

**THE UTILITY OF MOTIVATION IN COMMUNICATION
INTERVENTIONS FOR CHILDREN WITH AUTISM**

An Undergraduate Research Scholars Thesis

by

SAMANTHA GUZ

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Research Advisor:

Dr. Mandy Rispoli

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ABSTRACT

The utility of motivation in communication intervention for children with autism. (May 2014)

Samantha Guz
Department of Psychology
Department of Sociology
Texas A&M University

Research Advisor: Dr. Mandy Rispoli
Department of Educational Psychology

This study compares the use of highly preferred items and low preferred items as targets during a receptive identification intervention designed for children on the autism spectrum. The child's motivation for a specific item was evaluated prior to the intervention using a picture-exchange requesting session. This helped determine if motivation had any involvement with the speed of learning receptive identification. During intervention the participants were taught four target words, after intervention data was taken on the participants ability to generalize the taught words to other items. Two of the three participants recognized the generalized items and the third participant gained no new receptive identification skills during the study.

CHAPTER I

INTRODUCTION

In early stages of language development it is common for children to understand words they hear before they are able to apply them in speech (Leadbitter, 2010). Children with autism spectrum disorders (ASD) face challenges in learning language and these challenges may reveal themselves in both the comprehension and production of oral language (Leadbitter, 2010). However, even among children with ASD, an individual struggling with specific sub-categories of language can be labeled as developmentally anomalous within the broader category of language impairments. This is mostly because the degree of impairment for an individual is relative and often is not well understood.

An especially difficult part of language development for children with ASD is the receptive and expressive connection of words. For example, hearing the word “cup” requires abstract skills to be able to generalize the word to requesting “cup”, labeling “cup”, and locating a cup receptively when another person asks for it. For this reason, prompting and error correction is often necessary in teaching receptive and expressive language to individuals with developmental disabilities (Callahan, Magee, Shukla-Mehta, & Wie, 2010).

During identification tasks picture prompts help a variety of learners connect visual and auditory knowledge (Arkel, Carp, Ingvarsson, Peterson & Petursdottier & 2012). Although picture prompts have not shown to have an added effect on the emergence of labeling, they have been shown to enhance the speed of learning for participants (Arkel et al., 2012). Engaging

participants, without having an adverse effect on the research, is vital to participants' overall learning and retention.

The purpose of this study is to determine if using preferred items, rather than non-preferred items, result in learning more quickly, specifically in the beginning of receptive identification learning. At a preschool age it is normal for children to be taught to label functional items. Children engage with, for example, toothbrushes, everyday therefore there are many opportunities to practice communication skills. Children with autism who struggle with receptive identification tasks are often unmotivated to practice those skills. Consistent reinforcement has been shown to motivate children with autism to at least confront those language struggles (Egel & Koegel, 1979). Using preferred items might provide additional consistent motivation, which may improve the speed with which children with ASD overcome language challenges. The aim to learn to label these items and thereby improve clinical intervention for receptive communication, enhancing the participants' life.

CHAPTER II

METHODS

The study included three young boys with an ASD ages ranging from 4 to 7. The participants used Phase 5 of Picture Exchange Communication System to communicate (Bondy, A.S., & Frost, L. A., 1994). The fifth phase of Picture Exchange Communication System focuses on requesting for objects using phrases such as “I want (tangible or edible)”. This requires the participants to identify pictures and match the pictures to real life objects. Though all three of the participants used Picture Exchange Communication System, none have demonstrated any mastery of receptive identification in therapy.

The three male participants were Steven, Louis, and Dan. Steven was 5 years old and did not communicate with verbal words or phrases. Steven received 10 hours of therapy a week at the clinic and attended school, in a classroom designed for ASD students. Louis was also 5 years old and did not communicate with words or phrases. Louis attended 4 hours of therapy at the clinic and was a student in an ASD designed classroom. Steven and Louis were gaining verbal ability throughout the study but still used the Picture Exchange Communication System to communicate. For example, Steven and Louis requested and labeled items in therapy using Picture Exchange Communication System phrases such as “I see blue ball” or “I want five goldfish”. Dan was 7 years old and with guidance used Phase 5 of the Picture Exchange Communication System to request for items. Dan received 4 hours of therapy and participated in a life skills classroom.

The study took place in a square 7 feet by 7 feet white room. The walls were completely blank. The photos were laid out on a grey table with red trimming and the participant sat a red chair, facing the table throughout the trials. All three participants had an individual implementer. This implementer was the only person who performed any part of baseline, requesting session, intervention or generalization with the participant during the study. Louis's implementer was also his primary therapist. Steven and Dan's implementers were not their primary therapists.

Throughout the study a second observer collected data for 25 percent of the session for each participant during each phase of the study. During the requesting and receptive identification phases, the percentage of consistency among data collectors for each session was calculated by dividing the total number of agreements by the number of possible agreements then multiplying by 100. The averages were taken across participants and phases, requesting agreement scored up to 100 percent and agreement values for the receptive identification phases reached 99 percent. The range for both phases across all three participants was 94-100 percent.

Fidelity was taken throughout the study to guarantee that all the participants participated in same study and tested in each phase of the study correctly. Dividing the number of completed steps by the number of outlined steps and multiplying the total by 100 for a percentage measured consistency. The average consistency across all three participants, across all the phases was 98 percent.

A second observer also took data to gain interobserver agreement on fidelity during 25 percent of the sessions for all the participants. Dividing all the agreements by the number of possible

agreements and multiplying the number by 100 calculated interobserver agreements. This averaged out at 100 percent across all sessions and participants.

The study was conducted as a single case research design. In this research technique the participants serve as their own controls during the study, rather than using separate groups. A single case research design was ideal for the study because the intervention designed was sensitive to individual differences and needed to be adjusted for the individual participants' needs.

Before intervention a requesting session took place. During this requesting session the participants had the opportunity to request to play with any of the four items using Picture Exchange Communication System. Participants requested for the items using the phrase "I want" with a picture of the item. The picture used during the requested session was identical to the picture used during intervention. The requested session lasted either 15 minutes or for 10 successful requests. A successful request could be independent or prompted. The participant was then required to reach for the requested item independently after making the request. This let the implementer know that the participants understood what the photos represented and that the pictures were motivating. The items were visible but out of reach from the participant. After the child handed the request strip to the implementer, the participant then had to ensure that they understood what the picture represented by reaching for the correct item. If the participant did not reach for the correct item the implementer would correct them and physically prompt to request for the correct item. Data during these sessions were expressed as percentages. The data was collected as percentage of successful requests for high-preferred and low-preferred items.

During the intervention data was collected by dividing the number of items identified correctly over the number of opportunities in both the high-preferred and low-preferred groups. A correct response was defined as the participants picking up the correct photo and placing it in the implementers open palm. Participates had 7 seconds after the implementer asked them to identify the item and to place the correct picture in the implementers hand. To ask the participant to identify an item the implementer said, "Give me (item)" and waited 7 seconds for a response. All three participants had separate implementers who remained the participant's only implementers throughout all phases and the entirety of the study.

During the study four items were taught to the participants. Each high-preferred and low-preferred items were presented 4 times. There were two high-preferred and low-preferred items therefore each participants were asked to identify a total of 4 items 8 times. All high-preferred photos were presented in an array of four, two which were the taught items. This was the same for the low-preferred group. The implementer asked the participants to identify the items 16 times per session and the participant was only asked to identify one item at a time. In order to avoid the participants choosing pictures based on their position in the set every items had the opportunity to be the first, second, third and fourth picture in the set. The high-preferred and low-preferred groups remained separate during the study. First, the participants were asked to identify a single high-preferred item, then a low-preferred item. The groups alternated until all 16 items were presented and the session ended.

Data points of baseline data were taken before a participant moved into intervention. During baseline incorrect answers were not corrected and correct answers were not positively reinforced.

The implementer asked the participant “give me (item)” with an open palm. After the stimulus prompt the implementer waited 7 seconds for the participant to respond. The photos were identical in size and all items were pictured against a white background.

Requesting sessions occurred directly before receptive identification sessions in the same room. During the request sessions both high-preferred and low-preferred items were in the participants field of vision but were out of immediate reach. The participants requested to play with one of the four items using the Picture Exchange Communication System. The photos were identical to the pictures used in receptive identification sessions. All four requesting pictures and an “I want” picture was placed on a single communication board with sentence strip attached. In order for a request to be made the participant had to hand the implementer the sentence strip with “I want” preceding the item. Only one item could be requested at a time. The completed sentence strip was then read out loud to the participant. The requests were done independently or with prompting, starting with pointing at the picture of the item and ending with a full physical prompt. The implementer played with all four items in front of the participant before any requests were made.

Once a request was made the participant was then given physical access to all the items and had to choose the item they requested for. If the participant picked the correct item they were given two minutes of playtime with the item. If the participant did not correctly choose the item, all the items were placed out of reach and the implementer corrected the participant with prompting starting with a gestural prompt then moving to a physical prompt. The requesting pictures were

rearranged on the communication board after every request to avoid participants choosing a photo based on the position it was in the array.

Intervention was implemented identical to baseline, except correct answers were reinforced and incorrect answers were corrected. The participants were rewarded with a token economy. A token economy is a generalized reinforcer. This means that the tokens themselves were reinforcing because they represent another reinforcement. The token economies used in this study were on a sheet of 8'' by 11'' white paper with five tokens. Under the five tokens was a phrase that read "I am working for". Under the sentence was a row of pictures that represented reinforcers. In a token economy the participant can choose what they are working for and is aware of how close they are to receiving a break from the study. After the fourth session of intervention, Dan was also given additional edible reinforcement for correct responses. The participants only received social praise for incorrect responses. Each participant had to earn five tokens in order to receive a break with a reinforcer that was unrelated to the study. The first four tokens were earned with correct independent responses during intervention. The fifth token was earned by completing a task not related to the study, normally physical imitation. This was to avoid pairing an additional reinforcer with one of the items or reinforcing one response twice. Once the participant earned the outside reinforcer they were a break. This procedure was repeated until all 16 items were presented and the participant had the opportunity to earn the outside reinforcer four times within one session.

After three data points were collected at 100 percent correct in the intervention phase, participants moved onto generalization. For each item there was separate picture of the high-

preferred and low-preferred items. For example, the item would be a blue pen while the generalization picture would be a red pen. Generalization was implemented using the baseline procedure and data points were gathered prior and after intervention and. The participants had been exposed to some of the generalization items in the clinic but had not practiced identifying the items outside the study. Other generalization items were items the participant had never seen in the clinic.

Generalization was only taught when a participant failed to generalize the item after intervention. This was done during a requesting session, which used the original pictures to request for generalization items. These requesting sessions, similar to intervention, took place before the receptive identification trials. The participants were also required to reach for the correct item after requesting for a generalization item with the Picture Exchange Communication System. Incorrect requests were corrected with least to most prompting. Receptive identification sessions were then completed using generalization photos. The generalization sessions were implemented similarly to intervention. Incorrect answers were corrected first with gestural prompts then with physical prompts and correct answers were rewarded.

CHAPTER III

RESULTS

Results for the participants are shown in Figure 1, Figure 2, Figure 3 and Table 1. Steven's high-preferred items were rainmaker and bubbles. Steven learned to identify the high-preferred items more quickly than the low-preferred items. However in generalization, Louis was not able to generalize the pictures independently. Louis, similar to Steven, learned how to identify the high-preferred items more quickly than the low-preferred items. Unlike Steven, Louis did generalize independently and did not have to be taught generalization.

Dan's high-preferred items were the ball and markers, Dan frequently requested for these high-preferred items during the requesting sessions. However, Dan did not understand that the picture of the item represented the actual item in the room. Dan demonstrated this confusion by only reaching for the correct item during the requesting session 74% of the time. Louis and Steven reached for the correct item 98% and 96% of the time and were successfully able to identify items during intervention. This implies that Dan did not understand that the receptive identification pictures represented the object being requested and therefore was not able to correctly identify pictures during the receptive identification trials. This could also mean that the photos did not motivate Dan.

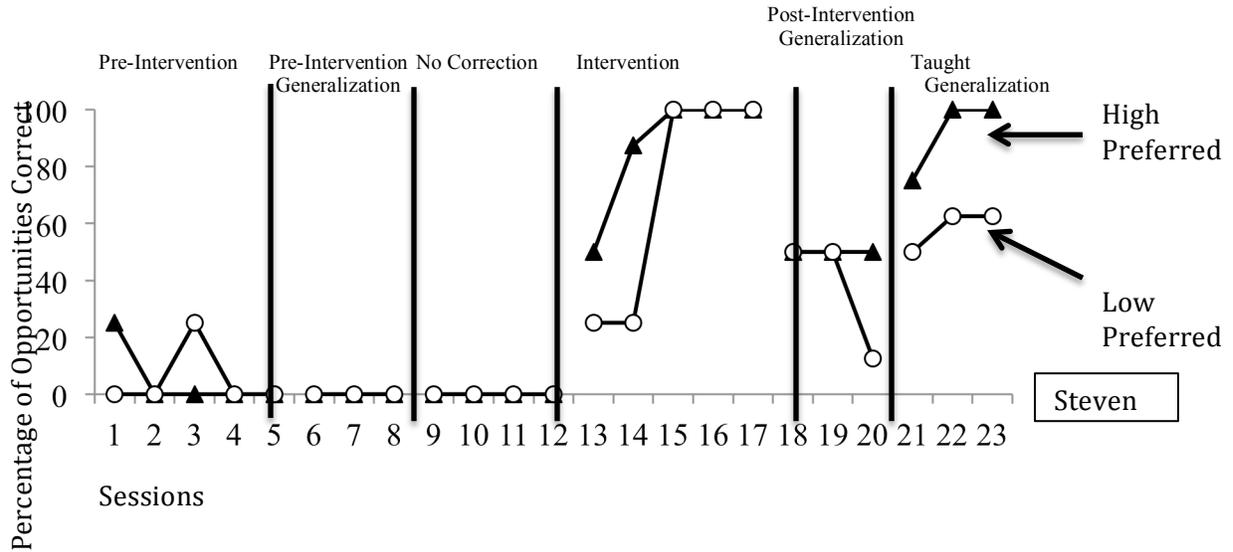


Figure 1: Steven acquired the high-preferred items more quickly than the low-preferred item but was not able to generalize independently.

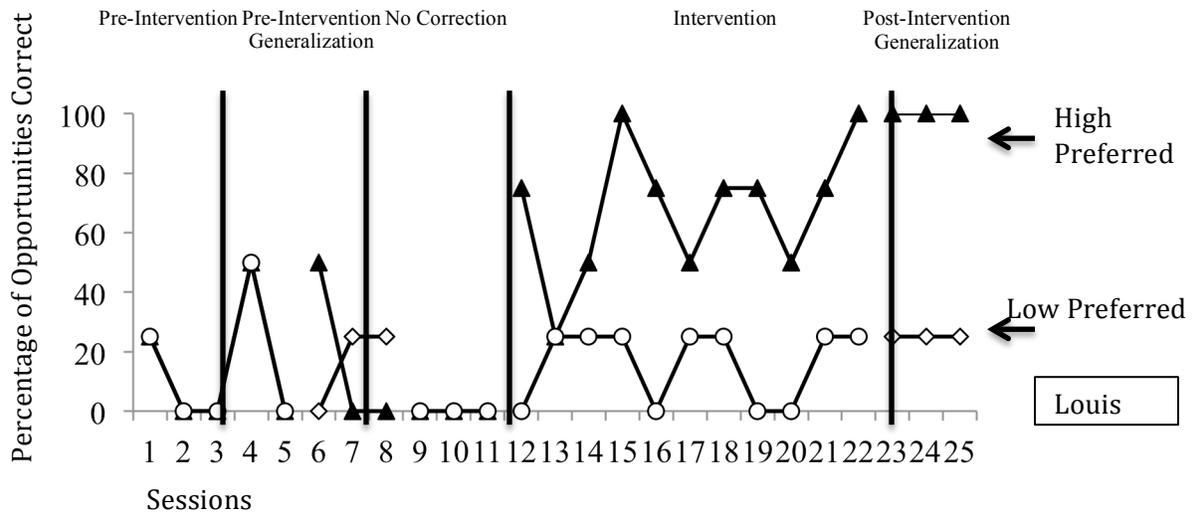


Figure 2: Louis acquired the high-preferred items more quickly than the low-preferred items and was able to generalize independently.

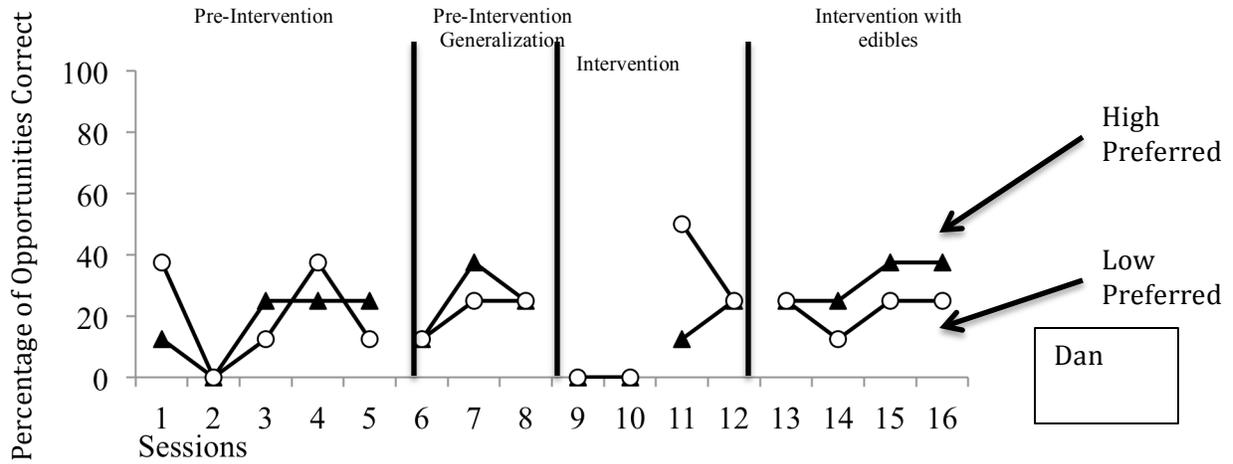
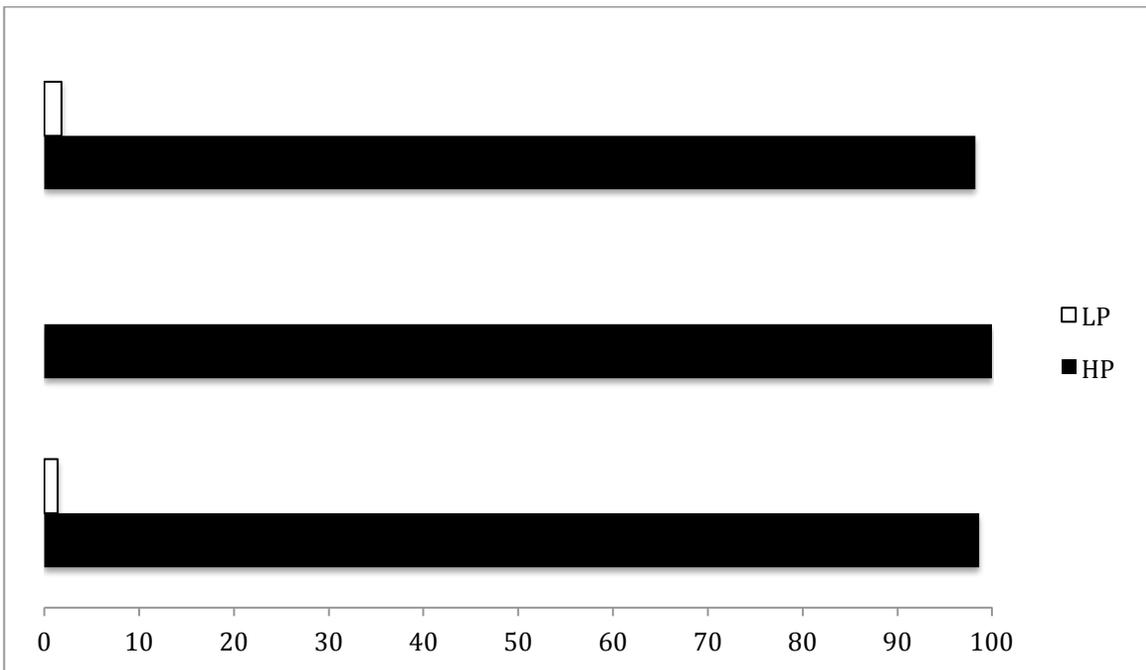


Figure 3: Dan did not learn the high-preferred items or low-preferred items.

Table 1: All participants requested primarily for the high-preferred items during the requesting sessions.



CHAPTER IV

DISCUSSION

This study emphasizes the importance of motivation in learning. The utilization of the participants' intrinsic motivation resulted in increased the speed of learning. The concept of incorporating natural motivation into learning new skills and tasks can be applied to many parts of education.

The specific results of this study are limited, as there were only three participants and the results were not similar enough to generalization across a wide range of learners. Children similar to Dan, the participant with an ID diagnosis, may need additional therapy sessions and reinforcement to correctly request and identify tangibles. The requesting sessions proved to be critical to the participants learning. Steven and Louis were able to correctly identify the items they requested for in the requesting session. Dan was unable to connect the image to the real tangible and did not learn any new receptive identification skill during the study. Further manipulation of the requesting session could lead to an increased understanding of transferring motivation and increased generalization skills.

Equal changes in the generalization objects were not considered during the creation of the study. For example, some objects, such as putty, changed color but maintained the shape of the original item. Other objects, such as shorts, changed in both color and shape from the original item to the generalization item. More even changes in generalization across the items could have produced

different results. Manipulating the changes in generalization items could have helped researchers understand what physical characteristics the participants were using to generalize the items.

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