Using Antecedent Strategies, Escape Extinction, and Positive Reinforcement to Increase Compliance in a 3-year-old girl with Autism Spectrum Disorder (ASD) to Decrease Frequency of Tantrums

By

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Dedication

I’d like to dedicate this thesis to my Nanny and Papa. Growing up I was able to witness their love and patience through their parenting skills while raising a daughter diagnosed with Down-Syndrome disorder for 40 years as well as seven other kids. I also learned the importance of family through their love and unselfishness to each family member. They were able to raise a large loving tremendously close Gourdier family. It was because of them that our family is as close and supportive as we are which played a major role in our family coping with the tragedy accident five years ago.
Rest in peace.
Abstract

Children diagnosed with Autism Spectrum Disorder (ASD) may face a challenge in communication and compliance. The present study, evaluates the effectiveness of antecedent strategies, escape extinction, and positive reinforcement for increasing compliance for a 3-year-old girl who is non-verbal and diagnosed with ASD. This was recorded through the frequency of tantrums. For this thesis, during intervention, antecedent strategies such as visuals through a wristband of pictures, daily visual schedule and a first and then communication board; escape extinction, and positive reinforcement used to increase the child’s compliance and to decrease the frequency of tantrums.

The current study used an AB design, using a frequency recording sheet for data collection of tantrums each day the study was using antecedent strategies, escape extinction and positive reinforcement for the intervention. The study showed a significant decrease in frequency of tantrums over the time of intervention. During baseline the participant averaged four tantrums a day. Once intervention was put into place, the participant only averaged one tantrum a day. Therefore, the participant showed a 75% decrease in tantrums comparing baseline and intervention.
Acknowledgments

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Chapter I: Introduction

Overview

Communication is second nature to them and they engage in it numerous times each day without thinking about it. This is true for many people, but those that face communication deficits would disagree. Autism Spectrum Disorder (ASD) is said to influence the brains development, causing communication and other types of deficits in young children (Autism Canada, 2011). Children who face communication deficits may engage in more inappropriate behaviours due to their lack of ability to communicate wants and needs following instructions (Whitaker, Joy, Edwards, & Harley, 2001). As a result of these challenges, it is common that younger children that face these deficits may engage in noncompliance behaviours that may also develop severe problem behaviours, such as tantrums (Whitaker, Joy, Edwards, & Harley, 2001). Noncompliance is defined as the failure to act in accordance with a command (Miltenberger, 2011).

Whitaker, Joy, Edwards and Harley (2001) provide another cause of inappropriate behaviours for young children diagnosed with ASD through environmental factors. Younger children are not always completely aware of their surroundings and children diagnosed with Autism Spectrum Disorder (ASD) tend to be more sensitive to different stimuli’s in the environment which may cause inappropriate behaviours to occur (Whitaker, Joy, Edwards, & Harley, 2001). Therefore, modifying environments can effectively assist children diagnosed with ASD with their inappropriate behaviours due to noncompliance (Whitaker, Joy, Edwards, & Harley, 2001).

Increasing compliance skills in young children diagnosed with ASD is essential in reducing or eliminating problem behaviours. Building this skill in children who are non-verbal can be a challenging process due to the inability to communicate with the child. However, there have been a variety of studies evaluating the effectiveness.

Purpose

The purpose of this thesis project is to measure the effectiveness of using antecedent strategies, escape extinction, and positive reinforcement to increase compliance for non-verbal individuals diagnosed with ASD. By increasing antecedent strategies for a child’s daily routine it will assist to increase compliance to instructions and will reduce the frequency of tantrums that occur.

Main Chapters

The following chapter will review the literature related to antecedent strategies, escape extinction, and positive reinforcement as well as the problem behaviour. Following the literature review section, a detailed description of the method used in this study will be discussed. The method will include important information regarding the participant of the study, the design, data collection, settings and materials, operational definitions and in depth description of the procedure. Following the method section is an overview of the results, which will include functional assessments, baseline and intervention data through the use of descriptions, tables, and graphs. The final chapter of the thesis presented will be a discussion section. This section will include a summary of the results, strength and limitations, any multi-level challenges, program changes, meaning of the results in context of current literature, and the programs contribution to the field of behavioural psychology.
Chapter II: Literature Review

This chapter will provide an in-depth examination of evidence based literature on the treatment procedures used for the current study. The literature review will begin with background information on the diagnoses of Autism Spectrum Disorder (ASD). Next it will briefly touch on noncompliance behaviour. Following, antecedent strategies, escape extinction and positive reinforcement, the three procedures being used for the present study will be outlined. Each section will begin with an introduction followed by empirical evidence based research studies demonstrating the effectiveness as an intervention. This will help to assist the use for the present thesis being conducted.

Autism Spectrum Disorder

Recent studies show that the diagnosis of ASD is increasing worldwide (Faras, Ateegi & Tidmarsh, 2010). These researchers state that ASD is presently testing positive in six per 1000 children. According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) in Faras et al., (2010) study, ASD is grouped as a Pervasive Developmental Disorder (PDD) and is characterized based off three deficits, which include communication, impaired social reaction, and repetitive patterns of interest or behaviours. These deficits may lead to the outcome of challenging behaviours for children with ASD (Howlin and Charman, 2011). Other than through the use of actions, children with ASD that face communication deficits have no other way to express their wants and needs (Howlin & Charman, 2011). This may be seen as a disruptive or inappropriate behaviour (Howlin & Charman, 2011). In order to successfully teach children better compliance skills, it is essential to begin intervention as early in life as possible (Landa, 2007).

Given that ASD is a heterogeneous condition and no two individuals diagnosed are the same, Lord, Cook, Leventhal, and Amaral (2000) provide specific categories for the different aspects of ASD. For each of the following categories, the individual diagnosed shows signs of at least one of the listed conditions (Lord, Cook, Leventhal, & Amaral, 2000). The communication deficits domain includes delay or lack of development in speech, lack of initiating and maintaining conversations with others, repetitive use of language, and lack of imitative play alone or with others (Lord et al., 2000). Impaired social reactions may be seen as failure of using common non-verbal behaviours such as eye contact, lack of developing peer relationships, lack of sharing enjoyment with others, repetitive behaviours and lack social or emotional reciprocity (Lord et al., 2000). Noncompliance is also a common behaviour for children with developmental delay (Hiebert, Martin, Yu, Thorsteinsson, & Martin, 2009). Noncompliance is defined as the failure to act in accordance with a command (Miltenberger, 2011).

Children with developmental delays tend to function at a slower rate than other children their age (Bruinsma, Koegel & Koegel, 2004). A number of developmentally delayed children also experience short periods of attention spans (Bruinsma et al., 2004). Bruinsma, Koegel and Koegel (2004) noted a major lack of attention spans in some children diagnosed ASD. Research on non-compliant behaviours has increased over the last 30 years (Playle & Keeley, 1998), indicating the importance of treatment for non-compliant behaviours.
Antecedent Strategies

Antecedent strategies are defined as any change to an event or environment that occurs immediately prior to problem behaviours (Kern & Clemens, 2007). Antecedent strategies are used in hopes to reduce or eliminate problem behaviours from occurring (Kern & Clemens, 2007). Kern and Clemens (2007) state that environmental changes are significantly important in decreasing problem behaviours. In order to develop antecedent strategies, information based on events that cause the problem behaviour have to be observed. Additionally, events that are associated with desirable behaviour need to be observed too. Once both these events are observed, it allows for easier and more effective modifications to the environment and events that trigger the problem behaviour and increase in events related to desirable behaviours (Kern & Clemens, 2007).

Kern and Clemens’ (2007) article state advantages to the use of antecedent strategies. First, they are useful in preventing problem behaviours from occurring. Secondly, antecedent strategies allow for easy correction to environments that are affected by the problem behaviour. Finally, since events linked to problem behaviours are decreased and events linked to desirable events are increased, it increases the environment for student’s motivation for learning. Additionally, Kern, Bambara, and Fogot (as cited in Kern and Clemens, 2007) stated that antecedent strategies tend to be a quick and non-disruptive act for intervention process for decreasing problem behaviours.

Likewise, Lalli, Casey, Goh, and Merlino (1994) conducted a study evaluating the effects of antecedent strategies and escape extinction used to decreasing problem behaviours related to daily routines in a classroom setting. The study hypothesized that daily antecedent strategies reduced rates of problem behaviour while increasing compliances. The study compared printed schedules and signals to photographic schedules to determine the next part of the participant’s schedule. For this study, the participants found the printed schedule to be more effective for decreasing problem behaviours. Due to the age of the participants, this method was more age appropriate and therefore photogenic schedules may be found more effective for younger children (Lalli, Casey, Goh, & Merlino, 1994).

Similarly, Colte, Thompson, and McKerchair (2005) conducted a study using antecedent strategies and extinction for increasing compliance during transitions for toddlers. This study included three participants who were between the ages of 14 to 30 months who attended full day daycare programs. The participants all followed basic one to two-step instructions but demonstrated noncompliant behaviours during transition from playtime to toileting area. Therefore, the study took place from transitions between these activities, which occurred every 30 to 60 minutes. During the experiment, the researcher implemented two forms of antecedent strategies to increase compliance. These antecedent strategies included a warning condition, where the children were provided with a two minute warning before the transition took place. The second antecedent strategy was a condition where the children were provided access to a preferred toy during the transition period. The results of this study showed that using the antecedent strategies alone were ineffective, however when combined with extinction, all three participants demonstrated higher rates of compliance during these transition period.
The following studies evaluating the use of antecedent strategies hypothesis that antecedent strategies are an effective use of treatment for increasing compliance in young children.

**Escape Extinction**

Miltenberger (2011) states that escape extinction includes not letting the individual escape the stimulus following the problem behaviour. Escape extinction may involve, but is not required, physical guidance which may result in harm to the individual exhibiting the study, therefore this is something to consider before determining the use of escape extinction (Miltenberger, 2011). However, there has been a variety of research showing that this type of interventions has been seen as an effective treatment for escape maintained problem behaviours (Iwata, 1987, as cited in Lalli et al., 1994). Escape maintained behaviours are behaviours that occur once the stimulus has already been presented (Miltenberger, 2011). The function of these behaviours are caused by escaping a certain stimulus through inappropriate behaviours (Miltenberger, 2011). Escape-maintained problem behaviours are commonly treated with either non-contingent escape, differential reinforcement or escape extinction (Slocum & Vollmer, 2015). Previous studies indicate that extinction is necessary to effectively decrease a problem behaviour that is maintained through escape behaviours (Slocum & Vollmer, 2015). Miltenberger (2011) states that the one of the most effective ways in decreasing escaped function behaviours is through escape extinction.

The previous study examined by Lalli et al., (1994) also used escape extinction for treatment in decreasing problem behaviours. The results of the study suggest that escape extinction played a major role in the effectiveness of the treatment. They believe this to be true because they stated that previous studies using strictly picture activity schedules have been ineffective in the past. Likewise, Colte et al., (2005) study used both antecedent strategies and escape extinction to decrease problem behaviours.

Piazza, Patel, Gulotta, Servin and Layer (2003) also conducted a study using escape extinction but for treatment of food refusal. This study used escape extinction on its own as well as combining it with positive reinforcement. If during a presentation of food, the participant accepted the offer within 15 seconds of the presentation, a reinforcer was provided which was identified by previous paired choice preferred assessments. If inappropriate behaviour or negative vocalization occurred during the presentation of food, the spoon or cup was removed for 15 seconds. Through escape extinction, the inappropriate behaviour was blocked if necessary to avoid escape. The results of this study showed that the use of positive reinforcement on its own was ineffective in increasing acceptance to food for all participants. However, a combination of escape extinction and positive reinforcement was a successful treatment for treating individuals with feeding problems. For all participants, the combination of both treatments increased food acceptance, decreased inappropriate behaviour and decreased negative vocalization. Additionally, the current study showed decrease in inappropriate behaviours, therefore supporting the treatment used for the study of tantrums.

Voulgarakis and Forte (2015) also used escape extinction combined with negative reinforcement through a change criterion design to treat food refusal for a young boy with cerebral palsy. The changing criterion design allowed for the child to remove themselves from the treatment after an acceptance of the criterion set was met. During baseline an average of two
bites occurred across three sessions. However, this average greatly increased during intervention. In the first intervention phase, the child met the criterion of five bites for all three sessions. During the second phase, the child met only two of the three sessions when the criterion was set to seven. Following the ninth session, the criterion increased to seven bites. During the ninth, 10th, 11th, and 12th session the child met or surpassed the criterion for all three sessions. The final session was set to 12 bites, which was met by the child in all three sessions. During all intervention phases, the child met the required criterion under 30 minutes. The results of this intervention demonstrate that the use of escape extinction and negative reinforcement was seen to be an effective use of treatment for increasing food acceptance for this specific child. The study also shows that this treatment is effective for problem behaviours maintained through escape. Additionally, this intervention can also been effective for individuals with complex needs such as cerebral palsy.

Iwata, Pace, Kalsher, Cowdery, and Cataldo (1990) conducted an experimental analysis using extinction to decrease self-injurious behaviours in individuals. The experimental analysis included three different studies which included the same participants. The first study involved all seven developmentally disabled individuals who experienced self-injurious behaviours. The study used different conditions to identify factors that caused the self-injurious behaviour. These conditions included positive reinforcement, negative reinforcement, automatic reinforcement, and control condition. For all participants, the most frequent condition that caused self-injurious behaviours was the negative reinforcement (demand condition). During the demand condition, demands were removed following the demonstration of self-injurious behaviours suggesting that the behaviour served an avoidance or escape function (removal of the demand). The second study included six of the seven participants from study one. During this study, escape extinction was applied to decrease the behaviour. The results showed that the escape extinction (non-removal of the demand) was effective and reduced self-injurious behaviours for all participants. The third and final study by Iwata et al., (1990) used the single individual from the first study that did not participate in the second study. This study used extinction plus reinforcement to decrease the individual’s self-injurious behaviours. Similar to the second study, the treatment was effective in eliminating self-injurious behaviours for this individual.

Positive Reinforcement

Miltenberger (2011) defines positive reinforcement as “an event or stimulus is presented and the probability of the behaviour increases in the future”. In order for positive reinforcement to be effective the reinforcement or reward has to be meaningful to the individual (Miltenberger, 2011). Therefore, the reinforcer is often seen as something pleasant or desirable to the individual that will motivate them to try and gain it (Miltenberger, 2011).

Miltenberger (2011) defines negative reinforcement as “a type of reinforcement in which the occurrence of the behaviour is followed by the removal or avoidance of an aversive stimulus” (p. 66). Using positive reinforcement for an appropriate behaviour is an effective way to decrease problem behaviours maintained by escape while increasing compliance (Meyers, Fisher, Kelley, & Frederick, 2014). A study by Slocum and Vollmer (2015) was conducted to evaluate positive and negative reinforcement without escape extinction for increasing compliance. The following study included five participants who exhibited problem behaviours maintained by escape from demands. Positive reinforcement of compliance was provided through an edible item immediately following compliance. In the study by Slocum and Vollmer, negative reinforcement
was provided through a 30s break following compliance. The results of this study provide evidence that negative and positive both reinforcement are effective in increasing compliance while decreasing problem behaviours. However, positive reinforcement was the more effective treatment of the two. During baseline, the rate of the problem behaviour was 2.4, whereas the rate of problem behaviour was .5 in the positive reinforcement condition and 1.3 in negative reinforcement condition. Therefore, the problem behaviour was reduced 79% from baseline to positive reinforcement and 48% from baseline to negative reinforcement. Likewise, compliance showed a 54.8% increase from baseline to positive reinforcement and a 22.8% increase from baseline to negative reinforcement.

Deleon, Neidert, Anders, and Rodriguez-Catter (2001) conducted a study comparing positive reinforcement and negative reinforcement for treating escape-maintained behaviours. The participant for this study was a 10-year old girl diagnosed with ASD who engaged in the following inappropriate behaviours: self-injurious, aggression towards others, and disruptive behaviours. She had minimal communication, using three to four phrases and followed multistep instructions. During baseline, she engaged an average of 1.7 problem behaviours responses per minute and 2.6% compliance. During negative reinforcement, the problem behaviour increased while compliance decreased. Therefore this study shows that negative reinforcement is less effective in decreasing problem behaviours. However, during positive reinforcement, the problem behaviour decreased while the participant compliance increased. Therefore, the results of this study are in agreement with previous study by Slocum and Vollmer (2015) that positive reinforcement for treating escape-maintained behaviours is more effective compared to negative reinforcement.

Similarly, Lalli et al. (1999) conducted a study comparing the effects of reinforcing compliance through both positive and negative reinforcement for five participants’ escape-maintained problem behaviour. Positive reinforcement of compliance was provided through the use of an edible item whereas negative reinforcement was used through a break. Additionally, extinction was added to each phase; however, treatment criteria was met without using extinction. Results of this study showed that problem behaviours were significantly lower whereas compliance was higher during the production of an edible item compared to a break.

Conclusion

The intent of the present study was to evaluate the effectiveness of antecedent strategies, escape extinction, and positive reinforcement for increasing compliance skills of a 3-year-old girl diagnosed with ASD.

There has been a variety of literature associated with noncompliance for children diagnosed with developmental disabilities such as ASD. The literature was based exclusively on the treatments used for this present thesis. Several studies were examined to determine the effectiveness of the three intervention strategies being used. Numerous articles specified the effectiveness of the combination of either two of these treatments or combination of all three.

Research based on the intervention procedures used for this current study was demonstrated to be an effective use of treatment for decreasing problem behaviours for children through a variety of case studies. The studies conducted by Piazza et al., (2003); Voulgarakis and Forte (2015), used escape extinction to treat feeding refusal through increasing food
acceptance. Although both these studies were conducted for different behavioural challenges, both studies concluded that the use of escape extinction combined with reinforcement was effective in decreasing the problem behaviour.

As demonstrated by Colte et al., (2005) the use of antecedent strategies alone is not an effective treatment for increasing compliance during transition for young children, however when combined with escape extinction, the rates of compliance rises significantly. As a result of this study, the uses of these two interventions are being used to increase the compliance of a young child diagnosed with ASD.

Iwata et al., (1990) conducted their study using an experimental analysis with both the use of extinction and reinforcement for decreasing problem behaviours. This study was also successful for all seven individuals who experienced different forms of developmental disabilities which were not specified in the research article.

Lalli et al., (1994) used both escape extinction and antecedent strategies to decrease problem behaviours in a classroom setting, similar to the present thesis. Subsequently, these intervention procedures were seen as an effective treatment for this study in decreasing problem behaviour. Finally as mentioned by Nelson, the use of positive reinforcement is one of the most effectively used process in increasing appropriate behaviours while decreasing inappropriate ones. Slocum and Vollmer (2015) and Deleon et al., (2001) evaluate the effectiveness of positive reinforcement for treating escape-maintained problem behaviours.

Although not all the given literature was directed for problem behaviours of noncompliance for individuals diagnosed with ASD, several studies looked at escape-maintained behaviours. Additionally, Colte et al., (2005) and Lalli et al. (1994) focused firmly on compliant behaviours.

Furthermore, the use of antecedent strategies, escape extinction, and positive reinforcement should all play a major role in increasing compliance and decreasing tantrums for a three year old child diagnosed with ASD. The current study being implemented will add to the current literature on increasing compliance for children diagnosed with ASD.

Word Count: 2,955
Chapter III: Method

Participant

The participant is a nonverbal three-year-old girl diagnosed with Autism Spectrum Disorder (ASD). The participant and her family have been working with a behavioural consultant for approximately a year and a half. She was referred by her consultant for her lack of communication which resulted in noncompliance causing problem behaviours throughout the day. The participant’s problem behaviour is expressed through tantrums, which can include aggression and self-injurious behaviours (SIB). The behavioural consultant referred her for this study in hopes to increase her compliance while decreasing her problem behaviours before she begins school the following year.

The participant lives with her biological mother and father and older sister. She and her sister both attend Clubhouse Daycare. She attends fulltime Monday-Friday from the hours of 7 a.m- 3 p.m., while her sister attends the before and after school program provided at the daycare. The participant has recently moved from the Junior Preschool room to the Senior Preschool room. This room is currently consists of a group of seven or eight three-year-old children, and one teacher. The participant requires fulltime assistance; therefore she has a one-on-one enhanced support worker with her each day.

The participant has a history of SIB that she may engage in during problem behaviour caused by noncompliance. She has a helmet that she previously wore for her safety but now that she is capable of removing it independently, it is kept in the classroom for easy access if the SIB were to occur. Her helmet is brought out anytime that the SIB began.

The participant’s parents were provided with a consent form where the parents provided informed consent on September 8, 2015. Following receiving approval from St. Lawrence College Research Ethics Board, the standard Behavioural Psychology Program consent form was provided to her parents to review, sign and date (Appendix A) on October 29, 2015.

Research Design

The proposed study utilizes a single subject design. A single subject design is “an experimental research design that uses the results of one participant to establish the existence of a cause-and-effect relationship” (Gravetter & Forzano, 2009, p. 396). The method used for this study will be an AB design. For this study, “A” will represent the baseline phase and “B” will represent the intervention phase.

The dependent variable of the study is the individual’s compliance skills. For the purpose of this study compliant skill was addressed due to the tantrums following noncompliant behaviours. Tantrums are operationally defined as anytime the participant begins yelling, crying, screaming, or whining. This may include, but does not occur each time, rolling around on the ground, kicking, pushing, or head banging. A tantrum must involve yelping, screaming, crying, or whining for a minimum of 15 seconds to be considered problem behaviour. A tantrum does not include making whining noises while engaging in activities due to constant noise making from the mouth while focusing on the task at hand. In order to be considered a new tantrum, one minute of appropriate behaviour must occur between each tantrum.
With very minimal communication, it is challenging for the participant to express her emotions other than through the use of her actions. Visuals prompts are used as the independent variable in the current study. By increasing her use of visuals it will allow for her to be aware of the schedule taking place and express her wants and needs. Positive reinforcement, through verbal praise and gestures such as high fives, will be provided to her any time following instructions that she demonstrates compliance. The student researcher, enhanced support worker, behavioural consultant and teacher all agreed that an increase in visuals used through antecedent strategies will assist to increase compliance and decrease tantrums.

Data Analysis

Baseline and treatment data gathered for this study will be presented through the use of tables indicating the mean, median, and standard deviation of the results. To measure the effectiveness of the treatment, the graphed results are visually analyzed for trends and percentage of non-overlapping data (Tawney & Gast, 1984). It was expected that the results would assist the success of antecedent strategies, escape extinction, and positive reinforcement when targeting noncompliant behaviour.

Functional Assessment Measures

**Case File review (09/16/15).** A review of the participants file was done to obtain a deeper understanding of the information regarding the participant. Information such as speech and language assessments, consultant observation assessments, previous observations, individual program plan, etc. was reviewed to assist the phase of the study. Additionally, the student researcher informally had conversations with the enhanced support worker and behavioural consultant on the participant’s behaviour.

**Functional Assessment Interview (FAI; 08/24/15).** The student researched completed a FAI, an indirect observation with the participant’s enhanced support worker (Appendix B). This interview asked questions regarding the child’s problem behaviour to determine antecedents that trigger the behaviour as well as consequences of the behaviour.

**Motivational Assessment Scale (MAS; 08/25/15).** The student researcher also completed a motivational scale, another indirect observation with the participants enhanced support worker to clarify the function of the behaviour (Appendix C).

**Sequence (ABC) Analysis of Tantrums (08/18/15; 08/24/15).** Naturalistic observations were also conducted to collect data on tantrums (Appendix D). This observation is a direct measure that shows a relationship between the antecedent and the consequence of the behaviour.

Baseline

**Baseline (08/17/15- 08/25/15).** During baseline, a frequency recording sheet was used to record the number of tantrums the child engaged in (Appendix E). This sheet was completed and reviewed by the student researcher and the participant’s enhanced support worker as well as discussed informally with the behavioural consultant.

The recording period took place over a total seven days from September 17, 2015-September 25, 2015. Recording only took place on weekdays for a full day (seven hours). During
each recording period, if a tantrum occurred anywhere in the daycare (classroom, hallway, bathroom, or outside) a tally was recorded underneath that day on the frequency chart.

During the baseline collection, data was collected by both the student researcher and the enhanced support worker at separate times. For the duration of the baseline data collection, the participant engaged in tantrums 28 times over the span of the seven days (Appendix, G). Therefore, during the baseline phase the participant averages four tantrums per day.

**Goals and Objectives**

The primary goal for the current study was to increase compliance by recording the frequency of tantrums per day when using antecedent strategies, escape extinction, and positive reinforcement. The following objectives were established for the target behaviour and are listed below.

*Goal #1: Increase Compliance (Accelerate):*

The participant will be compliant to instructions given by the teacher or enhanced support worker without engaging in tantrum behaviours.

*Objectives:*

1. Averaged 4 or less tantrums
2. Averaged 3 or less tantrums
3. Averaged 2 or less tantrums.
4. Averaged 1 or less tantrums.

Each objective was considered met when the participant was able to demonstrate each objective for two consecutive days. Once an objective was met, the frequency of positive reinforcement through verbal reinforcement was decreased.

**Setting and Materials and Program Procedures**

This study will take place at the daycare. Due to limited days that the student researcher is present at her daycare, the study only occurred on Thursdays and Fridays for seven hours each day.

*Frequency Recording Sheet.* A recording sheet was used for collecting data on the frequency of tantrums that occurred each day. Each time she engaged in tantrum behaviours one tally was added to the chart under the required day.

*Antecedent Strategies.* The uses of visuals were used through a communication wristband as well as through a four or five picture schedule. Both visuals included pictures of the routine in the daycare and different activities provided at the daycare. The antecedent strategies were used by the student researcher and enhanced support worker. The wristband was used for quick visual reminders. When providing the visuals, the student researcher or enhanced support worker would additionally verbally communicate what was being asked. The antecedent strategies were used because her tantrums often occurred during transition time as determined during the functional
For the use of the antecedent schedule, the day was divided into three different periods. These periods included the morning routine of pictures of play, snack, bathroom, and outside. After returning inside, the second visual schedule was used showing play, circle, lunch, bathroom, and nap. Finally following nap time, the final schedule was used showing snack, bathroom, play, outside, and free play. The rationale for dividing the day into periods was to allow focusing strictly on a low number of pictures rather than look at all 13 pictures at once. Additionally, a ‘First and Then’ board was used to visually show the required task she had to complete before moving onto the more preferred task. This was through the use of a binder full of routine and activity pictures. If an undesired task was scheduled, the first and then board showed that after completing the undesired task, a more preferred or reinforcing activity would occur.

Escape Extinction. The function of the non-compliance and tantrums are maintained through escape from demands. It is used to block all attempts to escape the task. Escape extinction was used whenever a tantrum would occur to escape a task. The participant was physically guided by the student researcher, enhanced support worker or classroom teacher, to complete the task at hand that caused the behaviour. Once the appropriate behaviour or task was completed, she was placed in a safe spot within the daycare and the tantrum behaviour was ignored. Although the tantrum was being ignored, she was being watched for fear that self-injurious behaviours may occur. If head banging were to occur, her helmet was put on her head. The duration of the helmet being on the participants head was determined by the participant herself. Once she was finished, she would take the helmet over to the teacher or her enhanced support worker.

Positive Reinforcement. Following the completion of a task or compliance to instructions reinforcement was provided. Verbal reinforcement was used consistently through-out the day. Physical reinforcement was used through high fives and thumbs up often as well. Reinforcement was also used through gaining tangible items. Visuals were used to assist in choosing the most preferred item and reinforcing target behaviours with access to those items. Positive reinforcement was also used through the first and then board. If the task used as the first part was successfully completed with no problem behaviours occurring, the participant was rewarded with the second more preferred picture used as the then section.

Program Implementation

To increase compliance for a non-verbal child, antecedent strategies, escape extinction and positive reinforcement procedures were used. The intervention was carried out during the routine at daycare by both the student researcher and her enhanced support worker and took place twice a week. The intervention procedure began on Thursday October 29th, 2015 through visual wristbands as antecedent strategies, first and then board escape extinction, and positive reinforcement. On October 29, 2015 the participants Speech and Language Pathologist came to the daycare for an onsite observation visit. During this visit, she requested an additional antecedent strategy to be used. The following week, November 5, 2015 a picture schedule was implemented into the classroom to visually assist the participant. These visuals showed pictures of her daily routine and were able to prep her for any changes to her schedule that was taking place that day. The wristband was used throughout the day. It was used as a prompt following instruction given by the teacher to redirect her to complete the task.
To generalize the study’s procedure, the antecedent strategies were used with the other children within the classroom if interested. The picture schedule was placed on the wall in the classroom in an accessible area. Any child that was interested in visually seeing the schedule was able to look at the pictures.

Frequency recording was used to track the target behaviour of tantrums during the intervention phase. Similar to the baseline data collection, a tally was added for each occurrence of a tantrum during Thursdays and Fridays at any location within the daycare (classroom, bathroom, hallway, or outside).
Chapter IV: Results

Overall, the participant displayed a significant improvement in her compliance through a decrease in frequency of tantrums. The following discusses the results of the intervention and the significant decrease in frequency of problem behaviour.

Data Analysis of Baseline Results

During the time of baseline recording, the participant engaged in a total of 28 tantrums over the seven-day baseline. There were zero days with no problem behaviours occurring and an average of four tantrums occurring each day at baseline. Four of the seven days the participant engaged in a minimum of four tantrums. The trend of the behaviour during baseline showed a slightly increasing trend over the seven days of data collection. Of the seven tantrum baseline points, 42.85% fall within 15% of the mean level (4), representing that the baseline data was stable.

Table 1 and the information provided above represents the frequency recording results that were obtained during baseline from September 17, 2015 to September 25, 2015. Figure 1 indicates the data collected during baseline. This data can also be found in appendix F.

![Results of Baseline for the Frequency of Tantrums](image-url)

**Figure 1:** Baseline data collection for the participant’s frequency of tantrums.
Table 1

Summary Statistics for Baseline Data

<table>
<thead>
<tr>
<th>Frequency of Tantrums</th>
<th>Mean</th>
<th>Median</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>4</td>
<td>4</td>
<td>2.38</td>
</tr>
</tbody>
</table>

Functional Assessment Results

Case file review (09/16/15) Reviewing the participants files allowed for a variety of beneficial information regarding the problem behaviour. It provided previous observations and treatments used with this participant. Informal conversations with the participants present enhanced support worker and previous observation charts provided information regarding different triggers and antecedents that have caused the problem behaviour in the past.

Functional Assessment Interview (08/24/15). Results from the FAI illustrate the hypothesis of the target behaviour is that the function of the behaviour is to avoid certain situations that the participant may not enjoy. The behaviour was said to be unpredictable the majority of the time and occurred most often during transition periods of changes to routines (Appendix B).

Motivational Assessment Scale (08/25/15). Results from the MAS hypothesised that the main function was escape. The escape section of the scale scored the highest with a score of 16. Questions that scored the highest on the Likert Scale were when asked “does the behaviour occur following request” and “does it occur when the person has been told that they cannot do or have something she wanted”. Therefore, this functional assessment supported the FAI in hypothesising that the main function was escape (Appendix C).

Sequence (ABC) Analysis (08/18/15; 08/24/15). Information about the antecedent and consequence of the target behaviour that were collected indicated that the behaviour was maintained through escape. The problem behaviour was triggered through a request by the teacher or something she enjoyed being taken away. The consequence for the participants’ behaviour was mainly ignored during baseline. The ABC observations were correlated to the results of both the FAI and MAS (Appendix D).

Intervention Results

Intervention through the use of antecedent strategies, escape extinction, and positive reinforcement were implemented to increase compliance in a three year old girl diagnosed with ASD to decrease the number of tantrums she engaged in. The target behaviour was measured through the frequency of tantrums. The intervention and data collection only occurred every Thursday and Friday for seven weeks from October 29, 2015 to December 10, 2015 due to agency restrictions. Over the 11 days of data collection, the participant engaged in a total of 10
tantrums averaging just under one tantrum per day (Appendix G). Therefore, there was a noticeable decrease in tantrums showing an increase in compliance to instructions and daily routine changes which is shown in Figure 2.

During baseline there was an average of four tantrums per day. During intervention there was an average of one tantrum per day, showing a 75% decrease in tantrums once the intervention procedure was put into place (Appendix H). Appendix H illustrates the data collection demonstrating a decrease trend line during both baseline and intervention. Additionally, during baseline there were not days where zero tantrums occurred, however, during intervention there was a total of six days where zero tantrums occurred.

The information above represents that data collected during intervention in comparison to the data collected during baseline. The figures and tables demonstrate the data analysis. Table 2 demonstrates a summary of the statistics during baseline and intervention. It illustrates the mean, median and standard deviation of all the data collected during the two data collection phases.

![Frequency of Tantrums During Baseline and Intervention](image)

**Figure 2:** The participant’s results from baseline and intervention based off the frequency of tantrums occurring.
Table 2  
Summary Statistics for Baseline and Intervention Data

<table>
<thead>
<tr>
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<th>Frequency of Tantrums</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
</tr>
<tr>
<td>Baseline</td>
<td>4</td>
</tr>
<tr>
<td>Intervention</td>
<td>.9</td>
</tr>
</tbody>
</table>

Analyzing the Data

The following section analyzes the data through the use of visual analysis. Percentage of non-overlapping data (PND) and Percentage of data points exceeding the median (PEM) were used to determine the effectiveness of the intervention.

PND is calculated by drawing a line from the lowest data point of baseline and the intervention points at or below are counted (Scruggs and Mastropieri, 1998). In order to determine the PND, the numbers of intervention data points that fall under the PND line are divided by the total number of intervention data points. Using the PND calculation nine of the 11 intervention data points fall under the PND line (2) (Appendix I). Therefore, according to the PND calculation, the treatment is 81% effective which according to Scruggs and Mastropieri (1998) the higher the percentage the more effective. Anything between 70% and 90% is seen to be fairly effective.

PEM is calculated by locating the median point during baseline on the graph and drawing a horizontal line through the middle of the point determining the percentage of the points that fall below the middle line (Scruggs and Mastropieri, 1998). Using the PEM calculation, a horizontal line was added to the graph at the median point (4) and all 11 intervention points fell below the PEM line (Appendix J). Therefore, the effectiveness of the intervention using PEM technique was 100% effective, which Scruggs and Mastropieri considers very effective.

Goals and Objectives

The results obtained from the intervention indicated that the goal of increasing compliance for the participant was reached. Additionally, each objective was met throughout the span of the intervention process.

The first objective of four or less tantrums a day was met on day seven and eight. The second objective of three or fewer tantrums a day was met on days five and six of intervention. The third objective was met on days three and four. Finally, the fourth objective was met two times throughout the course of the intervention process, being on days one and two and then again on the final three days of intervention. Therefore, the treatment consisting of antecedent
strategies, escape extinction, and positive reinforcement were demonstrated to be an effective treatment in increasing compliance and decreasing tantrums to reach the goal for the participant.

Summary

The participant displayed a 75% decrease in frequency of tantrums through the use of the intervention. As the results above demonstrate, the intervention used was effective in increasing compliance to the daily routine and decreasing the frequency of tantrums.
Chapter V: Discussion

Summary of Results

The current study combined antecedent strategies, escape extinction, and positive reinforcement and was effective in increasing compliance through a decrease in frequency of tantrums in a nonverbal 3-year-old girl diagnosed with ASD. Overall, the participant demonstrated a significant decrease in tantrums comparing baseline to intervention data. During baseline she averaged four tantrums per day whereas during intervention she only averaged one tantrum per day. Therefore, this participant demonstrated a 75% decrease in frequency of tantrums with the use of antecedent strategies to increase her compliance following instructions.

Strengths

A strength to the study was the use of reinforcement rather than using punishment. The participant was able to be reinforced for appropriate behaviour throughout the intervention instead of punished for inappropriate behaviour.

A major strength of this current study is that is the study used a single-subject research design. This allowed intervention package to be designed solely on the individual’s wants and needs. The individual in the study also had a one-on-one enhanced support worker that has worked with her for a four years now. This acted as strength to the study because it allowed for both the enhanced support worker and student research to work together in implementing the intervention. Additionally, it provided willingness to partake in the study by the participant due to the relationship that had already been maintained by the participant and the enhanced support worker.

Having the enhanced support worker assist the implementation of antecedent strategies, escape extinction and positive reinforcement during intervention procedure allowed for her to use the intervention during week when the student research was not at the daycare without data collection taking place. This also acts as a strength due to the fact that it is easier to maintain the intervention procedure following the completion of the student researchers fieldwork. The enhanced support worker was able to witness the implementation of the intervention procedure as well as help assist the intervention. This she has the ability of carrying out the intervention should the daycare and classroom teacher wish.

Limitations

Although a major strength, the use of a single-case study research design is also a limitation. Due to the fact that the study only focused on a single subject, the results of the study may not be generalized very easily to other nonverbal individuals diagnosed with ASD. Therefore, detailed analysis using statistical procedures such as ANOVA, could not have been used. As a result of this, the student researcher used PND and PEM techniques to analyze the data of the results.

Another limitation to the study was the frequency of days the student researcher spent collecting data and working with the child. The student researcher only spent two days a week at the daycare; therefore data was only collected for a total of 11 days over the intervention...
procedure that took place for seven weeks. If data had been collected each day, then the results of the study may have been more reliable.

There were times throughout the day that other staff members would be working within the classroom and would assist the participant. This acted as another limitation to the current study because not all early childhood educators within the daycare were trained using the intervention being used. This caused an inconsistency in the intervention for a period of the day.

Another limitation to the study was the inability to implement Picture Exchange Communication System as a research student. PECS would have been essential as a replacement behaviour for the participants target behaviour.

**Program Changes**

Although generalization and maintenance were carried out, having both the teacher and the enhanced support worker implement the intervention during the final days of placement would have benefited the implementation of the program. Briefly teaching other early childhood educators the intervention strategies would have allowed for the intervention to be carried out the same way throughout the entire day.

The positive reinforcement schedule was not provided in a consistent manner, due to the daycare environment and daily schedule. Therefore, having a more consistent reinforcement schedule would have better reinforced the appropriate behaviour throughout the intervention process.

An additional change to the program that would have allowed for more consistency would have been to better define the target behaviour. Although the target behaviour was operationally defined, the behaviour of tantrum if specifically more defined; may not have occurred as often during intervention due to the nonverbal participant. There were occasions during the intervention that may have been considered a tantrum yet was not considered a tantrum during baseline because it was minimal screaming for a time frame that did not succeed the operational definition.

**Multilevel Changes**

**Client Level:**

Client level challenges that were encountered during the placement were that the client was nonverbal so this made it more difficult to establish preferred reinforces due to the child’s inability to vocalize their wants. Another client level challenge was the student researcher was only able to work with the client twice a week due to the placement schedule.

**Program Level:**

One of the main challenges with the program implementation was as the schedule of the placement. The student researcher was only at the daycare for two days. This caused a major challenge in collecting data. Data was only collected on the two days and the program implementation was said to be carried out by the clients enhanced support worker. Due to the fact that I was not there all week I was unable to observe how the intervention was being carried
out. Therefore there may have not been a consistency for the client. If I had been at the same daycare all week, it would have allowed for a better rapport between the student researcher and the participant. It would also provided a wider variety of data collection throughout intervention.

Organizational Level:

The organization of the daycare caused several challenges for the current thesis study. There were times during the day when there were a different teachers in the classroom who did not regularly work with the child. This caused challenges because it was not always the same teacher coming in and therefore they were not aware of the intervention that was taking place.

Societal Level:

Multilevel challenges faced within the society during this study were the background knowledge of working with nonverbal children. Knowing basic information regarding assisting nonverbal children allows for better support provided to the child. Another factor assisting nonverbal children diagnosed with ASD is having the proper resources needed such as visuals, ipads, fidget toys, etc.

Meaning of the results in the context of the current literature

Literature has presented that the diagnoses of ASD is rising all over the world (Faras, Ateegi &Tidmarsh, 2010). The study conducted by Colte, Thompson, and Mckerchair (2005) was a relevant research study for the current study. It used antecedent strategies and escape extinction to increase compliance in a young child diagnosed with ASD. The results of the study demonstrated that the use of antecedent strategies and escape extinction were an effective use of treatment. Similarly, Lallo, Casey, Goh, and Merlino (1994) also used antecedent strategies and escape extinction in their study to decrease inappropriate behaviours. The results of the study were also demonstrated as an effective intervention. Therefore, using the results obtained from both Colte et. al, and Lalli et. al,’s studies, the effectiveness of the combination of antecedent strategies and escape extinction was effective in the present study.

Deleon, Neidert, Anders, and Rodriguez-Catter (2001) and Slocum and Vollmer (2015) conducted studies comparing positive reinforcement with negative reinforcement when increasing appropriate behaviours. Both studies demonstrated positive reinforcement as the more effective form of reinforcement when increasing an appropriate behaviour. For that reason, the present study used positive reinforcement as an additional part of the intervention for increasing compliance. Although positive reinforcement played a small role in the current study, it was still demonstrated as an effective use of treatment for the given participant.

Implications for the Behavioural Psychology Field

With the increase of children being diagnosed with ASD it is essential to research and practice interventions that will help allow these children to be successful in their lives at a young age (Faras, Ateegi &Tidmarsh, 2010). Using antecedent strategies to communicate routines and increase compliance with nonverbal children is a beneficial technique that is becoming more common within the field.
Professionals that work within the field of Behavioural Psychology are responsible for developing, evaluating, and implementing reliable programs to improve the quality of life for participants in varied diagnoses. This study supports and provides evidence to the effectiveness of using procedures such as antecedent strategies, escape extinction, and positive reinforcement. By using procedures such as these, individuals can be provided with the opportunity to increase life skills such as compliance.

**Recommendations for Future Research**

Although the current study was demonstrated effective, future recommendations for future research can better evolve the study. Future research on the intervention techniques could be conducted to better understand their strengths and weaknesses.

Including other staff within the daycare with the intervention would permit maintenance of the treatment. The current study involved the participants enhanced support worker throughout the entire process, however, there were times during the intervention when other staff members would be working with the participant within the classroom who had not been trained with the specific skills to carry out the intervention procedure.

**Word Count: 8,166**
References


Appendix A: Consent Form

**Project Title:** Increasing Antecedent Strategies, Escape Extinction and Positive Reinforcement to Increase Compliance in a 3-year-old girl with Autism Spectrum Disorder to Decrease Frequency of Tantrums

**Principal Investigator(Student):** Haley Gourdier  
**Supervisor:** Michelle Holloway  
**Agency:** Steps forward children foundations

**Invitation**
Your daughter is invited to take part in a research study. I am a student in my 4th year of the Behavioural Psychology program at St. Lawrence College. I am currently on placement at Community Living Kingston and District Behavioural Resource Consultant. As a part of this placement, I am completing a research project (called an applied thesis). I would like to ask you for your help to complete this project. The information in this form will help you understand my project. Please read the information carefully and ask all the questions you might have before you decide if you want to take part.

**Why is this study being done?**
This project will use visuals to increase compliance. Visuals are used to help individuals diagnosed with autism and other developmental disabilities. We believe that these visuals are an effective way to teach individuals better compliance.

**What will your daughter need to do if s/he takes part?**
If you choose to take part in this study, your daughter will work with her enhanced support worker and myself to learn to use more visuals to communicate their wants and needs.

**What are the potential benefits to your daughter if they take part?**
Benefits of taking part in this research study may include an improvement in your daughter compliance skills. This will allow for her to better communicate her wants and needs.

**What are the potential benefits of this research study to others?**
The potential benefits of this research study will help to improve the research on visuals for other individuals who face compliance challenges in the future.

**What are the potential disadvantages or risks to my daughter if they take part?**
Risks from taking part in this research study are minimal but may include your daughter feeling frustrated. Because we are blocking her attempts to escape certain tasks, aggression or self-injurious behaviors may also be a risk for your daughter.

**What happens if something goes wrong?**
If something were to go wrong and you or your daughter have problems or questions, you are able to contact myself as well as the agencies supervisor.  
If your daughter were to engage in self-injurious behaviours during one of her tantrums she will be supervised at the carpet by her enhanced support worker and myself for the entire tantrum. Your daughters helmet will also be put on to reduce self-injury through head banging. If she
engages in self injurious behaviours, the enhanced support worker and myself will block aggressive behaviours showing minimal attentions and direct her away from the other children in the room.

**Will my information you collect from my daughter in this project be kept private**

We will make every attempt to keep any information that identifies your daughter strictly confidential unless required by law. She will not be identified by her name in any reports, publications, or presentations made resulting from this project. Your consent form, surveys, and Data collected will be kept confidential in a locked up office and only reviewed by the supervisor and myself. The documents will also be kept at St. Lawrence College for seven years following the completion of the study, which then they will be destroyed from St. Lawrence files. The consent form will be kept for 10 years from your daughters 18th birthday as per professional clinical psychology guidelines. The following consent form will be kept at St. Lawrence College. The research data collected during this study will be kept for seven years, as per St. Lawrence College policy. The research data will be kept at the agency.

**Does my daughter have to take part?**

Taking part is voluntary. It is up to you to decide whether or not your daughter takes part in this research project. If you do decide for your daughter to take part, you will be asked to sign this consent form. A copy of this consent form will be provided to you for your own records including all the attachments used for this study. If you do decide to take part in this research project, you are still free to withdraw your daughter at any time, without giving any reason, and without incurring any penalty, or negative effects. If you chose to withdraw your daughter from the study for any reason, you can ask that any data not be used.

**Contact for further information**

This project has been approved by the Research Ethics Board at St. Lawrence College. The project will be developed under the supervision of Michelle Holloway, my supervisor from St. Lawrence College. I really appreciate your cooperation and if you have any additional questions or concerns, feel free to ask me, Haley Gourdier (hgourdier09@sl.on.ca). You can also contact my College Supervisor through email mholloway@sl.on.ca. You may also contact the Research Ethics Board at reb@sl.on.ca.

**Consent**

If you agree to take part in this research project, please complete the following form and return it to me as soon as possible. A copy of this signed document will be given to you for your own records. An additional copy of your consent will be retained at the agency and in a secure location at St. Lawrence College.
By signing this form, I agree that:

✔ The study has been explained to me.
✔ All my questions were answered.
✔ Possible harm and discomforts and possible benefits to my daughter of this study have been explained to me.
✔ I understand that my daughter has the right not to participate and the right to stop at any time.
✔ I am free now, and in the future, to ask any questions I have about the study.
✔ I have been told that my daughter’s personal information will be kept confidential.
✔ I understand that no information that would identify my daughter will be released or printed without asking me first.
✔ I understand that I will receive a signed copy of this consent form.
✔ I understand that the data from this study will be presented at the St. Lawrence College Behavioural Psychology Poster Gala, and may be reported at other conferences or published in a scientific journal. No identifying information will be included in these reports.

I hereby consent for my daughter, ________________ to take part.

Parent/Guardian Name ___________________________ Signature of Parent/Guardian __________ Date __________

Student Printed Name ___________________________ Signature of Student __________ Date __________
Appendix B: Functional Assessment Interview

Grade: Sr. Pre-school
Age: 3-year-old
Problem Behaviour: Tantrum
Date: September 24, 2015
Interviewer: Research Student
Respondent: Enhanced Support Worker

**Description of Behaviour:**

1. Describe the behaviour of concern? What does it look like?
   A tantrum is defined as any screaming, yelling, or crying. It may also include kicking, pushing, rolling around, and head banging.

2. Characterize your observation of the frequency, intensity, and duration of the behaviour.
   The frequency of the behaviour occurs about 3-4 times per day. The intensity of the behaviour can vary from quietly crying to rolling around on the ground screaming and crying rolling around while head banging and pushing anyone around them.

3. Are there other behaviours that usually occur along with the problem behaviour?
   There is not any other behaviour that occurs during the problem behaviour that have not been considered part of the operational definition.

**Academic Information:**

4. Does the student participate in classroom activities and complete assigned academic tasks? If not, what particular activities or assignments seem to be most troublesome?
   Completes classroom activities but there are minimal academic tasks during the day that the child does not participate in.

5. Does the student appear frustrated when presented with instructional tasks? If so, does the behaviour occur more often during certain type of tasks (e.g., too easy, too difficult?)
   Yes. Frustration seems to be present often when instructions are given that are too difficult of that the child does not want to do.

6. On what level is the student reading?
   N/A

7. On what level is an average student in the class reading?
   N/A

8. On what level is the student performing in math?
   N/A

9. On what level is an average student in the class performing in math?
10. What is the student’s class work completion percentage (0-100%)?
   60% of the daily tasks

11. What is the student’s class work accuracy percentage (0-100%)?
   N/A

Identify Events That May Affect The Behaviour:

12. Are there any setting events or conditions that may affect the behaviour (e.g. medications, medical conditions, illness, sleep patterns, diet, altercations with peers, etc.)?
   Any illness, sleep pattern, asthma, rough morning routine, change in schedule, conflict with sister or family or other children and directions given are all events that may affect the behaviour.

Identify Events That May Precede (or trigger) The Behaviour:

13. In what specific setting and times do you observe the behaviour?
   The behaviour is observed throughout the day in any settings of the daycare, such as in the classroom, hallways, bathroom, and outside.

14. Who is present when the behaviour occurs? Does not occur?
   There is no consistency in who is present when the behaviour occurs. Most often the behaviour occurs when interaction with enhanced support worker, teachers, and/or other children.

15. How can you tell that the behaviour is about to occur? What situations or conditions are most likely to precipitate (trigger) the behaviour (e.g. teacher makes a request, peers taunt, etc.)?
   The behaviour is not always predictable, however trigger listen in question 11 such as change in routine or direction may often cause the behaviour.

16. Describe the interactions that usually take place just prior to the behaviour.
   Just prior to the behaviour, the child often is interacting with the other children, or receiving direction from the teacher or enhanced support worker.

17. Are there settings, conditions, or situations in which the behaviour does NOT occur?
   If the child is left alone is it less likely that the behaviour will occur.

Identify Events That May Follow (or maintain) The Behaviour:

18. Describe the typical result of the behaviour and consequence of it (e.g. reactions from adults/peers, removed from setting, ignored, no consequences, etc.)
   The consequence of the behaviour is being ignored.

19. What positive or preventative strategies have you used with the student and how effective were they.
Positive strategies include minimal visuals, and some sign language.

20. What consequence strategies have you used with this student and how effective were they?
   Ignoring have been used with the child and it is seen as being effective.

**Identify The Function Of Behaviour**

21. For what reasons might the student be showing this behaviour? (e.g. to gain attention, get
   control, avoid something, etc.)
   The child might be showing this behaviour to avoid a certain situation or because they
   want or need something that they cannot communicate with you.

22. In your opinion, what would be an acceptable way for the student to achieve the same
   outcome?
   Using sign language or visuals would be an acceptable way for the child to achieve the
   same outcome.

23. Do you feel that this student does not “know how” to achieve needs using appropriate
   behaviour (cant), or does the student know how to behave differently, but consistently
   chooses not to (wont)?
   Due to the fact that this child is non-verbal, the child does not “know how” to properly
   express these feelings.

24. What other insight can you offer about this student or the behaviour that might assist us
   in developing appropriate, effective interventions (e.g., student preferences, situations
   when the student is successful, etc.)?
   To control the ignoring of the behaviour to allow for it to become more consistent.
Appendix C: Motivational Assessment Scale

Rater: Enhanced Support Worker  
Date: Friday September 25, 2015

Behaviour Description: Tantrum: screaming, yelling, or crying, may also include rolling around, kicking, head banging, and pushing.
Setting Description: Daycare-classroom, hallway, bathroom, or outside

Instructions: The Motivational Scale is a questionnaire designed to identify those situations in which an individual is likely to behave in certain ways. From this information, more informed decisions can be made concerning the selection of appropriate reinforcers and treatments. To complete the Motivation Assessment Scale, select one behaviour that is particular interest. It is important that you identify the behaviour very specifically. Aggression, for example, is not as good as description as hits his sister. Once you have specified the behaviour to be rated, read each question carefully and circle the number that best describes your observation of this behaviour.


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<tbody>
<tr>
<td>1.</td>
<td>Would the behaviour occur continuously, if the person were left alone for long periods of time, for example, several hours?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2.</td>
<td>Does the behaviour occur following a request to perform a difficult task?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3.</td>
<td>Does the behaviour seem to occur in response to you talking to another person in the same room?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4.</td>
<td>Does the behaviour ever occur to get a toy, food, or activity that this person has been told that he or she can’t have?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5.</td>
<td>Would the behaviour occur repeatedly in the same way for very long periods of time if no one were around, for example rocking back and forth for over an hour?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6.</td>
<td>Does the behaviour occur when any request is made of this person?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7.</td>
<td>Does the behaviour occur whenever you stop attending to this person?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8.</td>
<td>Does the behaviour occur when you take away a favorite toy, food, or activity?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9.</td>
<td>Does it appear to you that this person enjoys performing the behaviour? (it feel, tastes, looks, smells, and sounds pleasing)</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10.</td>
<td>Does this person seem to do the behaviour to upset or annoy you when you are trying to get him or her to do what you ask?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Never=0  Almost Never=1  Seldom=2  Half the time=3  Usually=4  Almost Always=5  Always=6
11. Does this person seem to do the behaviour to upset or annoy you when you are not paying attention to him or her, for example, if you are sitting in a separate room, interacting with another person?  0 1 2 3 4 5 6

12. Does this behaviour stop occurring shortly after you give this person the toy, food, or activity he or she has requested?  0 1 2 3 4 5 6

13. When the behaviour is occurring does this person seem calm and unaware of anything else going on around him or her?  0 1 2 3 4 5 6

14. Does the behaviour stop occurring shortly after (one to five minutes) you stop working or making demands of this person?  0 1 2 3 4 5 6

15. Does this person seem to do the behaviour to get you to spend some time with him or her?  0 1 2 3 4 5 6

16. Does this behaviour seem to occur when this person has been told that he or she can’t do something he or she had wanted to do?  0 1 2 3 4 5 6

<table>
<thead>
<tr>
<th></th>
<th>Sensory</th>
<th>Escape</th>
<th>Attention</th>
<th>Tangible</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>2</td>
<td>2.</td>
<td>3.</td>
<td>4.</td>
</tr>
<tr>
<td>5.</td>
<td>1</td>
<td>6.</td>
<td>7.</td>
<td>8.</td>
</tr>
<tr>
<td>9.</td>
<td>0</td>
<td>10.</td>
<td>11.</td>
<td>12.</td>
</tr>
<tr>
<td>13.</td>
<td>3</td>
<td>14.</td>
<td>15.</td>
<td>16.</td>
</tr>
</tbody>
</table>

Total Score: 6 16 4 15
Mean Score: 1.5 4 1 3.75
Ranking: 3 1 4 2
## Appendix D: Naturalistic Observations (ABC)

<table>
<thead>
<tr>
<th>Date</th>
<th>Antecedent</th>
<th>Behaviour</th>
<th>Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friday September 18/15 7:10am</td>
<td>Playing with puzzles and sees mom walk by the window.</td>
<td>Ran towards the door</td>
<td>Stopped by the teacher and asked to go back and play with the puzzles</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Thrown puzzle and runs to the door screaming.</td>
<td>Taken to the carpet and ignored.</td>
</tr>
<tr>
<td>Thursday September 24/15 9:48am</td>
<td>Playing catch with the staff and the ball bounced over her head and rolled to the other side of the play area.</td>
<td>Began screaming and crying and laying on the ground. Started rolling around and pulling off her hat.</td>
<td>Ignored.</td>
</tr>
<tr>
<td>Thursday September 24/15 11:34am</td>
<td>Teacher asked class to wash their hands.</td>
<td>Began slightly screaming</td>
<td>Taken to the sink in the bathroom</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Began screaming and crying</td>
<td>Ignored in the bathroom until it was time to go sit down for lunch.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fell to the floor screaming, crying, and rolling on the ground.</td>
<td>Ignored</td>
</tr>
</tbody>
</table>
Appendix E: Baseline Data Collection

Date: Thursday September 17, 2015

Number of Tantrums

Date: Friday September 18, 2015

Number of Tantrums

Date: Monday September 21, 2015

Number of Tantrums
Date: Tuesday September 22, 2015

Number of Tantrums

Date: Wednesday September 23, 2015

Number of Tantrums

Date: Thursday September 24, 2015

Number of Tantrums
Date: Friday September 25, 2015

Number of Tantrums
Appendix F: Baseline Data Graph

Results of Baseline for the Frequency of Tantrums
Appendix G: Intervention Frequency Recording Data Collection

<table>
<thead>
<tr>
<th>Date</th>
<th>Number of Tantrums</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thursday October 29, 2015</td>
<td></td>
</tr>
<tr>
<td>Friday October 30, 2015</td>
<td></td>
</tr>
<tr>
<td>Thursday November 5, 2015</td>
<td></td>
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<tr>
<td>Friday November 6, 2015</td>
<td></td>
</tr>
</tbody>
</table>
Number of Tantrums

Date: Thursday November 12, 2015

Number of Tantrums

Date: Thursday November 19

Number of Tantrums
Date: Friday November 20, 2015

Number of Tantrums

Date: Thursday November 26, 2015

Number of Tantrums

Date: Thursday December 3, 2015

Number of Tantrums
Date: Friday December 4, 2015

Number of Tantrums

Date: Thursday December 10, 2015

Number of Tantrums
Appendix H: Baseline and Intervention Data Results Graph

Results of Baseline and Intervention for the Frequency of Tantrums

Baseline

Intervention

Number of Tantrums

Days

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
Appendix I: Percentage of Non-overlapping Data Points

Results of Baseline and Intervention for the Frequency of Tantrums

Number of Tantrums

Days

Baseline

Intervention

PND Line

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
Appendix J: Percentage of Data Points Exceeding the Median

Results of Baseline and Intervention for the Frequency of Tantrums

Baseline

Intervention

PEM Line

Days

Number of tantrums