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Northeastern University

January 01, 2011

Determining preference for social interaction

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Determining Preference for Social Interaction

A Thesis Presented

By

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In partial fulfillment of the requirements for the degree of

Master of Science

In the field of

Applied Behavior Analysis

Northeastern University

Boston, Massachusetts

August 2011

NORTHEASTERN UNIVERSITY
Bouvé College of Health Sciences Graduate School

Thesis Title: Determining Preference for Social Interaction
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Master of Science in Applied Behavior Analysis
in the Bouvé College of Health Sciences Graduate School
of Northeastern University, August 2011

Acknowledgements

Abstract

The purpose of this study was to determine preference for social interaction, then determine if preference for social interaction can be changed. Two children diagnosed with autism participated in a split room assessment to determine a level of social interaction prior to training. The room was divided in half with a white piece of tape (Harding et al., 1999), the participant was free to move from one side of the room to the other throughout the session. Identical toys were placed on both sides of the room. On one side of the room the adult interacted with the participant, on the other side of the room the adult did not interact with the participant. Following the split room assessment a social reinforcer assessment was conducted to identify social stimuli that functioned as reinforcers. Social skills that were absent in the initial assessment were trained using prompt fading. Reinforcers identified in the social reinforcer assessment were used as reinforcers when training the social skills. Post training, a split room assessment was again conducted to determine if exposure to social stimuli would increase their preference for social interaction and the social behavior emitted in this assessment. The current study found that exposure to social consequences in the context of teaching increased preference for social interaction by about 10% for both participants.

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Determining Preference for Social Interaction

Autism is a complex neurological disorder (Casanova, 2007). The severity of autism makes up a spectrum. On this spectrum there are variations in the severity, time of onset, and deficits across categories (Lord, Risi, Lambrecht, Cook, Leventhal, DiLavore, Pickles, & Ritter, 2000). Children with autism often experience social impairments, communication deficits, and engage in repetitive behaviors. According to Mundy, Sigman, Ungerer, and Sherman (1986) the onset of autism occurs prior to 30 months of age and is marked by abnormal social development. Deficits are often seen in the non-verbal communication (such as reaching to others to evoke interaction), joint attention (including indicating or showing other's objects or events in the environment), and requesting (such as reaching for desired items; Mundy et al. 1986). Children with autism lack the ability to engage socially with another person. There are a variety of ways in which social interaction is affected in a child diagnosed with autism. They are less likely to respond to initiations from others, do not approach or imitate peers, they do not offer assistance, do not seek out or respond to adult attention, and they have difficulty interpreting or reacting to emotional responses (Maurice, Green, & Foxx, 2001). These are just some examples of the deficits seen in the social interaction of children diagnosed with autism.

Deficits in joint attention are also often seen in children with autism. These children may fail to orient to speech sounds or social stimuli, and fail to look where others point (Dube, MacDonald, Masfield, Holcomb, & Ahearn, 2004). Children with autism lack the ability to initiate and respond to adult bids for joint attention. (Dube et al.) state that deficits in joint attention may be due to one or more of the following failures: adult-attending stimuli to function as discriminative stimuli, adult-attending

stimuli to function as conditioned reinforcers, adult-mediated interactions to function as conditioned reinforcers.

Several studies have compared joint attention skills of children with autism to those of typically developing children. These studies have found that children with autism have deficits in joint attention skills. Mundy et al. (1986) examined the individual and combined discriminant power of non-verbal communication and object play variables with respect to groups of autistic, mentally retarded and normal children. The authors measured the following skills; response to social interaction, initiates social interaction, response to indicating, initiate indicating, response to request, and initiating requests. They found that children with autism exhibited deficits in the ability to share attention by making eye contact with the experimenter while manipulating objects or alternating eye contact between the experimenter and an active toy.

A joint attention task was used to study preschool children's ability to orient attention to both people and objects, to cue attention, and to shift attention from one location to another (Leekam & Lopez, 2000). The study consisted of three experiments in which they investigated the children's ability to orient to an adult's attention bid and to follow the direction of a human and nonhuman cue, and the ability to disengage and shift attention to objects. They used mechanical toys that could be activated by the experimenter when the child looked in the right direction. Leekam and Lopez found that children with autism were less responsive than developmentally delayed controls in orienting to attention bids and in following a human head-turn cue yet had no difficulty in shifting attention and were faster overall in orienting to targets.

Children with autism are known to have difficulties in sharing attention with others (Leekam, Hunnisett, & Moore, 1998). This current study investigated behavior that is usually considered to be on of the earliest emerging joint attention responses; the ability to follow another's head and eye direction. Leekam et al. found that the child's ability to follow another person's head turn was correlated with their mental age. Children with autism with high mental ages were able to follow another's head turn, children with lower mental ages were not able to spontaneously orient to another's head movement. For children who did not spontaneously respond to another person's head cue performance increased when cues were added.

Previous research has evaluated attention to social stimuli in children diagnosed with autism (Dawson, Meltzoff, Osterling, Rinaldi, & Brown, 1998). Dawson et al. used an orienting task (which consisted of social stimuli such as clapping and calling the child's name and non social stimuli such as playing a jack in the box and shaking a rattle) and a shared attention task (which involved the experimenter pointing or looking at items in front of or behind the participant were performed) to evaluate attention to social stimuli in children diagnosed with autism, children diagnosed with Down's Syndrome, and typically developing children. They found that children with autism exhibit a general impairment in orienting ability, and that this impairment is more severe for social stimuli. Children with autism failed to orient to social stimuli. When children diagnosed with autism did orient to the social stimuli they were more likely to have a delayed response when compared to children with Down syndrome and typically developing children. These results support the idea that shared attention impairments in observed in children

with autism may be the result, in part, of more basic failure to selectively attend to social stimuli, such as another person's eyes or facial expression.

Using a very structured protocol, (MacDonald, Dube, Geckler, Green, Holcomb, Mansfield, & Sanchez, 2006) measured joint attention responding and initiating. Results for joint attention responding showed that both children with autism and typically developing children responded to the examiner's pointing gestures on the majority of opportunities. They also found that for joint attention initiation, all measured behaviors (gaze shifts, gestures, and verbalizations) were observed in typically developing children, but about half of the children with autism failed to use any form of responding to initiate joint attention.

Children with autism spectrum disorders often present with insensitivity to the naturally occurring social consequences that strengthen and maintain behavior in typically developing children (Dawson et al., 1998). For typically developing children social stimuli such as smiles, vocalizations, and physical contact become effective consequences early on. Dawson et al. suggest that it seems possible that some forms of social interaction may serve a reinforcing function, although the variety of salient social reinforcers may be limited for children with autism. Several possible reasons for these deficits: including, adult attention does not function as a discriminative stimulus for interaction, adult attention does not function as a conditioned reinforcer, or interaction with an adult does not function as a conditioned reinforcer (Dube et al., 2004).

Children with developmental disabilities sometimes experience difficulties with choice making. A variety of procedures have been developed to make choice making less difficult for these children. One of these procedures involves the use of a concurrent

operants arrangement. Reinforcer assessment procedures that provide choices among stimuli are considered to approximate natural contexts in which individuals have an opportunity to select between concurrently available items of activities (Harding, Wacker, Berg, Cooper, Asmus, Mlela, & Muller, 1999). In a concurrent-operant arrangement stimuli are available simultaneously, the individual must choose between the two stimuli. Harding et al. used concurrent operants methodology to evaluate the effects of different types and dimensions of reinforcers on various aspects of behavior. The primary purpose of the Harding et al. study was to evaluate the relative influence of positive and negative reinforcement on choice making with children who displayed escape-maintained problem behavior. During the concurrent-operant choice assessment the room was divided in half with a white piece of tape. The child had the option of interacting with the stimuli in either of the two choice areas. Harding et al. found that the current choice assessment suggested that by providing choices that maximize the positive reinforcement available to the child, increases the compliance with parent instructions.

Smaby, MacDonald, Ahearn, and Dube, (2007) describe a method, appropriate for young children with autism, for rapidly identifying social reinforcers and assessing relative preferences among social consequences. If preferred social consequences can be identified, they could then be paired with naturally occurring social consequences to reinforce the acquisition of appropriate social behavior without introducing contrived non-social consequences. Joint attention involves the interaction between persons with respect to a simultaneously experienced environmental event. Smaby et al. state that joint attention behavior involves socially mediated reinforcers, therefore a procedure that identifies effective social consequences might prove useful for establishing these critical

responses. The current study simultaneously identified social reinforcers and preference among social stimuli. The authors of the current study outline an assessment that allows clinicians to successfully identify social reinforcers. Smaby et al. suggests that research should examine the role of social versus non-social reinforcement in the acquisition of new conditioned social reinforcers.

Children with autism often experience deficits in joint attention. Deficits in joint attention have been well documented in children with autism (MacDonald et al. 2006). These children fail to orient to speech sounds or social stimuli, show deficits in the ability to follow the gaze of another person, and often fail to look where others point. Joint attention is a term used to describe a child's use of gestures and eye contact to coordinate attention with another person in order to share the experience of an interesting object or event. Joint attention is an important skill that enables children to develop other social skills. Teaching joint attention using social reinforcers may increase acquisition of joint attention skills, and allow for exposure to social stimuli.

The primary purpose of experiment 1 was to determine preference for social interaction using a split-room procedure, similar to procedures described by (Harding et al., 1999) for children with autism and typically developing children. The secondary purpose was to develop a social interaction coding system to more accurately reflect social engagement during sessions. The purpose of experiment 2 is to assess social interaction using procedures similar to those outlined by Harding et al. Then we attempted to determine if the participant's preference for social interaction could be changed.

Method

Participants

Two children diagnosed with autism spectrum disorder participated, Brian and Craig. Participants attended a school for children diagnosed with autism. Brian was 7 years old and communicated verbally. Craig was 6 years old and also communicated verbally. Participants were selected based on their lack of social skills.

Setting

All sessions were conducted in a research room (2.7 m x 4.3 m) at the participants' school. The room was separate from the participants' classroom and free from distractions. During split room assessment probes the room contained identical toys on each side of the room, masking tape to divide the room in half, and a timer. For social reinforcer assessment sessions a table, two chairs, poker chips, different colored construction paper, different colored plates, a timer, pen, and data sheet were present. Finally, during the social skills training a table, two chairs, toys, a timer, data sheet, and a pen were present.

Materials

During split room assessment probes materials present included a camera, a timer, making tape to divide the room in half, reading material for the non-social experimenter, and identical toys on each side of the room. Toys included two books, an etch sketch, puppet, a musical toy, a truck, blocks, two toy cars, a phone, and a baby doll with a bottle and brush. For social reinforcer assessment sessions materials present included different colored poker chips, different colored pieces of construction paper, different colored plates, a timer, a pen, and a data sheet. Materials needed to conduct the social skills training sessions included toys, a timer, a pen, and a data sheet.

Independent Variables

The split room assessment probes, the social reinforcer assessment, and the teaching of joint attention using social reinforcers were the independent variables.

Dependent Variables

Location in the room and social interaction during the split room assessment probes were the dependent variables. Location in room was quantified as the proportion of time during the session in which the child is on the social side of the room. For the location coding the child's location in the room determined whether time was coded as social or non-social. If the child was standing, kneeling, or lying head plus one foot on the social side of the room it was coded as social. A non social code was given if the participant rests on the center line without any inclination to either side. Behavior was measured a second by second coding system. All sessions were videotaped and scored after the session.

Social interaction was quantified as the proportion of time during the session in which the child is engaged in initiating or participating in social exchanges with either experimenter. Social interaction could include social engagement (like taking turns with toys), verbalizations (having a conversation with or requesting an items from the experimenter), gestures (such as pointing, showing, or giving), shared play (taking items from or giving items to the experimenter), or physical contact (including holding the experimenter's hand or sitting in their lap). An example of non social behavior might include the child taking a book and sitting in the corner with their back turned to the experimenter. Periods of social interaction were defined by the child's behavior directed at either of the experimenters, including attempts to engage the experimenter who is

unresponsive. Like location social interaction was measured using a second by second

coding system. All sessions were videotaped and scored after the session.

Experimental Design

A multiple probe across participants (other than the participants discussed in this

paper) design was used to demonstrate control over the dependent variables, room

location and social interaction. In the multiple baseline across participants design the

independent variables were applied to one participant while the other participant

remained in the baseline condition.

The order of conditions was the same for both participants; split room assessment

probe (pre-training), social reinforcer assessment, social skills training, split room

assessment (post-training). The split room assessment probe prior to training served as

the baseline condition. Following baseline a social reinforcer assessment was conducted

to identify social reinforcers. Once social reinforcers were identified there were used to

teach social skills. Following the social skills training phase the post-training split room

assessment was conducted to determine if there was an increase in time spent on the

social side of the room and social interaction after exposure to social stimuli as

reinforcers.

Procedure

Split room exposure: Prior to the split room assessment pre-training probe the

participants were exposed to each side of the room. The room was divided in half with a

white piece of tape (Harding et al., 1999). Only the social experimenter and the social

side toys were present. The social experimenter engaged in non demanding interactions

with the child during this session. If the child did not initiate social interaction with the

social experimenter, the experimenter initiated an interaction with the child. These sessions lasted one minute. The participant was then exposed to the non-social side of the room. During the non-social side exposure, the non social experimenter and non-social side toys being present. The experimenter read a book and did not look at or otherwise respond to the child during these sessions. Sessions lasted one minute.

Split room assessment (pretraining): The room was divided in equal halves with a white piece of masking tape to indicate two choice areas (Harding et al., 1999). A set of toys including two books, an etch sketch, puppet, a musical toy, a truck, blocks, two toy cars, a phone, and a baby doll with a bottle and brush was placed on each side of the room. On one side of the room the experimenter interacted with the child. If the child did not initiate social interaction with the social experimenter, the experimenter initiated an interaction with the child. On the other side of the room the experimenter read a book and did not look at or otherwise respond to the child during these sessions. The child had the option of interacting with stimuli in either of the choice areas. Prior to each session, the child was directed to the tape at the center of the room. The session began when the child stepped off the tape and entered either side of the room. At all times during each session, the child was allowed to move freely across both choice areas; however the toys had to stay on their designated side. These sessions lasted four minutes.

Social reinforcer assessment: Following the pre-training split room assessment probes a reinforcer assessment was conducted to determine reinforcing social stimuli. Relative preference for three social consequences was assessed: tickle, head rub, and praise (Smaby et al., 2007). Sessions alternated between baseline and social consequence condition. Each condition was signaled by a color. For example, during a session where

tickles was the consequence green poker chips were place on a green plate and covered

by a green piece of construction paper. The different colors were used to help the

participant discriminate between the different conditions. The target response for both

participants was passing a chip. The participant passed a chip into the experimenter's

hand. Once the participant passed the chip the consequence was delivered depending on

what condition was being run at the time. When the participant passed the chip to the

experimenter, the experimenter closed her hand for 2 seconds. During the 2 seconds the

participant could not respond. The experimenter would then pass the chip from one hand

to the other and deposit the chip into a box on the floor. Chips were counted at the end of

the session.

Prior to the initial baseline a training session was conducted to teach the

participant the target response. This consisted of the experimenter removing the

construction paper from the plate, saying "people", and physical prompting the

participant to hand over the chip. The word "people" was used at the beginning of the

session because it was neutral and did not signal any social consequence. During this

training phase no consequence was delivered. During baseline there was no consequence

for passing the chip. At the beginning of the session the experimenter uncovered the

poker chips and said "people". The participant then passed a chip into the experimenter's

hand. The experimenter closed her hand for 2 seconds and then deposited the chip into

the box. The experimenter turned her body away from the participant and did not make

eye contact with the participant. Baseline sessions lasted 5 minutes. If the participant

stopped responding for 1 minute the session ended. If the participant responded

throughout the entire 5 minute session, chips were counted only for the last minute of the session.

Social consequence sessions involved delivery of the specified social consequence for correct responses. At the beginning of the session the experimenter uncovered the poker chips and said "tickles". The participant then passed a chip into the experimenter's hand. The experimenter closed her hand for 2 seconds and tickled the participant, then deposited the chip into the box. The procedure was the same for all other social consequences. Social consequence sessions lasted 1 minute. Chips were counted at the end of the session.

For both participants the response of passing a chip had to be changed to touching the experimenter's hand (a low five). The response was changed because the participants stopped responding in all conditions to stack the chips. Procedures for baseline and social consequence sessions remained the same. Prior to the first baseline session using the new response a training phase was conducted to teach the new response. Training was exactly the same as training the passing of the chip, except the participant was taught to touch the experimenter's hand. Once the participant touched the experimenter's hand, she closed her hand for 2 seconds and delivered the appropriate consequence.

Social skills training: During the social skills training the participant entered the room and sat down across from the experimenter. The experimenter had a timer, a pen, a data sheet, and a bin of toys (including a puppet, a toy phone, a musical book, and a musical toy. A script was developed by the experimenters. The script required the participant to engage in four target behaviors. Target behaviors included initial eye contact, which involved the participant orientating their eyes towards the experimenter

upon entering the room. Eye contact and a greeting, which involved the participant maintaining eye contact with the experimenter while saying, "Hi, can I play?" Exchange 1 involved the participant making eye contact with the experimenter while asking to play with one of the toys in the bin. Finally, during exchange 2 the participant was required to make eye contact with the experimenter and comment on the toy he was playing with.

During baseline the experimenter did not reinforcer any responses. If the participant engaged in a target response the experimenter scored the response as correct and continued with the session. If the participant did not ask for a toy the experimenter offered them a choice between two of the toys in the bin. Each trial last 2 minutes, there were 10 trials conducted per session, sessions lasted 20 minutes. Trials lasted 2 minutes to allow adequate time for the participant to follow the script and have time to play with the toy at the end. Sessions were shortened for Brian to reduce problem behavior. Each trial lasted 1 minute, there were 10 trials conducted per session, sessions lasted 10 minutes for Brian.

The social skills were trained using multiple baseline design; therefore only one skill was being trained at a time. During training correct prompted and independent responses were reinforced using a social reinforcer identified during the social reinforcer assessment. Following baseline the first skill, initial eye contact, was trained if the participant did not perform this skill in baseline. Skill 1 was taught using the following prompt hierarchy (i. while looking toward the participant, therapist brings two fingers within the participant's eyesight and gestures toward the therapist's eyes until fingers are about ½ inch away from the therapist's eyes; ii. After a 2 second delay, while looking toward the participant, therapist brings two fingers within the participant's eyesight and

gestures toward the therapist's eyes until fingers are about ½ in away from the therapist's eyes; iii. After a 2 s delay, while looking toward the participant, therapist brings two fingers within the participant's eyesight and gestures toward the therapist's eyes until fingers are about 5 in away from the therapist's eyes; iv. After a 2 s delay, while looking toward the participant, therapist brings two fingers within the participant's eyesight and gestures toward the therapist's eyes; v. No prompt). The remaining three target behaviors (eye contact & greeting, eye contact and exchange 1, eye contact & exchange 2) were taught using the following prompt hierarchy (i. Full vocal model of response; ii. After a 2 s delay, partial vocal model of response; iii. No prompt).

A criterion to increase to the next prompt step was 90% or better at any prompt level. If the participant made two consecutive errors at any prompt step, the prompt step was decreased to a more intrusive prompt step. Criterion to move to the next step in the chain was 90% independent for two consecutive sessions. If errors occurred at anytime the correction procedure was implemented, which involved using the most intrusive prompt step. All correct responses were reinforced using a social reinforcer indentified during the social stimulus reinforcer assessment.

Split room assessment (post-training): All procedures were the same as during the split room assessment (pre-training). The room was divided in equal halves with a white piece of masking tape to indicate two choice areas (Harding et al., 1999). On one side of the room the experimenter interacted with the child. On the other side of the room the experimenter read a book and did not look at or otherwise respond to the child during these sessions.   At all times during each session, the child was allowed to move freely

across both choice areas; however the toys had to stay on their designated side. These

sessions lasted four minutes.

Interobserver Agreement

Sessions were videotaped and scored independently by a second observer for the

purposes of interobserver agreement (IOA). IOA for split room assessments (pre-

training) was 89% or higher for both participants and ranged from 89% to 100%.

Average IOA for these sessions was 97%. IOA for the social reinforcer assessment for

both participants was 94% or better and ranged from 94% to 97%. Average IOA for

these sessions was 95%. IOA for the social skills training was 86% or higher for both

participants and ranged from 86% to 100%. Average IOA for the social skills training

was 94%. IOA for the split room assessments (post-training) was 85% or higher for both

participants and ranged from 85% to 100%. Average IOA for these sessions was 93%.

Results

Participant 1

Split room assessment (pre-training): Figure 1 illustrates the results for

participant 1. Brian preferred the non-social side of the room in all sessions accept the

first session where he spent 93% of his time on the social side of the room. Social

interaction was low for all sessions for Brian.

Social reinforcer assessment: Figure 2 and Figure 3 represent the results of the

social reinforcer assessment for participant 1. Brian preferred tickles and head rubs.

Figure 2 represents the social reinforcer assessment session by session. Figure 3

represents the average response per minute for each condition.

Social skills training: Figure 4 represents the results for the social skills training

for Brian. Brian did not have skill 1, initial eye contact; therefore this skill was trained

first while all other skills remained in baseline. After four training sessions using the

prompting described above Brian mastered skill 1. Skill 2, eye contact and a greeting

was taught next. Using the prompting described above this skill was taught in three

training sessions. After mastery criteria were met for skill 2, skill 3 was taught. Brian

mastered skill 3, eye contact and exchange 1, after four training sessions. Finally skill 4,

eye contact and exchange 2 were taught. Brian mastered skill four after 11 training

sessions. Maintenance probes were conducted following mastery of all four skills.

Split room assessment (post-training): Figure 5 represents the results for the spilt

room assessment (post-training). Brian preferred to be on the side of the room with the

social adult for 74% of sessions. Time spent on the social side of the room increased by

54% from pre-training probes (20%) to post-training probes. Social interaction increased

by about 12% following the social skills training. Brian engaged in social interaction for

an average of 16% of the time as compared to the pre-training probes where he engaged

in social interaction for an average of 4% of the time.

Participant 2

Split room assessment (pre-training): Figure 6 illustrates the results for

participant 2. Craig preferred the social side of the room in all sessions. Social

interaction was low except for the first and fourth session where the participant engaged

in social interaction 75% and 60% of the time. Social interaction during all other

sessions was at or below 30%.

Social reinforcer assessment: Figure 7 and Figure 8 represent the results of the social reinforcer assessment for participant 2. Craig preferred verbal praise and tickles. Figure 7 represents the social reinforcer assessment session by session. Figure 8 represents the average response per minute for each condition.

Social skills training: Figure 9 represents the results of the social skills training for participant 2. Results for skills 1, initial eye contact, indicate that this participant had this skill during baseline. Therefore, skill 1 was not trained. Skill 2, eye contact and a greeting, was trained using the prompt hierarchy described above. Craig acquired this skill after one session of being prompted. Skill 3, eye contact and exchange 1, did not require training for this participant, Craig performed this skill in baseline. Skill 4, eye contact and exchange 2, was trained using the prompt hierarchy above. Craig acquired this skill after two sessions of prompting. Craig met mastery criteria for the entire chain (all four skills) after 8 sessions.

Split room assessment (post-training): Figure 10 represents the results for the spilt room assessment (post-training). Again, Craig preferred to be on the side of the room with the social adult for all sessions. Social interaction increased by about 10% from the pre-training probes. Craig engaged in social interaction for 50% or more of the time for 5 out of 11 sessions as compared to the pre-training probes where he engaged in social interaction for 50% or more of the time for only 2 out of 7 sessions.

The results of this study indicate that exposure to social stimuli did not significantly increase social interaction for either participant. Social interaction did increase from pre-training to post-training; however there was only about a 10% increase for both participants. Although social interaction did not increase significantly it is

important to note the increase in the amount of time that Brian spent on the social side of the room following the social skills training. The average percent of time spent on the social side of the room increase by 54% for Brian. This is a significant increase. Brian did not interact with the social adult during the post-training sessions, but he did prefer to be on the side of the room where the social adult tried to interact with him.

Discussion

The current study found that exposure to social consequences in the context of teaching increased preference for social interaction by about 10% for both participants. This is not a significant increase. However, it is important to note that time spent on the social side of the room with the social adult increased by an average of 54% across sessions for Brian.

Implications of this study are extremely important. Children with autism may learn to prefer social consequences when they are exposed to them. We spend a lot of time using tangible reinforcers to teach different skills. Establishing social stimuli that function as a reinforcer could increase both target behavior and social skills. Using social stimuli would allow for faster more efficient delivery of reinforcers. Also, teachers would not have to worry about carrying edibles. Another important implication is that use of social reinforcers could help reduce the amount of food and candy that children with autism eat on a daily basis, which is a big concern for parents. Although there was not a significant increase in social interaction in this study future research should continue to try and find a way to increase the use of social stimuli as reinforcers for children with autism.

There are limitations to this study. The first limitation is the small sample size. Only two participants participated in this study. Another limitation of this study is the social coding system used to score the split room sessions. The current coding system did not accurately capture social interaction. For the majority of children with autism in this study time spent on the social side of the room and social interaction was low. However, social interaction across both groups, children with autism and typically developing children, was not that different when sessions were scored using the current coding system. The current code does not capture the quality of social interaction or the difference in social interaction between children with autism and typically developing children.

The current study had a limited number of participants. Future research could replicate this study with a larger number of participants. Another area for future research could be to revise the social coding system to more accurately capture social interaction, and the difference in social interaction between children with autism and typically developing children. Future research could also assess a larger variety of social stimuli in the social stimuli preference assessment. In the current study only three social stimuli were used in the social reinforcer assessment. Using more social stimuli may allow researchers to identify more reinforcing social consequences for their participants. In this study we focused on teaching social skills. Finally, another area for future research could be to teach a variety of different skills using social stimuli as reinforcers.
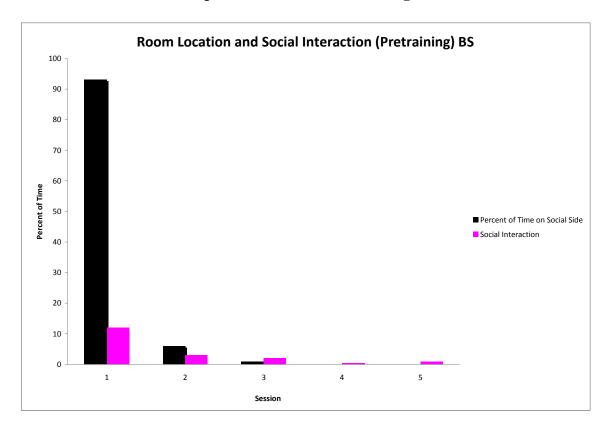
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Figure Captions
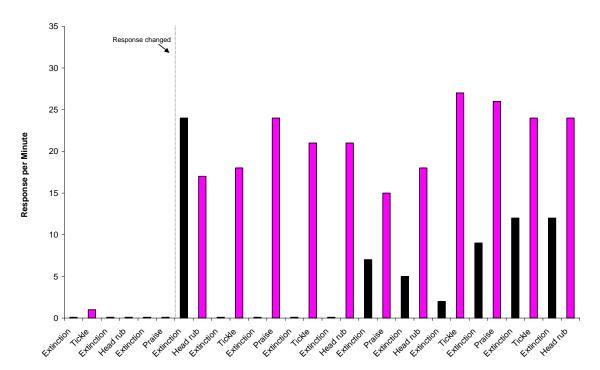
Figure 1 Spilt room assessment (pre-training) results for participant 1.

Figure 2 Social stimulus reinforcer assessment for participant 1, session by session.

Figure 3 Social stimulus reinforcer assessment for participant 1, average responses per minute for each condition.

Figure 4 Social skills training for participant 1.

Figure 5 Split room assessment (post-training) results for participant 1.

Figure 6 Spilt room assessment (pre-training) results for participant 2.

Figure 7 Social stimulus reinforcer assessment for participant 2, session by session.

Figure 8 Social stimulus reinforcer assessment for participant 2, average responses per minute for each condition.

Figure 9 Social skills training for participant 2.

Figure 10 Split room assessment (post-training) results for participant 2.

Split Room Probe (Pre-training)
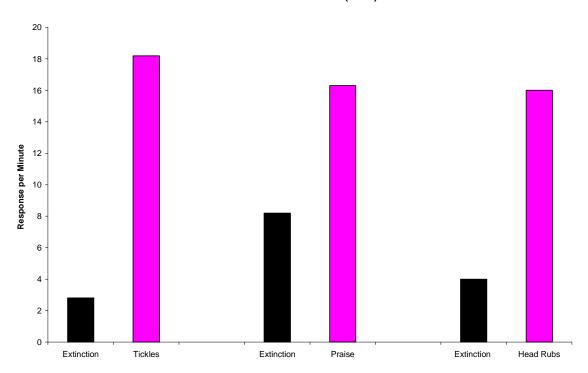
Room Location and Social Interaction (Pretraining) BS

Legend:
- ■ Percent of Time on Social Side
- ■ Social Interaction

Y-axis: Percent of Time
X-axis: Session

Social Stimuli Reinforcer Assessment (session by session)
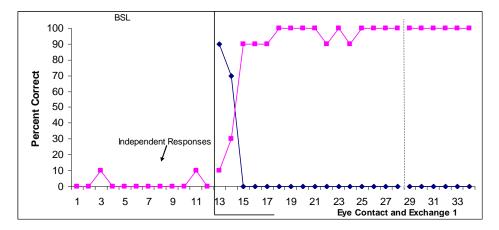
Social Stimulus Reinforcer Assessment BS
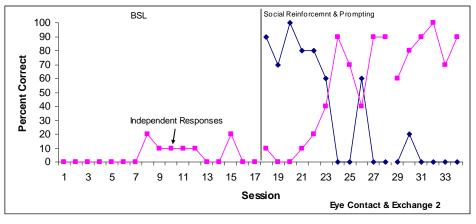
Social Stimuli Reinforcer Assessment (mean)
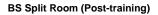
Social Reinforcer Assessment (Mean) BS

Social Skills Training

BSL · Social Reinforcement & Prompting · Maintenance Probes

Independent Responses

Prompted Responses

Initial Eye Contact

BSL · Social Reinforcement& Prompting

Independent Responses

Prompted Responses

Eye Contact & "Can I play?"

BSL

Independent Responses

Eye Contact and Exchange 1

BSL · Social Reinforcemnt & Prompting

Independent Responses

Session

Eye Contact & Exchange 2

Split Room Assessment (post-training)

BS Split Room (Post-training)

Split Room Assessment (pre-training)

Social Stimuli Reinforcer Assessment (session by session)
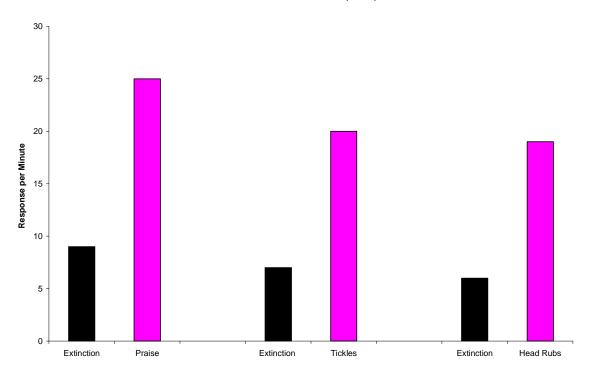
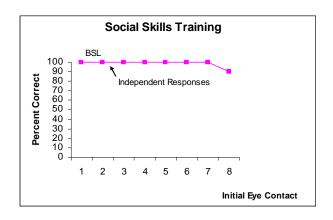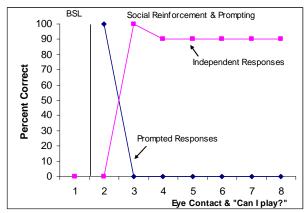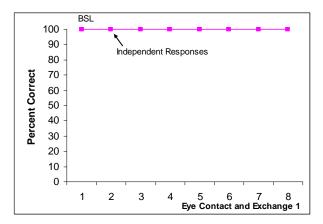**Social Stimulus Reinfocer Assessment CC**
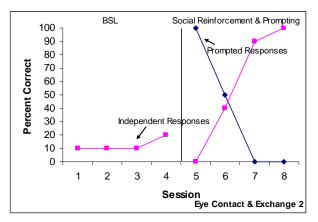
Social Stimuli Reinforcer Assessment (mean)

Social Reinforcer Assessment (Mean) CC

Social Skills Training

Split Room Assessment (post-training)

CC Split Room (Post-training)