Using video self-modeling and the peer group to increase the social skills of a preschool child

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The development of social skills in the preschool years is paramount to the development of later social, academic and behavioural competence. Children who exhibit social skills deficits may require specialised support to develop functional social behaviours. Video self-modeling (VSM) has been shown to be an effective form of social skills intervention with certain populations. This study examined the effects of a video self-modeling social skills intervention on a preschooler who was behaving in a disruptive and aggressive manner with his peers. Peer participants were employed to augment the effects of the VSM intervention. Results suggest that the VSM intervention had a beneficial effect on the participant's positive social interactions with peers. The results are discussed in light of the implications for children with externalizing behaviours.

Keywords: video self-modeling, peers, positive social interactions, social skills

The development of social skills in the preschool years is considered crucial to the development of later social, academic and behavioural competence (Brown, Odom, & Conroy, 2001; McCabe & Altamura, 2011). However, achieving positive social relationships in preschool is a complex process which seems to require - at a minimum - age-appropriate language, and the the effective management of negative emotions. However, there are also a host of specific skills that may be required. In particular, children might need to know how to interact with peers by engaging in positive communications and behaviours that not only enhance the play, but increase the likelihood of positive interactions continuing. For example, children might need to learn how to accept invitations and initiate activities. However, perhaps most importantly they might need to know how to sustain positive interactions with peers by engaging in positive communications and cooperating with others. This positive behaviour includes sharing, taking turns and negotiating with others to manage disagreements and conflicts (Elliot, Roach, & Beddow, 2008; Girolametto & Weitzman, 2007). While all children require some support from caregivers and teachers to develop positive social relationships with peers, there are some children who struggle to achieve a desirable level of social skill and may require specialised support (Elliot et al., 2008; Guralnick, 1993).

There are numerous causal factors for poor social skills development in young children, including language and developmental delays, behavioural disorders (Walker, Ramsey, & Gresham, 2004) and autism spectrum disorder (Koegel, Koegel, Hurley, & Frea, 1992; Wang & Spillane, 2009). As deficits in social skills can lead to poor academic performance, problem behaviour (Brown et al., 2001; January, Casey, & Paulson, 2011; O'Shaughnessy, Lane, Gresham, & Beebe-Frankenberger, 2002) and peer rejection (Ladd, 1990; Walker et al., 2004), early intervention is critical (Elliot et al., 2008).

The goals of social skills intervention should typically be to increase positive peer interactions, reduce or eliminate problem behaviours, and to achieve generalisation and maintenance of skills acquired. January et al. (2011) found that social skills training is most effective when it is implemented in preschool or kindergarten. Preschools are natural settings for social skills interventions because preschool education emphasises social development rather than academic achievement.

One potentially effective method of intervention for social skill development has been the use of video modeling (VM) and video self-modeling (VSM). These approaches have their origins in Bandura's theory of social learning (Bandura, 1977) and are considered to be both time and cost-effective. The video models performing the appropriate behaviours are ideally similar in age, gender, and ethnicity to the target child. In the case of VSM, the target child him- or herself is used to depict the target behaviour (Dowrick, 1999) These approaches are considered relatively unobtrusive ways to teach desired behaviour or reduce undesired behaviour (Ballard & Crooks, 1984; Kehle, Bray, Margiano, Theodore, & Zhou, 2002; Keller & Carlson, 1974). VM and VSM have been employed successfully as social skills interventions with preschoolers with autism spectrum disorders (e.g., Buggey, 2012; Buggey, Hoomes, Sherberger, & Williams, 2011; D'Ateno, Mangiapanello, & Taylor, 2003; Litras, Moore, & Anderson, 2010). For example, Litras et al. (2010) employed VSM to increase the social behaviour of a 3.5 year old with autism and limited social skills. There were increases across all three targeted social behaviours.

While VSM has been found to be a successful intervention with preschool age children with and without ASD, according to a review by Buggey and Ogle (2012) relatively little research has been conducted on the effectiveness of either VSM or VM with preschool children who exhibit problem behaviours, such as aggression toward peers. In one study, Green et al. (2013) used VM with four preschoolers with the aim of increasing their positive peer interactions. The two children who were shy and withdrawn showed increased positive peer interactions. However, the children who were disruptive and

aggressive toward their peers showed variable effects. Furthermore, Clark et al. (1993) used a VSM intervention with six preschoolers who had been diagnosed with oppositional defiant disorder. They found that there were no effects of reduced aggression or increased compliance rates. These findings indicate that further research is needed to determine if VSM can be used effectively with preschoolers with externalizing behaviours (Buggey & Ogle, 2012).

In light of the importance of peer interactions in early childhood to assist in the development of social skills, some interventions have incorporated peers as intervention agents or confederates (Elliot & Gresham, 1993; Mathur & Rutherford, 1991). The inclusion of peers has been been found to be very effective at increasing social interaction rates in target children (Elliot & Gresham, 1993; Hendrickson, Strain, Tremblay, & Shores, 1982), as well as promoting positive social changes in isolated children (Strain, 1984), aggressive children (Strain, Shores, & Kerr, 1976) and students with ASD (Laushey & Heflin, 2000; Owen-DeSchryver, Carr, Cale & Blakeley-Smith, 2008). These interventions are considered to be more effective than teacher-mediated interventions, because peers might provide more immediate and natural reinforcement in social situations (Elliot et al., 2008; Mathur & Rutherford, 1991).

Therefore, one way to enhance the effectiveness of VSM and VM with preschoolers who are exhibiting problem behaviour is to make more use of the peer group. However, to date relatively little research on the combined use of VM/VSM and peers as confederates or intervention agents has been conducted. Sansosti and Powell-Smith (2008) used a VM intervention to increase the social communication skills of three boys aged 6 to 10 years (M = 8 years, 6 months) with diagnoses of autism spectrum disorder or pervasive developmental disorder. They found that while the VM package was effective, modifications were needed. In particular, for two of the boys, joining-in behaviour was observed to increase dramatically after peer confederates were included in the programme. Prior to the use of peer

confederates, the two boys had been using their new social communication skills appropriately, but their attempts were either refused or ignored. When peers were prompted to reciprocate to the target children's joining-in behaviours, their rates improved. This study highlighted an important factor when implementing social skills interventions. In particular, as noted by Strain, Odom and McConnell (1984) it is not realistic to teach social skills in an unnatural context (e.g., in a one-to-one adult-directed teaching format) and expect successful implementation in a natural context. Therefore, it seems that although both VSM and VM have been shown to be effective social skills interventions for behaviours such as social initiations (Buggey, Hoomes, Sherberger & Williams, 2011) the incorporation of peers as participants may help facilitate the success of the intervention. This would be particularly relevant for those children who may have already established a negative peer reputation as a result of their externalizing behaviours.

This study examined the effects of a VSM intervention with a peer confederate component on a preschool child with a history of problem behaviours in the classroom with the aim to increase positive social interactions with peers. VSM interventions are based on the principles of social learning theory and therefore it is anticipated that upon viewing the video clips of himself seemingly initiating play with peers, engaging in positive communications and sustaining this play that the target child would independently engage in these positive social interactions with peers. The reinforcement in this situation was presumed to be the inclusion of a peer group both on the videos and during the viewing of the videos and verbal praise for engaging in these positive interactions. Repeated viewings of the video clips were intended to serve as opportunites to rehearse and practice the concepts being demonstrated and therefore was considered a useful way to increase the liklihood of the behaviours being performed by the target child. Furthermore, once the child started to engage in the positive interactions, a cycle of reciprocity is perhaps more likely to unfold.

The specific research question was whether a VSM social skills intervention, combined with the use of peer participants, would improve the social interactions of a preschooler with problem behaviours? To address this question, six video vignettes of the participant and peer confederates were created that depicted the participant successfully using three key social skills and the peer confederates responding positively to his attempts. The three sets of vignettes (i.e., two per social skill) were shown sequentially to the participant and peer confederates and data were collected on the participant's use of the specific social skills depicted in the videos.

Method

Ethical approval and informed consent

The relevant university ethics committee approved the study and school, parental and teacher consent were obtained for the participant. In addition, although the participant was unable to provide consent due to his age, he seemed to give his assent to participate in the VSM activities as evidenced by his willingness to accompany the researcher and watch the videos.

Participant

The participant, Tyler (pseudonym) was a male, aged 4 years 9 months. He was a native English speaker and had been attending his current preschool for 6 months at the time of the study. An interview with the participant's mother revealed that a significant medical procedure in infancy had resulted in motor and speech delays between 2 and 4 years of age, for which he received therapy. According to the parent, a recent assessment of his speech and motor development by a speech-language therapist indicated that he was now within the normal range and no longer met criteria for specialised support. However, the parent and head teacher expressed concerns about Tyler's social communication skills. They also reported that he had difficulty playing cooperatively with other children and had not developed any friendships at the centre, despite attending for the past

6 months. In addition, the head teacher had concerns about his aggressive and defiant behaviour. The teacher reported that there were usually several instances a week in which Tyler engaged in aggressive behaviour towards peers and staff.

Prior to starting the baseline observations, Tyler's teacher completed the Social Skills Improvement System Behavior Rating Scales-Teacher (SSIS; Gresham & Elliot, 2008). The SSIS is a norm-referenced scale that includes four major scales: social skills, behavior problems, autism spectrum and academic competence. While the SSIS is technically sound and has strong internal reliability, there are concerns with the autism spectrum subscale and that key behavioural disturbances are not well-represented (Doll & Jones, 2010; Lee-Farmer & Meikamp, 2010). Therefore, the scores in the autism spectrum and problem behaviour scales were interpreted with caution. Tyler scored in the 2nd percentile for Social Skills (Standard Score = 67) and in the 78th percentile (Standard Score = 113) for Problem Behaviors on the SSIS. He also scored in the "above average" range for the autism spectrum scale, indicating that he did not appear to meet the cut-off for having autism spectrum disorder.

In addition, the teacher completed the communication and socialization domains, and the maladaptive behaviour index of the Vineland Adaptive Behavior Scales, second edition (*Vineland-II*; Sparrow, Cicchetti, & Balla, 2005). The *Vineland-II* is an adaptive behaviour measure designed to assess the personal, social, and behavioural functioning of individuals with and without disabilities from birth to adulthood (Gerhardt & Mayville, 2010) Tyler's scores on the communication subdomains varied, with his receptive and written communication scores in the moderately high to high levels and his expressive communication score in the low level. Therefore, although his standard score and percentile rank fell within the "adequate" range on the communication subdomain, when the individual subdomain scores are considered, his communication score represent a skewed profile. His socialization subdomain scores were rated as low to moderately low, resulting

in a standard score of 68 and percentile rank of 2, which is considered to represent a mild deficit. Tyler's score on the maladaptive behaviour index was "average", although he showed elevated levels for both externalizing and internalising behaviours.

In summary, Tyler was selected as the participant in this study due to the concerns expressed about his behaviour in the preschool setting. Particularly, the aggressive behaviours the preschool teacher's were seeing multiple times per week and his lack of friendship/social skills. These concerns were further evident in his scores on the Vineland-II and the SSIS.

Setting and Personnel

Observational data of the particpant were collected at his preschool, which was located in an urban centre in New Zealand. The student-teacher ratios throughout the sessions ranged from 9:1 to 6:1. Sessions ran Monday through Friday from 8:30 am to 3:30 pm and consisted of multiple structured and unstructured activity times. During unstructured activity times, children were able to choose between a number of craft, science, pretend and outdoor activities and had the opportunity to move between them freely. There was also a morning tea and lunchtime in each session during which all of the children ate together at the same time around a large mat. The study was implemented by a Master of Educational Psychology student (first author). An independent observer was present during a third of the observations to collect inter-observer agreement data and to conduct procedural integrity checks.

Dependent Variables

Three dependent variables were defined based on the social skills literature and from three hours of pre-baseline observations of the participant. Given that the aim of the intervention was to improve the participant's positive social interactions with peers, three key social skills were targeted: (a) inviting others to play, (b) engaging in positive communications, and (c) sustaining interactions with peers. The definitions for these dependent variables were partially derived from definitions used in the Litras et al. (2010) study. The

first was making an invitation to play (MIP) and was defined as the target child using one or more intelligible phrases while positioned within one metre of a peer to express his desire to play. An example of this behaviour in the preschool setting was: Tyler is shooting hoops. Another child walks up to the hoop and Tyler says, "Want a turn?" A non-example of what this would look like in the preschool setting is: Tyler is building towers of blocks and then knocking them down. He sees another child is watching. He builds a tower and knocks it down while looking at the child, but doesn't interact. The child then moves away.

The second dependent variable was positive communication (PC) and was defined as the target child making an intelligible vocal utterance clearly directed toward a peer, as evidenced by use of their name, body orientation focused towards them, or an attention-seeking gesture such as arm tapping or pointing. PC included making statements, asking questions, acknowledging a verbal statement by another with a head nod or saying "Hmm," answering a question, responding with a related comment about observable objects or an event within an ongoing activity, and confirming or clarifying a question or comment, such as saying, "What did you say?". An example of this behaviour in a preschool setting is: Tyler is riding a bike and comes upon another child riding a scooter. Tyler says, "Watch out!" as he passes the child on the scooter. Non-examples of PC included vocal utterances the child makes while playing with objects or walking around that are directed to no one in particular or are repetitive in nature, such as humming. Also, utterances that are angry or defiant are not examples of PC.

The final dependent variable was sustained social interaction (SI) and was defined as the target child being engaged or interacting with another person. SI included self-initiated interactions or other interactions in a play activity, such as cooperative play, imaginative play, physical play, or playing with musical instruments to create a shared song or rhythm. An example of SI in a preschool setting is: Tyler is working with another child to build a marble

track. They take turns putting the pieces together to create one track and then take turns putting marbles down the track. Intermittently they make eye contact and vocal utterances, such as, "Your turn" or "Look." A non-example would be: Tyler is playing with the marble track and another child joins in. Tyler does not acknowledge the child with eye contact or a vocal utterance, and instead starts humming while putting marbles down the track and pushing the other child's hand away when s/he tries to use the track.

Materials

The intervention focused on teaching Tyler appropriate peer social interaction skills. To teach these skills three sets of video interventions were created to teach three different social interaction skills. There were six short digital videos in total (2 per social skill). The videos ranged in length from 32 s to 1 min 24 s and the mean length of video clips was approximately 1 min. These videos featured Tyler primarily, with the peer participants or other children at the preschool for whom permission was granted to appear in videos. The children were told that they were going to be filmed and their ideas about what they wanted to play were incorporated into the filming process. Before the start of filming, the researcher checked that Tyler could self-recognise by showing him the video camera and turning the view screen so that it was facing him. He attended to his image by smiling and waving. This was considered an indicator of self-recognition (Buggey et al., 2011). All scenarios in the video vignettes were set up with teachers prompting the children and then edited to show only successful or positive interactions. Psuedonyms have been used in the following examples.

To create the video vignettes, the researcher employed the assistance of the teachers to set up play scenarios that corresponded to the behaviours being targeted for intervention. For example, to promote Tyler's ability to invite his peers to play with him, two videos were created for this first intervention. The setting was a tennis court and the teacher prompted two of the peer participants to respond positively when Tyler approached them with a soccer

ball. In the video, Susie and Tom are standing on the courts with some other children. Tyler approaches them with the soccer ball (adult voice-over: *Tyler wants to play soccer. He asks Susie and Tom to play with him. They say 'yes'*). Tyler, Susie, and Tom then begin playing soccer by kicking the ball and running after it as a group. Then they kick it back and forth to each other (adult-voice over: *They have fun running around together, kicking the ball, and scoring goals.*) The video ends with Susie passing the ball to Tyler and he then kicks the ball through a goal and cheers.

The second social skill targeted was engaging in positive social communication and the two videos were set on the playground near a child-sized basketball hoop. Tyler and Zach are taking turns throwing the ball through the hoop (adult voice-over: *Tyler and Zach are playing at the basketball hoop. Listen to how they talk to each other while they are playing*.) The subsequent scenes depict Tyler and Zach laughing, looking at each other and saying things such as "There's your ball!' 'Watch me do a trick!" and "I did it!".

Finally, to assist Tyler with maintaining his social interactions with peers the third intervention consisted of two videos that depicted Tyler and three peers playing skittles (adult voice-over: *Tyler is playing skittles with Josh, Tracy, and Tom.*) The next scenes show the children throwing the bowling ball, picking up the knocked over skittles, keeping score for each other and talking about whose turn it is next (adult voice-over: *They have fun taking turns, setting up the skittles, and keeping score for each other. Tyler has a fun time staying and playing with his friends.*) All of the videos were shown using VLC Media player on a 13" MacBook.

Peer Participants

Three peers were recruited from the class to appear in and watch the videos with Tyler. Peers were included so that Tyler would not appear to be "singled out", and to support the VSM intervention. These children, whose names have been changed, were selected by the preschool teachers for having average to above-average levels of social competence and also the high likelihood that they would respond positively to

Tyler. Susie (4 years 9 months), Melanie (4 years 1 month) and Tom (4 years 10 months) attended all sessions and participated in the group discussions about the videos (see Intervention Procedures). The inclusion of peers as part of the intervention was intended to (a) enhance the ecological validity of the study, (b) lessen the potential stigma of being singled out for intervenion, and (c) provide opportunities for peer proximity and modeling to occur.

Experimental Design

The design employed in this case study was a multiple treatment design (Engel & Schultz, 2014), which included an intial baseline (A) followed by three related, sequential video interventions (i.e., phases B_1, B_2 and B_3) and a follow up phase (C). Each intervention involved the use of a different set of two videos. The B_1 phase involved the use of the two videos that focused on showing Tyler inviting his peers to play with him. The B_2 phase involved the use of the two videos that showed Tyler engaging in positive social communication. And the B_3 phase involved the use of the two videos that showed Tyler maintaining his social interactions with peers. After this, a final follow-up phase (i.e., C) was implemented during which the videos were no longer used.

This design was chosen because we wanted to evaluate the effects of the three different sets of videos on the three different dependent variables. The sequence of videos was based on the assumption that each video addressed a different and increasingly complex social skill/social communication. That is, initiating play (i.e., which was targeted in the B_1 phase videos) could be viewed as less complex than engaging in the types of positive communication interactions that were targeted in the B_2 phase, which are, in turn, generally viewed as less complex than sustaining a social interaction, which was the focus of the videos in the B_3 phase (Engel & Schutt, 2014).

Procedures

Baseline. During baseline, no videos were presented and data were collected on the three dependent variables in 10-min sessions. Each 10 minute session was divided into 10-s observation intervals and 10-s recording intervals

(Merrell & Gimpel, 1998). That is, the researcher would observe for 10 s and then would record data on each of the dependent variables for the next 10 s, alternating between the observing and recording for a total of 30 observation intervals (3 min) and 30 recording intervals (5 min) per session. The intervals were timed using an interval timer smartphone app (Seconds Pro®). Data were recorded for each interval with a tick for the occurrence of the three target behaviours or a dash for the non-occurrence or non-completion of a behaviour during the interval. Therefore, for any occurrence of an MIP a tick was given if the behaviour was present at any point during the 10 second interval (i.e., partial interval recording); the same procedure was used for PC. For SI, a tick was given only if the behaviour occured during the entire 10 second interval (i.e., whole interval recording). A maximum of one occurrence per interval was recorded for each dependent variable. During the sessions, the researcher did not interact with the target child in any way.

A total of five baseline data collection sessions occurred over the period of one week during unstructured play times either in the mid-morning or afternoon. The observations were recorded using pen and paper in real time and began at least 2 min after the beginning of the unstructured play time in order to allow the target child to have had an opportunity to engage in play. Data was collected on all three dependent variables simultaneously throughout the baseline observations.

Intervention. Prior to each intervention session, the target child and the peer participants were asked by a teacher to come to another room situated next to the classroom to watch some videos. The researcher would be in this room with the laptop open when the children arrived. After having the children seat themselves on the floor, the researcher would explain briefly what the videos were about, for example, "Today we are going to watch some videos about talking with our friends while we are playing with them." Then the children would be instructed to watch the two videos. Two videos depicting one of the three social skills, were shown during each

session. During the videos, the children were encouraged to keep watching if they became distracted, (e.g., "Keep watching") and afterwards the children would be thanked for paying attention to the videos. The first time a set of 2 videos was shown, the researcher engaged the children in a brief discussion about the topic of the videos. For example, she asked, "What are some good ways to invite friends to play with us?" These discussions were 1 to 2 min in length. When the video viewing session was complete the children would be told it was time to go back and play. Once the children were back in the preschool play areas, generally one minute after the viewing session was completed, the researcher would wait two minutes or until the target child was engaged in a play area to begin recording.

The first set of videos, were introduced in session 6 (B_1) and viewed till session 12. The second set, began in session 13 (B_2) and were viewed till session 17 and the final set of videos were introduced in session 18 (B_3) and were viewed till session 24. In accordance with a multiple treatment design (Engel & Schultz, 2014) the decision to cease the first set of videos and introduce the next set and so on, was dependent on improvement being shown in the previously targeted behaviour. However, if no improvement was observed after seven sessions with a set of videos, then the next set of video clips was introduced. This decision rule was implemented because time constraints meant that the complete sequence of all three intervention phases plus the follow-up had to completed before the school term ended.

The intervention observation sessions were conducted in the same format as the baseline observation sessions except that the participants had viewed the respective video prior to each 10-min observation. As in the baseline condition, observations took place during unstructured play times.

Follow-up. Follow-up sessions were conducted two weeks after the completion of the final intervention session of the B_3 phase. The procedures in this (C) phase were identical to those in the baseline phase.

Inter-rater Agreement and Procedural Integrity

Inter-observer Agreement (IOA) was collected on 30% of the sessions in each phase of the study. IOA data were collected by a postgraduate student who had experience conducting research in preschools and was familiar with VSM as an intervention. She was trained by the primary observer (the first author). The training included a detailed explanation of definitions and descriptions of the dependent variables, procedures, event recording and partial- and whole-interval recording methods. Agreement was calculated on a session-by-session basis (Gast & Ledford, 2010). In each session, both observers used interval time-sampling programme software on handheld devices when observing the target child. These handheld devices were synchronised so that the intervals would match the observation data. Agreement was calculated via the following formula: number of agreed occurrences across the intervals observed/the total number of intervals x 100%. The resulting percentages of agreement ranged from 92% to 100% with a mean of 98%. The reliability observer also conducted treatment integrity checks for 30% of all of the sessions in the intervention phase using a checklist of steps. The procedures were all correctly implemented in each session that was checked.

Treatment Acceptability and Perceived Effectiveness

Parents and teachers were asked to complete adapted versions of Kazdin's (1980) Treatment Evaluation Inventory (TEI) and Hunsley's (1992) Treatment Acceptability Questionnaire (TAQ) to assess the acceptability and perceived effectiveness of the intervention. This was conducted three weeks after the intervention phase was completed. Both these questionnaires have been deemed to have sound psychometric properties (Hunsley, 1992; Kazdin, French, & Sherick, 1981). They were both adapted by Green et al. (2013) so that the language was appropriate for a social skills intervention within a New Zealand context.

The adapted version of the TEI consisted of nine questions rated on a 7-point Likert scale (i.e., 1-Strongly

Disagree to 7-Strongly Agree). For example, "I have noticed a change in my child's social skills". The adapted version of the TAQ had four questions for parents and five for teachers. For example, "How acceptable was the social skills programme used in the preschool?" (1-Very Unacceptable to 7-Very Acceptable) and "How ethical was the social skills programme used in the preschool?" (1-Unethical to 7-Ethical). There was also an open-ended question which asked for any comments about the intervention or the child's social behaviour.

Results

Baseline and Intervention

Figure 1 shows the percentage of intervals in which MIP behaviour was observed during each session of the study and it is evident that during baseline Tyler did not exhibit any MIP behaviour. With the introduction of the first video intervention there was a slight increase during the first session and again during the 5th session. However, MIP remained at low levels throughout all the intervention phases. Despite these low overall levels it is important to note that of the 18 intervention sessions, Tyler had 10 sessions in which he *did* initiate play with peers at least one time, which was markedly different behaviour to what was displayed during baseline. Anecdotal comments from the teacher indicated that Tyler was approaching peers more than he had before and using functional strategies to get their attention, gain entry, or invite someone to play with him. Tyler's method of initiating play interactions was varied, particularly as according to his teacher, Tyler did not use the same phrases that were depicted in the video. The range of phrases he was using could have been as a result of participating in the short group discussions. These were conducted upon the first viewing of the B_1 videos and may have also contributed to this success, as the researcher did ask the children to give examples of how they could initiate play with others and discussed some simple scenarios. This indicates that including peers in the sessions was effective for not only modeling social behaviour and

Figure 1. Percentage of intervals with an occurrence of Making an Invitation to Play within each session
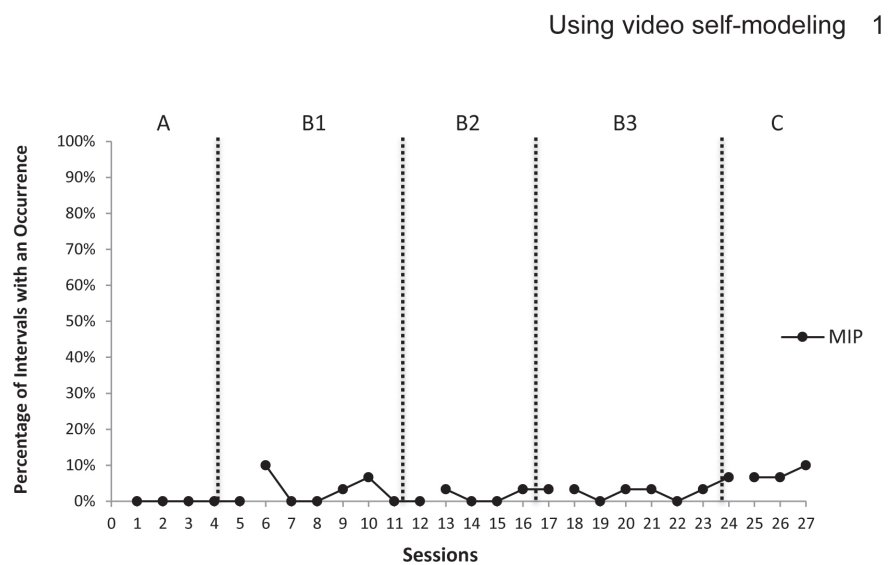
providing proximity to peers, but also in extending the behaviour.

As can be seen in Figure 2, Tyler's positive communications during baseline ranged from 0% to 18%. With the introduction of the first intervention videos there was an

evidence of some improvement in Tyler's status among his peers. For example, one of the peer participants and another boy had been actively seeking Tyler out for play and were telling the teachers and others and they were "Tyler's friends."

Figure 2. Percentage of intervals with an occurrence of Positive Communication within each session
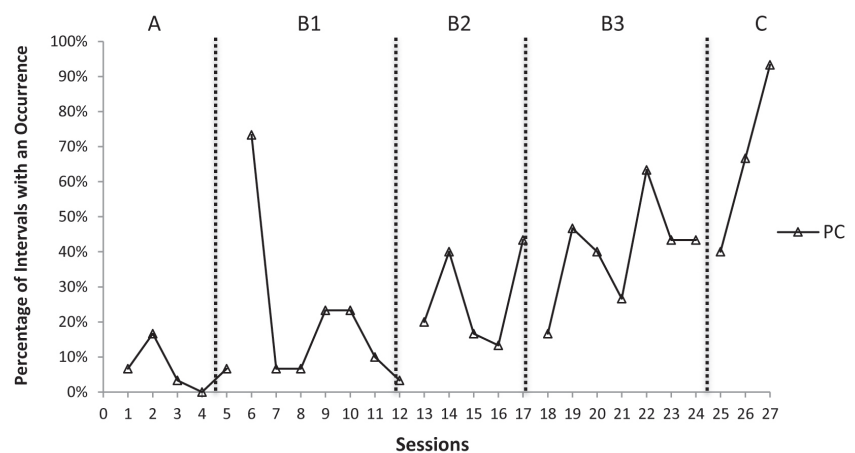
unexpected spike in the percentage of positive communications, however they dropped back to between 5% and 22% of intervals for the remainder of the first intervention phase. During the second set of videos that focused specifically on positive social communication (B_2), there was an overall increase in the percentage of intervals in which PC occurred (the range was from 10% to 40%). PC continued to increase throughout the remainder of the study. During this phase there was anecdotal
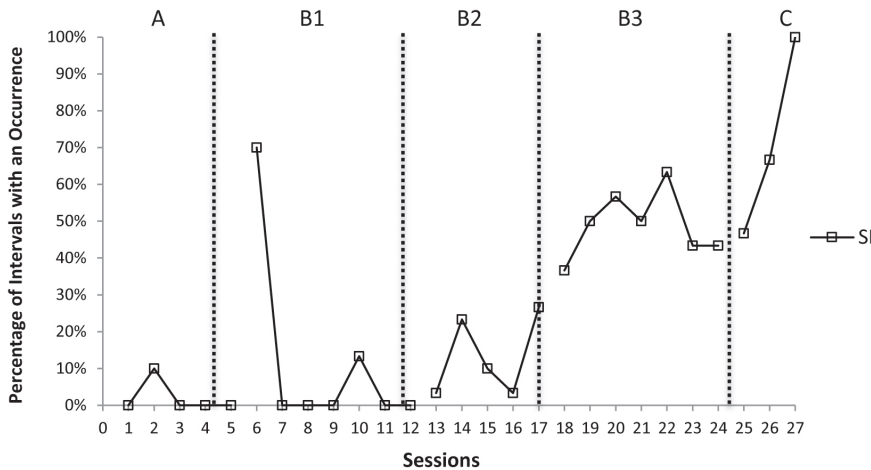
As with the previous two dependent variables, Tyler's ability to sustain interactions with his peers was low during baseline (between 0 and 10% of the intervals). However, when the first set of videos were introduced (B_1) there was a spike in the percentage of intervals where he had been able to maintain social interactions with peers and also some evidence of SI during the second set of videos (B_2). The third set of videos that focused specifically on maintaining social interactions (B_3)

were introduced during session 18, because it was evident that Tyler's PC had shown steady improvement. The percentage of intervals in which he had sustained interactions with peers ranged from 30% to 60% over the course of this intervention. The field notes show

It was interesting to note that, i), his scores would have been even higher for this session (as they were already the highest they had been for PC and SI since the initial spike) and ii), that when the children left, Tyler did not remain at the table, but went in search of others

Figures 1 and 2 in particular, indicate that Tyler was not only maintaining the gains he had achieved at the end of the 3rd intervention phase, but was continuing to show improvement in his positive communications and sustained interactions. The field notes show that during the final session he approached a boy playing in the sandpit and joined in the boy's game of burying his truck. The boys had a good deal of discussion about their play and it was clear to the researcher and the teacher supervising the outdoor area at the time that Tyler was responding well to his peers, even when at times it seemed that he was confused or frustrated by their responses to him. Tyler was observed by his teacher to be playing with the other children more than he had been before the start of the intervention and to be interacting in more meaningful, positive ways.

Figure 3. Percentage of intervals with an occurrence of Sustained Interaction within each session

Treatment Acceptability and Perceived Effectiveness

Results from the TEI (Table 1) suggested that the parents and teachers believed that Tyler had learned and benefitted from participating in the intervention. The TAQ data showed that the intervention was considered to be highly ethical and effective. The individual scores for the four positively worded questions were all within the 5-7 range (acceptable to very acceptable range).

that in the 22nd session, Tyler was playing with four other children at the woodworking table. During this session he shared tools and toys with ease and he continually made the others laugh by the way he was playing with the toys and tools at the table. During the middle of this session, a teacher came and called all of the children away except Tyler.

to play with.

Follow-up data was collected three weeks after the end of the 3rd intervention. In these sessions, the conditions were identical to those during the baseline and intervention phases, however the video interventions were not re-introduced. The results from

Table 1. Mean and Standard Deviation Scores from the Treatment Evaluation Inventory

Question	Parent and Teacher Responses Combined	
	X (N = 3)	SD
1. Child now plays appropriately	4.67	0.58
2. Child can apply what he learnt	4.33	0.58
3. There has been a change in this social skills	5.33	0.58
4. Child looked forward to the programme	3.33	1.15
5. Child gained new information about how to play with other children	4.67	0.58
6. I am glad that the child participated in the programme	6.00	0.00
7. I anticipate that child will react differently in social situations	5.00	1.00
8. Child seemed to enjoy the programme	4.33	2.08
9. Child found the programme interesting	5.00	1.00

Discussion

This study examined the effects of a VSM intervention aided by the inclusion of peer confederates on the social skills of a preschooler who exhibited externalizing behaviours. It was hypothesized that the VSM intervention would be more likely to be successful by including peers in the viewing sessions. The results showed that although there was a steady and positive increase in the dependent variables from baseline to follow-up, there was some variation throughout the intervention. The initial increases in all three dependent variables upon the showing of the first intervention are somewhat similar to the findings in the Litras et al. (2010) study, in that the target social skills all increased upon the very first viewing of the video clips. Also, the first two dependent variables in the Litras et al. study were "greetings" and "invitations", and showed variation throughout the study similar to the MIP variable in the current study. Part of the reason for this could be that there is less opportunity for greetings and initiating play during sessions and more opportunities for communication, interaction, and responding.

One of the prime advantages of conducting a social skills intervention in a preschool setting is the possibility of "spill-over effects". When peers are encouraged to interact with target children, their behaviours may influence untrained peers to interact more frequently and in similar ways with the target children (Kohler & Fowler, 1985). This was the case in studies conducted by Cooke and Apolloni (1976) and Owen-DeSchryver et al. (2008). In the latter study, a small group of peers were trained to socially interact with children with autism. The intervention increased the initiations of both the trained peers and the children with autism. However, the researchers noted that untrained peers also showed increased initiations as a result of the intervention. Kohler and Fowler (1985) surmise this "spill-over" effect may occur because the social behaviours of young children are interdependent. That is, modifying the behaviour of one child should have an effect on the peers who interact with this child. These effects were observed anecdotally about one week after the intervention phase of the current study was introduced. It was noted throughout the intervention, by the teacher that the peer participants were more likely to be receptive to Tyler's play initiations and more tolerant of his social difficulties than they had been previously, and more than other peers in general. This seemed to encourage other peers to interact with Tyler in a positive way.

At certain times, each of the peer participants were observed encouraging other peers to include Tyler or to tolerate his aggressive and/or disruptive behaviours. This was particularly important for addressing Tyler's social behaviours with his peers. When there has been a history of negative behaviours, such as aggression or non-responsiveness toward peers, Strain et al. (1984) have stated that the target child may have difficulty eliciting positive responses to his or her newly learned social skills. In these cases, they recommend that the intervention take place with the peer group. Walker and Irving (1998) concur, stating that including the peer group in a preschool social skills intervention is vital to overcoming the barrier of negative peer perceptions and promoting successful social interactions. Using peer participants in this case seems to have been helpful in influencing Tyler's peers to be more accepting of him. Of course, this was only observed anecdotally, and formal data collection on such behaviours would be more indicative of these effects. In future studies these interactions could be formally measured possibly through teacher observations of approaches and interactions initiated by peers toward the target child.

Thus the inclusion of peers as part of the intervention may have added to the success of this study. It appears that this type of intervention, specifically including peers in VSM videos and viewing sessions, has not been conducted before with this age group. Although peer training and buddy systems have been conducted with preschoolers (e.g., Kohler, Greteman, Raschke, & Highnam, 2007; Laushey & Heflin, 2000), these studies did not employ VSM. In the current study, peer participants, along with the target child, were made to feel that they were all equal participants in the intervention.

At no point did the peers indicate that the intervention was directed toward Tyler specifically, even though he was featured prominently in the video clips. Tyler's enjoyment of spending time with the small group to watch the video clips was evident in the way that he smiled and laughed with his peers as they walked to the viewing room together to view the video clips.

Bandura (1977) postulated that the best way to ensure a child attends to a model is to have the model be as similar to the target child as possible. In VSM, the target child is depicted as competent in these target behaviours, which should not only enhance motivation and attention, but also foster a belief in the individual's self-efficacy (Bellini & Akullian, 2007). This appeared to be the case for Tyler. He was very motivated to watch the videos and his enthusiasm for the content of the videos was evident in his expressions and positive vocal statements about his performance in the videos.

Measuring and conducting interventions on social skills is inherently complex due to the reciprocal nature and inter-relatedness of social behaviours (Tremblay, Strain, Hendrickson, & Shores, 1981). Although this study was designed with three dependent variables that were functionally similar yet also different (Gast & Ledford, 2010), the interaction of the three variables was evident in the results obtained. Initiating play, communicating positively with peers, and sustaining social interactions, are all separate behaviours, however, a change in one is very likely to bring about a change in the others. For example, the day that Tyler asked Melanie to play soccer and Melanie agreed, a number of communicative and interactive behaviours took place as a result of the very first behaviour, causing an elevation to all behaviours. If Tyler had been unsuccessful in his attempts to initiate play, initially his results might have conformed to the multiple treatment design quite neatly. However, without the reinforcing experiences of having peers agree to play and then communicating and interacting with him, he probably would not have continued making attempts. So while, the data did not conform perfectly to the multiple treatment design, it did

show that Tyler was exhibiting increases in his social behaviour and that he was experiencing natural reinforcement as a result.

There is also a distinct possibility that the VSM intervention including peer discussions had a positive effect on Tyler's language ability, which in turn may have helped to reduce his aggressive behaviour and improve his positive behaviour and social interactions with peers. Viewing his successful verbal interactions on screen and verbally interacting with his peers may have reinforced his skills and increased his sense of confidence and self-efficacy. There is some evidence in the literature that demonstrates the positive impact that video self modeling can have on language development. In particular Whitlow and Buggey (2003) used VSM to effectively improve a preschool child's language delay. However, additional replications of the current study are required including pre and post language assessments to more accurately determine the possible link between a reduction in behavioural problems and possible improvements in pragmatic language.

The social validity of this study was evident in the positive responses from the parent and teachers to the TEI and the TAQ. However, there were some limitations to this preliminary study that should be considered. First, as it is case study it cannot be generalized to other children or locations, however case studies are useful for testing hypotheses about the conditions necessary for successful interventions. Another limitation was that by employing a multiple treatment design it is difficult to eliminate carry-over effects (Engel & Schultz, 2014). For example, all three behaviours showed a spike after the first viewing of the first set of videos. Although typically the behaviours targeted for intervention should be functionally independent, the current design was implemented in part because social behaviours are inter-related. It follows that an intervention targeting one particular skill will possibly effect a change in the related social skills (Elliot & Gresham, 1993). Therefore it was not surprising that when Tyler initiated play with a peer that his communication and social interaction scores also went up. It

is also plausible that it was a cumulative effect of all three sets of videos that resulted in Tyler's overall improvement as it provided him with a complete set of inter-related skills.

Another limitation with the design is that is not possible to rule out maturation as a possible confounding variable in this intervention, as the preschool years are a time of intense cognitive and social-emotional development (Engel & Schultz, 2014; McCabe & Altamura, 2011). Tyler's teachers and the author all noticed that Tyler's language improved during the time of the intervention and follow-up phases. He was also observed to gain greater control over his emotions as he was having less angry outbursts, all of which may have been due to the intervention and his increased opportunities to engage with and learn from his peers.

Another limitation was that the peer participants did not seem to like watching the same videos more than twice and were vocal in their discontent. Tyler seemed very happy to watch the videos repeatedly, most likely because he was featured prominently in each video. Even though the peer participants were also featured in the videos, they did not seem as interested. Their complaints distracted from the video viewing at times, although they were prompted to keep watching. So while their participation most likely augmented the effects of the VSM intervention, there were some complications with their involvement as well.

Future research could include the use of an explicit, tangible reinforcer (e.g., a sticker) for watching the videos, to encourage the peer participants to watch the same videos more than three or four times without complaining. In addition, it would have been useful to include post-intervention assessments to further confirm that the study did in fact have a meaningful effect on the participant's social behaviour, and that his problem behaviours were reduced. Finally, it is recommended that sociometric assessments be employed in addition to the standardised assessments used in this study. While it was helpful to see and hear anecdotally that the participant's relations with his peers showed improvement, sociometric assessments would have provided a

stronger indication of improvement.

Addressing the social skills deficits in preschoolers is highly important to their overall development. The preschool years are an ideal time to address such deficits as preschools provide curricula and settings that are likely to support and foster social skills improvement (Green et al., 2013). The results of this study show that VSM combined with the use of peer participants appeared to be somewhat effective at increasing social behaviours in a preschooler who exhibited aggressive and disruptive behaviours towards his peers and teaching staff.

References

Ballard, K. D., & Crooks, T. J. (1984). Videotape modeling for preschool children with low levels of social interaction and low peer involvement in play. *Journal of Abnormal Child Psychology, 12(1)*, 95-110.

Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice Hall.

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*(3), 264-287.

Brown, W. H., Odom, S. L., & Conroy, M. A. (2001). An intervention hierarchy for promoting young children's peer interactions in natural environments. *Topics in Early Childhood Special Education, 21*(3), 162-175.

Buggey, T. (2012). Effectiveness of video self-modeling to promote social initiations by 3-year-olds with autism spectrum disorders. *Focus on Autism and Other Developmental Disabilities, 27*(2), 102-110.

Buggey, T. Hoomes, G., Sherberger, M. E., & Williams, S. (2011). Facilitating social initiations of preschoolers with autism spectrum disorders using video self-modeling. *Focus on Autism and Other Developmental Disabilities, 26*(1), 25-36.

Buggey, T., & Ogle, L. (2012). Video self-modeling. *Psychology in the Schools, 49*(1), 52-70.

Clark, E., Beck, D., Sloane, H., Jenson, W., Bowen, J., Goldsmith, D. & Kehle, T. (1993). Self-modeling with preschoolers: Is it different? *School Psychology International, 14*(1), 83-89.

Cooke, T. P., & Apolloni, T. (1976). Developing positive social-emotional behaviors: A study of training and

generalization effects. *Journal of Applied Behavior Analysis, 9*(1), 65-78.

D'Ateno, P., Mangiapanello, K., & Taylor, B. A. (2003). Using video modeling to teach complex play sequences to a preschooler with autism. *Journal of Positive Behavior Interventions, 5*(1), 5-11.

Doll, B., & Jones, K. (2010). Review of the social skills improvement system rating scales. In R. A. Spies, J. F., Carlson, & K. F. Geisinger (Eds.), *The 18th Mental Measurements Yearbook* (pp. 561-565). Lincoln, NE: Buros Institute of Mental Measurements.

Dowrick, P. W. (1999). A review of self modeling and related interventions. *Applied and Preventive Psychology, 8*(1), 23-39.

Engel, R. J. & Schutt, R. K. (2014). *Fundamentals of social work research (2nd ed.)*. Thousand Oaks, CA: Sage Publication Inc.

Elliot, S. N., & Gresham, F. M. (1993). Social skills interventions for children. *Behavior Modification, 17*(3), 287-313.

Elliot, S. N., Roach, A. T., & Beddow III, P. A. (2008). Best practices in preschool social skills training. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology V* (pp. 1531-1546). Bethesda, MA: National Association of School Psychology.

Gerhardt, P.F., & Mayville, E. (2010). Assessment of social skills and social competence in learners with autism spectrum disorders. In D. W. Nangle, D. J. Hansen. C. A. Erdley, & P.J. Norton (Eds.) *Practioner's guide to empirically based measures of social skills* (pp. 193-206). New York: Springer.

Gast, D., & Ledford, J. (2010). Multiple baseline and multiple probe designs. In D. Gast & J. Ledford (Eds.), *Single subject research methodology in behavioral sciences* (pp. 276-328). New York, NY: Routledge.

Girolametto, L., & Weitzman, E. (2007). Promoting peer interaction skills: Professional development for early childhood educators and preschool teachers. *Topics in Language Disorders, 27*(2), 93-110.

Green, V. A., Drysdale, H., Boelema, T., Smart, E., van der Meer, L., Achmadi, D., … Lancioni, G. (2013). Use of video modeling to increase positive peer interactions of four preschool children with social skills difficulties. *Education and Treatment of Children, 36*(2), 59-85.

Gresham, F. M., & Elliot, S. N. (2008). *Social Skills Improvement Rating System: Rating Scales*. Bloomington, MN: Pearson Assessments.

Guralnick, M. J. (1993). Developmentally appropriate practice in the assessment and intervention of children's peer relations. *Topics in Early Childhood Special Education, 13*(3), 344-371.

Hendrickson, J. M., Strain, P. S., Tremblay, A., & Shores, R. E. (1982). Interactions of behaviorally handicapped children: Functional effects of peer social initiations. *Behavior Modification, 6*(3), 323-353.

Hunsley, J. (1992). Development of the treatment acceptability questionnaire. *Journal of Psychopathology and Behavioral Assessment, 14*(1), 55-64.

January, A. M., Casey, R. J., & Paulson, D. (2011). A meta-analysis of classroom-wide interventions to build social skills: Do they work? *School Psychology Review, 40*(2), 242-256.

Kazdin, A. E. (1980). Acceptability of alternative treatments for deviant child behavior. *Journal of Applied Behavior Analysis, 13*(2), 259-273.

Kazdin, A E., French, N. H., & Sherick, R. B. (1981). Acceptability of alternative treatments for children: Evaluation by inpatient children, parents, and staff. *Journal of Consulting and Clinical Psychology, 49*(6), 900-907.

Kehle, T. J., Bray, M. A., Margiano, S. G., Theodore, L. A., & Zhou, Z. (2002). Self-modeling as an effective intervention for students with serious emotional disturbance: Are we modifying children's memories? *Psychology in the Schools, 39*(2), 203-207.

Keller, M. F., & Carlson, P. M. (1974). The use of symbolic modeling to promote social skills in preschool children with low levels of social responsiveness. *Child Development, 45*(4), 912-917.

Koegel, L. K., Koegel, R. L., Hurley, C. & Frea, W. D. (1992). Improving social skills and disruptive behavior in children with autism through self-management. *Journal of Applied Behavior Analysis, 25*(2), 341-353.

Kohler, F. W., & Fowler, S. A. (1985). Training prosocial behaviors in young children: An analysis of reciprocity with untrained peers. *Journal of Applied Behavior Analysis, 18*(3), 187-200.

Kohler, F. W., Greteman, C., Raschke, D., & Highnam, C. (2007). Using a buddy skills package to increase the social interaction between a preschooler with autism and her peers. *Topics in Early Childhood Special Education, 27*(3), 155-163.

Ladd, G. W. (1990). Having friends, keeping friends, making friends, and being liked by peers in the classroom: Predictors of children's early school adjustment? *Child Development, 61*(4), 1081-1100.

Laushey, K. M., & Heflin, L. J. (2000). Enhancing social skills of kindergarten children with autism through the training of multiple peers as tutors. *Journal of Autism and Developmental Disorders, 30*(3), 183-193.

Lee-Farmer, J., & Meikamp, J. (2010). Review of the social skills improvement system rating scales. In R.A. Spies, K.F. Geisinger, & J.F. Carlson (Eds.), *The 18th Mental Measurements Yearbook*. Lincoln, NE: Buros Institute of Mental Measurements.

Litras, S., Moore, D. W., & Anderson, A. (2010). Using video self-modelled social stories to teach social skills to a young child with autism. *Autism Research and Treatment*. doi: 10.1155/2010/834979

Mathur, S. R., & Rutherford, R. B. (1991). Peer-mediated interventions promoting social skills of children and youth with behavioral disorders. *Education and Treatment of Children, 14*(3), 227-242.

McCabe, P. C., & Altamura, M. (2011). Empirically valid strategies to improve social and emotional competence of preschool children. *Psychology in the Schools, 48*(5), 513-540.

Merrell, K. W., & Gimpel, G. A. (1998). *Social skills of children and adolescents: Conceptualization, assessment, and treatment*. Mahwah, NJ: Lawrence Erlbaum Associates.

O'Shaughnessy, T. E., Lane, K. L., Gresham, F. M., & Beebe-Frankenberger, M. E. (2002). Students with or at risk for learning and emotional-behavioral difficulties. In K. L. Lane, F. M. Gresham, & T. E. O'Shaughnessy (Eds.), *Interventions for children with or at risk for emotional and behavioral disorders* (pp. 3-17). Boston, MA: Allyn & Bacon.

Owen-DeSchryver, J. S., Carr, E. G., Cale, S. I., & Blakeley-Smith, A. (2008). Promoting social interactions between students with autism spectrum disorders and their peers in inclusive school settings. *Focus on Autism and Other Developmental Disabilities, 23*(1), 15-28.

Sansosti, F. J., & Powell-Smith, K. A. (2008). Using computer-presented social stories and video models to increase the social communication skills of children with high-functioning autism spectrum disorders. *Journal of Positive Behavior Interventions, 10*(3), 162-178.

Sparrow, S. S., Cicchetti, D., & Balla, D. A. (2005). *Vineland Adaptive Behavior Scales (*2nd ed.*)*. San Antonio, TX: Pearson.

Strain, P.S. (1984). Social behavior patterns of nonhandicapped and developmentally

disabled friend pairs in mainstream preschools. *Analysis and Intervention in Developmental Disabilities, 4*(1), 15–28.

Strain, P. S., Odom, S. L., & McConnell, S. (1984). Promoting social reciprocity of exceptional children: Identification, target behavior selection, and intervention. *Remedial and Special Education, 5*(1), 21-28.

Strain, P. S., Shores, R. E., & Kerr, M. M. (1976). An experimental analysis of "spill-over" effects on social interaction among behaviorally handicapped preschool children. *Journal of Applied Behavior Analysis, 9*(1)*,* 31–40.

Tremblay, A., Strain, P. S., Hendrickson, J. M., & Shores, R. E. (1981). Social interactions of normal preschool children: Using normative data for subject and target behavior selection. *Behavior Modification, 5*(2), 237-253.

Walker, S. & Irving, K. (1998). The effect of perceived social status on preschool children's evaluations of behaviour. *Journal of Australian Research in Early Childhood Education, 1*, 94-103.

Walker, H. M., Ramsey, E., & Gresham, F. M. (2004). *Anti-social behavior in school: Evidence-based practices* (2nd ed.). Belmont, CA: Wadsworth/Thompson Learning.

Wang, P., & Spillane, A. (2009). Evidence-based social skills interventions for children with autism: A meta-analysis. *Education and Training in Developmental Disabilities, 44*(3), 318-342.

Whitlow, C. K., & Buggey, T. (2003). Video self-modelling: an effective intervention for a preschooler with language delays. *Journal of Research in Special Educational Needs 3(1)*

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