Evaluating the Effect of Using the Premack Principle and Social Stories on On-Task Behaviour for a 23 Year-Old Male with an Intellectual Disability and an Autism

by

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Abstract

The overall purpose of the study was to examine the effectiveness of the Premack principle and Social Stories to increase on-task behaviour in a 23 year-old adult male with an Autism Spectrum Disorder (ASD) and an Intellectual Disability (ID). The Premack principle involves increasing the likelihood that a low rate behaviour will occur by making access to a high likelihood behaviour contingent on the occurrence of an otherwise low rate behaviour (Mazur, 1975). Typically, this entails pairing a very powerful reinforcer with the occurrence of an otherwise low rate behaviour. Social Stories involves developing a short story that combines pictures and words and seeks to describe the core components of a social situation, as well examples or descriptions of ways to react in a socially appropriate manner. During the intervention, the participant was provided with positive reinforcement for remaining on-task during a non-preferred activity at or above a specific criterion. Additionally, a Social Story was developed for the purpose of teaching the participant what on-task behaviour looked like. In order to be considered on-task the participant had to remain in close proximity to the group activity and either be engaged in the activity, listening or speaking to one of the other group or staff members. The participant was expected to remain appropriately seated or standing during the activity in order to earn reinforcement. The intervention was implemented over a 3-week period. The study utilized an AB research design due to time limitations and no follow up could be conducted after the study was completed. Momentary time sampling was used to record data for a period of 30 minutes during an activity where on-task behaviour occurred at a low rate. The results indicated that there were no significant changes in the percentage of time spent on-task during non-preferred activities when comparing baseline to intervention. Staff members did not notice any changes in the participant’s behaviour as well. The results gathered from the study do not support the usage of the Premack principle and Social Stories in order to increase on-task behaviour. There were several limitations to the study including the use of questionnaire based preference assessments, the length of baseline and intervention, and chosen recording methods. Recommendations for future research includes using a control group, increasing the length of the study, a baseline reversal, as well as collecting Inter Observer Agreement (IOA) data.
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Chapter I: Introduction

An intellectual disability (ID) is characterized by deficits in intellectual functioning and the ability to naturally acquire and use adaptive behaviours and skills. The Diagnostic Manual of Mental Disorders (DSM-V) defines ID as a general impairment in three areas of functioning (5th ed.; DSM-V; American Psychiatric Association [APA], 2013). The first is the conceptual domain which involves skills in subjects such as language, reading, writing, math, knowledge and memory, as well as reasoning ability (5th ed.; DSM-V; American Psychiatric Association [APA], 2013). The second is the social domain referring to social skills and behaviours including empathy, the ability to develop and maintain healthy friendships, social judgement, and general interpersonal and communication skills (5th ed.; DSM-V; American Psychiatric Association [APA], 2013). The third and final domain affected by ID is the practical one which focuses on self-management skills such as maintaining personal care, fulfilling professional responsibilities, independently managing finances, and properly balancing work and school while remaining actively and effectively involved in the community (5th ed.; DSM-V; American Psychiatric Association [APA], 2013). In order for an ID to be diagnosed, onset of symptoms in these three domains must first occur during the developmental period (5th ed.; DSM-V; American Psychiatric Association [APA], 2013). (Made this clearer, but I think this is in line from what I was paraphrasing from the DSM. “319. Intellectual Disability (Intellectual Developmental Disorder) is a disorder with onset during the developmental period that includes both intellectual and adaptive functioning deficits in conceptual, social, and practical domains”).

Research

Consistent on-task engagement can for adults diagnosed with an ID. Some adults may exhibit difficulties remaining on-task during community outings (Lancioni et al., 2001). Lancioni et al., (2001) cite consistent task engagement during community engagements as being crucial for personal development as it increases overall attentiveness, and assists in developing skills needed for appropriate community participation. Therefore, it is important to develop effective interventions and techniques to help encourage consistent on-task engagement for this population. Increasing consistent engagement in activities is often a goal for agencies that provide services for persons with an ID (Lancioni et al., 2001).

There is literature available suggesting that incorporating the Premack principle into behavioural interventions may help increase on-task behaviour (Mazur, 1975). The Premack principle involves using a behaviour that has a high likelihood of occurring, to reinforce a behaviour that has a low likelihood of occurring (Mazur, 1975). A study conducted by May and Howe in 2013 cited off-task behaviour as being maintained by competing reinforcement contingencies at times. Therefore, it may be important to manipulate positive and negative reinforcement contingencies in order to increase the frequency and duration of on-task behaviour (May and Howe 2013). Social Stories have also been used to help persons diagnosed with Autism Spectrum Disorders (ASD) understand the core components of specific social situations (Gray, 1998; Gray & Garand 1993 as cited in Scattone, Tingstrom, & Wilczynski 2006). Social Stories typically consist of a short story that focuses on teaching how to react appropriately to social situations by detailing social cues, how they appear, and how to appropriately respond (Scattone, Tingstrom, & Wilczynski, 2006).

Hypothesis

This study aims to add to existing research surrounding the topic of using the Premack principle and Social Stories to increase on-task behaviour. It is hypothesized that using the
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This proposal seeks to evaluate the effect of using the Premack principle in combination with Social Stories to increase on-task behaviour in a 23-year-old male with an ID and ASD.

Thesis Summary

The literature review will help provide an overview and rationale for the intervention by providing a summary of the research that has been used to help develop the research study. The methodology section will identify participants, research design, and the procedures that are involved in the study. The results section of the study will describe and interpret the results of data gathered during intervention, and will be supported through visual analysis of the data collected, as well as other statistical tools such as PEM. The strengths and limitations section will serve as the final section and recommend potential avenues for future research.

Chapter II: Literature Review

Lancioni et al., (2001) stated that some adults with an ID exhibit difficulty remaining on-task during community outings. Dusseljee, Rijkem, Cardol, Curfs, and Groenewegen (2011) state that frequent occurrences of on-task behaviour can make it difficult for adults with an ID to effectively participate in community activities that they choose. Additionally, Lancioni et al., (2001) cite consistent task engagement during community activities as being crucial for personal development as it increases overall attentiveness and assists in developing the skills needed for proper community participation. Low levels of community participation also bring up ethical concerns for agencies and organizations seeking to facilitate personal growth and development, as persons with IDs have a right to access community activities and services, as well as have the opportunity for work placements. However, interventions can be developed to assist with developing consistent on-task engagement during community outings (Dusseljee, Rijken, Cardol, Curfs, & Groenewegen, 2011).

Overview

This literature review will seek to present a wide variety of research studies that have been conducted in the past, pertaining to the usage of Social Stories and the Premack principle to help increase on-task behaviour in individuals with an Intellectual Disability (ID) and/or an Autism Spectrum Disorder (ASD), amongst other diagnoses. The Premack principle is a process where a behaviour that has a low likelihood of occurring is followed by a behaviour that has a high likelihood of occurring (Mazur, 1975). In other words, socially desirable behaviours that do not occur frequently can be effectively reinforced with an activity that the participant finds highly motivating or rewarding. Social Stories meanwhile are described as short stories that seek to teach the core components of a socially significant behaviour or situation (Scattone, Tingstrom, & Wilczynski, 2006). Social Stories typically use a combination of words and pictures so that they may be easily adapted to suit an individual’s specific needs (Gray 1998; Gray & Garand 1993 as cited in Scattone, Tingstrom, & Wilczynski 2006). According to Vandermeer, Beamish, Milford, and Lang (2013) Social stories are most effective when they are written from the client’s point of view, is appropriate for their level of functioning and uses large sized lettering. These techniques have been proven to be effective when used for interventions designed to increase on-task behaviour. It is hypothesized that an intervention that combines the Premack principle and Social Stories will help increase the frequency of on-task behaviour in an individual diagnosed with an ID and ASD.

Premack Principle/ Positive Reinforcement

The Premack principle operates on the principle that low likelihood behaviours can be reinforced by providing access to behaviours that have a high likelihood of occurrence (Mazur,
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A study conducted by Mazur (1975) sought to validate whether matching law and the Premack principle could be used to predict duration of running behaviour in rats. The author set up an apparatus where the rat would run in a cage and after the rat had run for a set amount of time a water bottle would be made accessible for the rat. During the study the author tracked the total amount of time the rat ran. Mazur also examined the effects that modifying the amount of running that is required to access water, and whether these changes could be accurately predicted. Mazur found the Premack principle to be an effective method for increasing running duration in rats. The author’s results were also representative of their initial predictions; however, the averages were slightly longer than predicted. These results suggest that the Premack principle has potential for prolonging the duration of behaviours and may have potential for being used in an intervention designed to increase on-task behaviour.

A further study investigating the effectiveness of the Premack principle was done by Houtz and Feldhusen (1976). In the study the authors used the Premack principle in conjunction with special instructional exercises in an attempt to evaluate fourth grader’s problem solving skills. Two hundred and forty students across 12 classrooms were chosen to take part in the study. In return for working on daily problem solving worksheets over a period of 9-weeks, the group was given time to access preferred activities such as, art supplies, books, and games). When the 9-week program had finished performance on worksheets had improved and results were maintained after the intervention. The authors concluded that in order for the Premack principle to have a consistent effect, there must be a strong contingency between the occurrence of the low likelihood behaviour, and access to the high likelihood behaviour. Despite these findings, the study does have some limitations. The authors noted that the procedure was either implemented or treated in different ways across classrooms, and treatment integrity across classrooms may be of concern.

McComas, Goddard, and Hoch (2002) sought to evaluate the effect that an intervention based on access to preferred activities during breaks had on decreasing destructive behaviour and promoting engagement in academic tasks. Additionally, the effects of the intervention were compared to an intervention based around escape extinction and negative reinforcement. The participant was a 9 year-old boy diagnosed with a learning disability in reading and mathematics. Results from the functional analysis indicated that the destructive behaviour was maintained by escape from task demands. At the beginning of each session the research directed the participant to a 20-question long math sheet. The participant would receive an initial prompt to complete the math sheet, but no further prompts were provided. Destructive behaviour did not result in escape from the task demand in either intervention. During each of the conditions the participant was informed that after completing the work sheet, they would receive a 5-minute break. However, in one condition the participant was also informed that they would receive access to a preferred activity. The escape and negative reinforcement condition did not result in a higher frequency of task engagement. However, the study found that the client remained engaged in academic school work for nearly every interval, after preferred activities were provided contingent on the occurrence of academic tasks (McComas, Goddard, and Hoch 2002). There are some limitations to the findings of this study however. Firstly, the previous study conducted by Houtz and Feldhusen (1976) had 240 participants as opposed to the study conducted by McComas, Goddard, and Hoch (2002), which had one participant. Secondly, Houtz and Feldhusen (1976) used a control group to help establish experimental control, which McComas, Goddard, and Hoch (2002) did not do in their study. Both Houtz and Feldhusen (1976) and
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McComas, Goddard, and Hoch (2002) conducted follow up sessions however, which Mazur (1975) did not do in his study.

An additional study investigating the effectiveness of the Premack principle in increasing academic engagement was completed by Mancil and Pearl (2008). There were a total of three participants in the study consisting of two males and one female from different schools and age groups. The procedure consisted of embedding preferred objects into everyday academic activities, as well as providing access to preferred activities after completing academic work. Additionally, a personalised method for reminding the participant that they are receiving a reward for completing academic work was designed for each participant. Similar to the other studies referenced, follow up results were gathered after the intervention had ceased and results were maintained. There are some limitations to the results gathered from the study however. Mancil and Pearl (2008) did not use a control group to help compare results between the control and treatment groups. Furthermore, a standard AB design was followed, which means that experimental control was not established, although studies by both Houtz and Feldhusen (1976) and McComas, Goddard, and Hoch (2002) did not use an experimental design either (Mancil and Pearl, 2008). Additionally, the Premack principle was not the sole part of the designed intervention, and hypothetically any change in behaviour observed during the study may have been a result of the other component of the intervention, and not the application of the Premack principle (Mancil and Pearl, 2008).

A study conducted by Mithaug and Mar (1980) sought to examine whether making a preferred task contingent on working on a non-preferred task helps increase the frequency in which the non-preferred task is selected. The study consisted of two participants, who were 19 and 20 years of age and were diagnosed with severe intellectual disabilities (Mithaug and Mar, 1980). One of the participants also had a diagnosis of Down’s syndrome (Mithaug and Mar, 1980). The procedure consisted of allowing clients to choose between two different work tasks represented by placing two different tools on either end of a tray and placing it in front of the participant (Mithaug and Mar, 1980). Afterwards, one of the researchers would prompt the participant to select either the preferred task or the less preferred task (Mithaug and Mar, 1980). The participants would then work on the selected tasks for 5 minutes and then take a 2 minute break (Mithaug and Mar, 1980). After the 2 minute break had elapsed, the participant would be allowed to work on a task that they prefer as opposed to working on a forced choice task (Mithaug and Mar, 1980). The results indicate that the intervention was successful in increasing the frequency in which non-preferred tasks are selected (Mithaug and Mar, 1980). There are similar limitations between the study conducted by Mancil and Pearl (2008) and Mithaug and Mar (1980). Unlike Mancil and Pearl (2008), Mithaug and Mar, (1980) did not use a control group, and therefore the study is lacking experimental control. Both sets of authors did not use an experimental design in their study as well. Additionally, due to time constraints one of the preference assessments could not be conducted as detailed in the intervention and a modified version had to be used.

In addition to the Premack principle other interventions have had success in increasing on-task behaviour in persons with an ID or an ASD. One intervention that has begun to gather empirical support is the usage of Social Stories.

Social Stories

The primary goal behind Social Stories is to teach the core components of either a specific social skill or social situation so that they may be practiced and used in the natural environment (Scattone, Tingstrom, & Wilczynski, 2006). Scattone, Tingstrom, and Wilczynski
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(2006) sought to examine whether Social Stories can help increase appropriate social interactions in children with ASD. The procedure involved reading a Social Story to the participants and then quizzing them on the content. If they could not get 100.00% of the questions correct, the teacher would provide and explain the correct answers until they attained a 100.00% score. After the first session participants would read the Social Story to their teacher on a one to one basis before free time. During a 10 minute free time period, the participants were observed for the occurrence of socially appropriate interactions. Scattone, Tingstrom, and Wilczynski found that appropriate social interactions increased for two of the three participants, and their results suggest Social Stories may be an effective method for teaching children with ASD appropriate social interactions. Despite these findings, there are some limitations to the study. The authors gathered results solely from the treatment group and did not set up a control group, meaning that the results may have potentially been caused by a confounding variable (Scattone, Tingstrom, & Wilczynski, 2006). Furthermore, the study followed an AB research and therefore experimental control could not be established (Scattone, Tingstrom, & Wilczynski, 2006).

Similar to Scattone, Tingstrom, and Wilczynski (2006), Kalyva and Agaliotis (2009) sought to examine whether Social Stories could be successfully adapted to help teach children with learning disabilities effective conflict resolution skills. The intervention involved reading a Social Story that detailed a social conflict twice a week to the class regarding a disagreement over ownership of an object. The Social Story provided a socially appropriate solution to the conflict that left both parties satisfied. The authors found that after the intervention and after a 2 month follow up children in the experimental group resorted to positive problem solving strategies more frequently than the control group. Unlike the study conducted by Scattone, Tingstrom, & Wilczynski, 2006 there was a control group present which helps validate the results gathered by establishing experimental control (Kalyva & Agaliotis, 2009). Additionally, a follow up session was conducted 2 months after the study had ended, and results were maintained from the in intervention which helps exclude the potential of a confounding variable (Kalyva & Agaliotis, 2009). A follow up session was not completed in the study conducted by Scattone, Tingstrom, and Wilczynski (2006), further lending to the credibility of the study conducted by Kalyva and Agaliotis (2009). Although a follow up session was conducted the authors used an AB research design and therefore they did not properly establish experimental control.

Unlike the previous two studies which focused on increasing social appropriateness and conflict resolutions skills, Schneider and Goldstein (2009) examined whether Social Stories could improve the on-task behaviour of 3 children who exhibited language impairments along with challenging behaviour. Schneider and Goldstein found that the language impairments and challenging behaviour made it difficult for the participants to actively be included the classroom. An intervention based around the usage of Social Stories was evaluated for its in increasing on-task behaviour (Schneider & Goldstien, 2009). The procedure for intervention consisted of the author reading the Social Story before a routine (ie Math, Writing, Science, etc.). The Social Story was only read before routines where the target behaviour had a high likelihood of occurring. The first author was responsible for reading the Social Stories. After the author had read the Social Story to the participant three to four question about the content of the story would be asked to test overall comprehension. The authors found that Social Stories may be an effective treatment for children with language impairment exhibiting off task behaviour and that on-task behaviour was maintained and generalized even after the intervention had ceased. Unlike Kalyva and Agaliotis (2009), Schneider and Goldstein followed did not gather a control group, and therefore experimental control could not be established. The results of Schneider and
Goldstein (2009) and Kalyva and Agalioti (2009) were both limited due the studies relying on an AB design and not removing the intervention and starting it again to examine whether the results were produced by the intervention and not a confounding variable. Based on these findings, Schneider and Goldstein (2009) recommended Social Stories as an intervention for increasing on-task behaviour in children with impaired language.

Vandermeer, Beamish, Milford, and Lang (2015) evaluated the effect of iPad presented Social Stories on the on-task behaviour during table top activities of three 4 year-old children diagnosed with ASD. A personalised Social Story was designed for each participant on an iPad. The Social Story was developed using a program designed specifically for teaching social messages to children with ASD. The intervention was successful in increasing on-task behaviour in two out of three participants. According to Vandermeer, Beamish, Milford, and Lang (2013), the findings suggest that while Social Stories may be effective in certain situations, there is variability in their success and future research needs to be conducted. Despite the findings there are still some limitations to the research gathered however. The authors did not establish a control group for the study, and while the authors planned to follow an ABA research design the final phase of the design was only done with one participant due to time constraints. (Vandermeer, Beamish, and Lang, 2013).

Similar to the two previous studies reviewed, a study by Ivey, Heflin, and Alberto (2004) sought to investigate whether Social Stories could be used to increase participation during novel events. However, they sought to increase participation during novel events and the participants consisted of three males between the ages of 5-7 who had a previous diagnosis of a Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS) (Ivey, Heflin, & Alberto 2004). Additionally, participants were excluded from the study if they had an IQ below 55 (Ivey, Heflin & Alberto, 2004). The Social Story was presented by reviewing a specific Social Story with the participants’ parents approximately one week prior to the novel event (Ivey, Heflin & Alberto, 2004). Two Social Stories were created for a specific novel event each week (Ivey, Heflin & Alberto, 2004). The Social Stories were then sent home with the parents for them to read and review with their children at home at a time of their choosing (Ivey, Heflin & Alberto, 2004). Some parents were familiar with Social Stories while some were not. A training checklist was developed and used during review sessions to ensure that all parents had the same understanding of the Social Story event (Ivey, Heflin & Alberto, 2004). The training checklist detailed how to properly review and present Social Stories to each parent’s child. Typically, the participants would work on speech and language exercises with the lead author once per week (Ivey, Heflin & Alberto, 2004). These situations continued as normal, however once the study began, a new novel event was added to the session each week event (Ivey, Heflin & Alberto, 2004). Each participant’s percentage of time spent participating during novel events was recorded during baseline and intervention so that a comparison could be made between the two. (Ivey, Heflin & Alberto, 2004). Ivey, Heflin and Alberto (2004) found that Social Stories as an intervention was an effective method for increasing participation after novel events (Ivey, Heflin & Alberto, 2004). One of the limitations shared with the other studies reviewed was that no control group was established, therefore it cannot be determined whether the observed results were the result of confounding variables. However, unlike the previous studies, the authors did use an ABAB research design and the target behaviour did decrease when the intervention was removed, and then returned to previous levels after the intervention was reintroduced (Ivey, Heflin & Alberto, 2004). Other limitations include the parent’s responsibility for reviewing the Social Story outside of the study, as it cannot be affirmed whether or not they maintained the integrity of the
treatment (Ivey, Heflin & Alberto, 2004). The author also acted as the participant’s regular speech-language pathologist and there is the potential that the previously established relationship with the participants before the sessions began may have had an indirect effect on the results. One notable strength of this study however, was having the parents read the stories which could be potentially beneficial for encouraging generalization.

**Conclusion**

According to Lancioni et al., (2001), frequent engagement in community activities has been connected to higher levels of attentiveness during community occupations. As, on-task behaviour has been supported as being crucial for personal development, further interventions should be developed. Overall, the Premack principle is supported as an effective method for modifying behaviours such as on-task behaviour and academic performance with participants with diagnoses such as an ID and ASD. However, there appears to be a shortage of literature relating to the Premack principle and the studies that are available usually have a limited number of participants, and most follow simple AB designs. The usage of Social Stories has gathered support as being an effective intervention for modifying behaviours such as on-task behaviour and participation through past studies. The current research that is available for Social Stories does have its limitations however. Most studies have a limited number of participants, use primarily AB research designs, and studies that conduct follow up sessions are sparse as well. Despite these limitations, the research that has been presented suggests that an intervention utilizing a combination of the Premack principle and Social Stories would be an effective intervention for increasing on-task behaviour in adults with either an ID or an ASD.

**Chapter III: Method**

**Participant**

The participant in the study was a 23-year-old male who had a diagnosis of an Intellectual Disability (ID), as well as an Autism Spectrum Disorder (ASD). The individual was referred to the study by his facilitator at his community agency. The participant’s facilitator, as well as other staff members at the agency cited that he had some difficulties remaining on-task during specific community jobs, excursions, and group activities. Often during such activities, he would inform a staff member that he was not interested in the activity and that he wanted to leave. Typically, the staff member would ask why he was not interested in the activity and then provide some reasons as to why they should remain in the activity, or provide options to help make the activity more enjoyable for him. The majority of the time he would provide a response either citing that he did not enjoy the activity, or that the activity was too difficult and he could not do it. Afterwards, they would typically leave the immediate area the group is in and begin to engage in self-stimulatory behaviour. The self-stimulatory behaviour took the form of handflapping/ rubbing, pacing/running, jumping up and down, and self-talk. As this has been occurring on a consistent basis there is some concern about the effect that off-task behaviour had on his ability to develop social relationships with other participants, remain actively engaged in the community, as well as discover new activities that he does find enjoyable.

**Consent/ Assent**

Prior to the start of the study the participant’s mother signed and submitted a consent form providing permission for her son to take part in the study. The consent form was developed by the research student and was approved by his college supervisor, the participant’s agency, as well as the Research Ethics Board at St. Lawrence College. A sample of the consent form can be found in Appendix A. The form was provided to the participant and their guardian after it had received approval by the necessary parties. The consent form outlined the procedure for the
study, what it sought to accomplish, what is required to participate, and potential risks as well as benefits. A disclaimer was included in the consent form requesting that the participant and his mother ask any and all questions they may have about the study. The email addresses for the research student, their college supervisor, and the research ethics board chair were provided to help facilitate open communication. The participant and his mother were informed in the consent form that they may decide to withdraw from the study at any time with no penalty, or effect on services at the agency.

An assent form was also provided for the participant to review and sign with his parent. A sample of the assent form was included in Appendix B. The assent form provided most of the information already provided in the consent form, however the assent form had been redesigned to take into account the participant’s diagnosis of an ID and used simpler language. The overall length of the form was reduced as well.

As concerns had been brought up by the participant’s facilitator regarding anxiety, a support plan was developed in case it was suspected that participant was beginning to feel anxious or distressed during the intervention. If it was suspected that the client was beginning to feel anxious during the study then they were typically removed from the immediate situation and brought to a quieter office or area where the research student or a staff member would speak to them. Deep breathing and Progressive Muscle Relaxation (PMR) were reviewed by the research student through modelling and prompting to help the client reduce anxiety so that it would inhibit his ability to remain on-task less frequently.

Research Design

The research design used in the study was an AB design. The A condition represents the collection of baseline data with no ongoing behavioural intervention in order to assess the average amount of intervals spent on-task during community jobs, excursions, and group activities. The purpose of collecting baseline data was to provide a comparison for intervals remained on-task before and after the intervention has been implemented. After baseline data had been gathered the B condition was implemented which included implementation of the Premack principle in combination with Social Stories in order to increase on-task behaviour. While using an ABAB design would have been desirable, it was considered not to be suitable due to time constraints. The independent variable in the study was the intervention and the dependent variable was the percentage of intervals where the participant remained on-task.

Dependent Variable: On-task behaviour (Accelerate): On-task was considered to have occurred when the participant remained appropriately engaged in the assigned task. If the task required the participant to remain sitting then the participant was required to remain seated for the task for the duration of the activity, unless they need to acquire materials for the task, or if they need to use the washroom. Additionally, in order to be considered on-task the participant had to have their head up, hands resting in their lap, at their sides, or on the table, if someone was speaking during group activities then eye contact should be made, and the participant had to remain appropriately engaged in the task. Talking to peers and staff during tasks was permitted as long as the client remained focused, and none of the staff member had specified the activity as being silent. If the activity required the participant to either be standing or moving around then the participant was required to remain in the area where the activity is being held unless they need use the washroom or acquire materials in order to be considered on-task. In order to be considered on-task the client had to either be using their hands to complete the task if required, or if not required their hands should remain at their sides. If someone was speaking to the group during an activity or community occupation then eyes were to remain focused on the speaker.
Independent Variable: Intervention Using Premack Principle and Social Stories:
The independent variable in this study was the addition of an intervention utilising the Premack principle and Social Stories. The Premack principle refers to providing access to high likelihood behaviours contingent on the occurrence of low likelihood behaviours. The usage of Social Stories refers to using a short story comprised of both text and pictures to help teach a socially significant behaviour or skill.

Setting/ Apparatus
The study took place at an agency that provides community activities, services, and employment to adults with disabilities, as well as various locations throughout the community as some activities are conducted outside of the agency. The participant is assigned two activities or community occupations per day, although they are only present at the agency four days a week.

The materials required to conduct the study included: reinforcing activities/tangibles, a Social Story, a pen, coloured pencils, board games, an iPad, cards, data sheets, and a stopwatch.

Measures
Both direct and indirect measures were used to collect data on on-task behaviour. Momentary time sampling of the participant’s on-task behaviour was collected during a specified activity each day for a total of 30 minutes per day at 1 minute per interval. The data was recorded in a log maintained by the research student. Due to the fast paced nature of the natural setting, it was decided that only one recording session would be performed per day. The daily number of 1 minute intervals where the participant was observed being on-task was divided by the total number of intervals for the day and then multiplied by 100 to produce a daily percentage. A stopwatch was used to signal when an interval had ended, and to cue the research student to observe the participant. The stopwatch’s audible alarm was removed to reduce the intrusiveness of the intervention. For the duration of each 30 minute recording session the silent alarm on the stopwatch would signal once every 60 seconds for the observer to look at the participant. If the participant met the criterion for on-task behaviour for that interval then an O was recorded for that interval, if they did not meet the criterion then an X was recorded.

Three different functional assessments (two indirect and one direct) were used during the study, the modified Functional Assessment Checklist for Teachers and Staff (FACTS; Anderson & Borgmeir, 2007 adapted March et al.’s, 1999) and Barrera and Graver’s (2009) GB Motivational Screening Tool (GBMST) both of which were completed with the research student’s agency supervisor. An additional FACTS was completed with one of the participant’s direct support staff at the agency. In addition to the indirect assessments, direct observations were conducted through naturalistic observations (ABC). The assessments were conducted with the purpose of identifying potential functions of the off task behaviour, as well as identifying setting events, antecedents, and consequences based on input from the research student’s placement supervisor. In addition to collecting, data the overall effectiveness of the intervention will be determined by calculating the amount of data Point Exceeding the Median (PEM) (Ma, 2006). Overall effectiveness will be interpreted by using Scruggs and Mastropieri’s (1998) method of determining an effective treatment using PEM. Additionally, a line graph will be produced along with phase and trend lines to help compare the intervention between phases, and to perform a visual analysis of the data.

Procedure
The intervention was implemented from November 22, 2016 to December 9, 2016. The intervention was based on the usage of the Premack principle and Social Stories. The study itself took place within the participant’s agency, and at various locations throughout the community.
for excursions and occupations. The number of participants at the agency varies day by day, and throughout the day, with the usual amount of people being around 15-20 people. The agency itself is staffed by a supervisor, three community facilitators, and around nine staff supports. The amount of staffing varied throughout the study. As some of the services provided by the agency take place in the community the number of staff present at the agency at any time varies greatly.

Each morning the research student would review the Social Story with the participant prior to group activities starting. Deep breathing and PMR were reviewed as well prior to the start of specific activities where off-task behaviour and anxiety had been cited as frequent. During the activity, if the participant remained off-task for three straight intervals they were prompted to rejoin the activity and were reminded about the content of Social Story, and was prompted with whether the Social Story needed to be reviewed. After rejoining the activity, the participant was praised for doing so. After the activity had ended, the research student would discuss with the participant how the activity went overall and whether they had earned their reward. If they did then the research student would ask them what they would like to select. If a response took longer than 1 minute then the research student would propose two options, and let the participant decide between them, although they are still allowed to select a third option. After they had selected an activity the research student would leave to gather the materials with them if necessary and move to the quiet room provided at the agency if it was available. If the quiet room was not available then a quiet location was selected as the agency can be fairly busy at times, and the noise level at the agency is typically fairly high. When these situations occurred, the participant was reminded that they can go for a walk instead if they find the noise disturbing. If the participant did not meet the criterion needed to earn a reward then the research student would review how the activity went with the participant, what the participant did well, what they could improve on, what strategies could be developed to help succeed later on.

Social Story
A Social Story was created by the research student to explain the importance of on-task behaviour, why being on-task is personally beneficial to the participant, a reminder that they receive a reinforcer for remaining on-task, and how to handle situations where they feel anxious and/or stressed. The Social Story (Appendix C) was introduced to the participant at the beginning of the study and then reviewed before each activity before fading and generalization was implemented.

Rewards
Potential reinforcers used during the study varied day by day depending on the participant’s selection after each activity. A preference assessment was completed at the beginning of each week as there were concerns of some activities becoming less reinforcing if they were selected too frequently. Rewards used in the study included drawing/ colouring sheets, sketching, sensory toys, board games, card games, and going for walks. Rewards were delivered after an activity if the participant had met the current behavioural objectives for that activity. Rewards were selected after the activity had ended as they required little to no set-up. Additionally, there were concerns that if a reward was selected earlier in the day it may not be available, as another participant or group may be using the selected item or activity.

Behavioural Goals: A total of three behavioural goals were developed for the participant to complete by December 9, 2016. The first goal was to remain on-task for 60.00% of observed intervals for each observed recording period, which was selected based on data collected during baseline. The goal was considered completed once the participant maintained this percentage for three consecutive days. As the client is not present at the agency on Friday’s absences will not
be considered to be a 0.00% for the day. The second behavioural goal was to increase the percentage from 60.00% to 75.00% for the second goal, and to 90.00% for the final goal.

**Fading and Generalization**

At the beginning of the study, the intervention was implemented by the research student. As the participant advanced through behavioural goals the research student was slowly faded out to lessen the amount of staff support needed to properly run the intervention. Reinforcement was to be faded after the third objective had been reached. After the third behavioural goal had been reached the reward was only delivered once per day after the criterion level has been maintained for both daily activities. After the second objective was considered to have been met, the intervention was further faded so that the participant would only receive a reward at the end of the day if he had fully participated in both activities. Prompting was faded as well, only providing prompts after remaining off-task for four intervals during the second objective as opposed to three during the first, and then only after 2 minutes for the third. Also, the procedures were not removed entirely, as they were viewed as not being disruptive to the natural setting of the agency, or requiring a high amount of staff time to implement. Additionally, due to time constraints removing the intervention may not have been ideal, as on-task behaviour may have fallen closer to baseline levels with little time to adjust. While progressively integrating staff into delivering the reward themselves was considered, the process would have been difficult due to time constraints, and concerns brought up by the agency supervisor regarding staff members providing a reward consistently as it has been an issue in the past. However, staff members were asked to monitor the participant for signs of anxiety, as well as providing positive praise for joining activities and reminding the participant about the Social Story and what they need to do in order to earn their reward. Reinforcers were selected that could be delivered by the participant by themselves without further staff assistance or the need for staff presence. During each day, the participant would engage in community occupations, activities, or group activities at the agency. Since the participant’s schedule did not remain consistent throughout the week there was some difficulty in planning generalization. Additionally, while there are set groups for each activity throughout the week, the membership does change as needed throughout the week, which was believed to have potentially contributed to generalization as the participant would be less likely to rely on the presence of certain peers.

**Chapter IV: Results**

**Functional Assessments**

During baseline a total of four functional assessments were conducted. The completed functional assessments consisted of three indirect measures, consisting of two Functional Assessment Checklists for Teachers and Staff (FACTS; Anderson & Borgmeir, 2007 adapted March et al.’s, 1999; Appendix D and E) and one GBMST (Barrera & Graver, 2009; Appendix F). All functional assessments were completed by the research student. The purpose of completing the functional assessments was to determine what setting events, antecedents, and consequences influence the rate of the target behaviour, as well as determining overall function. It was noted that while on-task behaviour was fairly high during some specific activities and community outings, there were also a select few where the rate of on-task behaviour was low on a consistent basis. The activities where the participant was off-task most frequently included bowling and basic cooking. The behaviour appeared to be maintained by escape from non-preferred activities, as well as providing automatic sensory reinforcement.

Naturalistic direct observations were also taken using ABC recording during group activities and community outings that staff cited as having a high occurrence of the problem
behaviour (Appendix G). The results from the observations seem to indicate that conflict with peers and the presence of particular peers may operate as an antecedent for the problem behaviour. The results of the naturalistic observations indicate that the function of the problem behaviour is escape from non-preferred activities, as well as gaining access to automatic reinforcement, which supports the findings of both the FACTS and the GBMST.

**Baseline Data**

During baseline data was collected using momentary time sampling during a specified activity each day for 30 minutes using 1 minute intervals (Appendix H). A total of seven data points were collected over a 10 day period. The intervention was implemented over a 3-week period during which eight data points were collected. Percentage of time spent on-task was calculated by taking the total number of intervals spent on-task and dividing it by the total number of intervals, and the multiplying the result by 100. The purpose of doing so was to help simplify the statistical analysis. Data collected during the study were graphed and displayed in Figure 1 and a visual analysis of the graph was conducted, although median and trend lines are only displayed in Appendix I.

![Figure 1. Daily percentage of the participant’s time spent on-task during group activities, community outings/occupations.](image)

**Analysis**

A visual analysis and statistical analysis of the results was conducted to help gain insight and determine the overall effectiveness of the intervention. Mean, median, stability, standard deviation, and overall Percentage of data points exceeding the Median (PEM) were calculated.
Baseline. Stability is calculated by determining the number of data points that fall within a 25.00% range (12.50% above and 12.50% below) of the median (Tawny & Gast, 1984). During baseline the median was 46.66% which means the stable range was from 40.83% to 52.49%. The upper range of stability was calculated by multiplying the median by 1.125 and the lower range was found by calculating the median by .875. During baseline four of the seven data points fell within the range, which means with only 57.14% of the data points falling within the stable range the data collected during baseline could not be considered stable. Despite the lack of stable data, the intervention was started due to time constraints.

Intervention. The mean during baseline was 49.05% and the mean during intervention was 42.92% which represents a treatment improvement of -12.49%. Treatment improvement was calculated by subtracting 42.92 by 49.05, and then dividing by 49.05 and then multiplying by 100 ((42.92% - 49.05%) /49.05% x100). Additionally, the standard deviation during baseline was 27.06 and during intervention the baseline was 19.98. Standard deviation was calculated using Microsoft Excel.

Trend lines were also provided in the graph displayed in Appendix J to help conduct a visual analysis. There appeared to be a high degree of variability in the data points in both baseline and intervention. In both phases the trend line appeared to indicate a slightly increasing trend. Overall both trend lines seem to indicate similar trends in both baseline and intervention with little difference between the two conditions.

An additional component of the visual analysis involved a calculation of PEM for intervention. PEM was determined by drawing across the median during baseline (49.05%) and determining how many points are above the line since we are looking to increase the rate of a behaviour. After adding the median line to the graph there appears to be three data points that exceed the median. A percentage was gained by dividing the number of data points above the median by the total number of data points in the intervention phase and the multiplying by 100. Based on the results gathered the PEM of the intervention was 37.50%, which according to Scruggs, Mastropieri, Cook, and Escobar (1986) represents an ineffective intervention as the percentage was below 70.00%. All equations used in the statistical analysis can be found in Appendix L. Table 1 displays a summary of the statistical analysis.

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Baseline</th>
<th>Intervention</th>
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<tbody>
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<td>Mean</td>
<td>49.05%</td>
<td>42.92%</td>
</tr>
<tr>
<td>Median</td>
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<td>44.99%</td>
</tr>
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<td>PEM</td>
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</tr>
<tr>
<td>Standard Deviation</td>
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<td>18.82%</td>
</tr>
<tr>
<td>Trend Line (linear)</td>
<td>Slightly Increasing Trend</td>
<td>Slightly Increasing Trend</td>
</tr>
</tbody>
</table>

Chapter V: Conclusions/Discussion

Summary of the Study

The overall objective of this study was to examine whether using the Premack principle and Social Stories to increase on-task behaviour in a 23 year-old adult with an ASD and an ID was effective. The Premack principle is based on using high likelihood behaviours as a contingency to low likelihood behaviours in order to increase the rate of a low likelihood
behaviour (Mazur, 1975). Social Stories use a combination of words and pictures in order to describe an important social situation and its core components (Schneider and Goldstein, 2009). In addition to this, Social Stories also provide examples of how to react in a socially appropriate way as well (Schneider and Goldstein, 2009).

**Interpretation of Results**

Combining the Premack principle and Social Stories in an intervention designed to increase on-task behaviour did not attain any noteworthy results. Overall, there was no notable increase in the percentage of time spent on-task when comparing the mean and median from baseline and intervention. Additionally, PEM was calculated for baseline and intervention, and the results would indicate that the intervention had no effect on the percentage of time spent on-task during group activities and outings. The intervention did not display any success in terms of social validity either. The participant’s group facilitator commented that they had seen little progress over the three weeks the intervention had been implemented which supports the results gathered.

There is available literature that suggests the Premack principle and Social Stories may be effective in increasing on-task behaviour when used individually. Findings by McComas, Goddard, and Hoch (2002) support the usage of the Premack principle in increasing on-task behaviour during academic school work. It should be noted however that the study’s participant was a 9 year-old boy. Schneider and Goldstein (2009) conducted a study where they sought to examine the effectiveness of an intervention using Social Stories to increase on-task behaviour in three children with language impairments. Schneider and Goldstein found that their intervention was successful and that results generalized after the study had finished. However, the participants in the study were children and had language impairments instead of an ASD or an ID.

While the current literature supports the use of the Premack principle and Social Stories individually to increase on-task behaviour, there is little to no available literature that suggests they are effective when used together.

**Limitations**

**Time.** The intervention was only implemented over a three week period, which may have had an effect on the reliability of the results. This makes it difficult to draw concrete conclusions on the results of the intervention, as while the results gathered were not positive, the likelihood that the intervention may have eventually seen positive results cannot be discounted. Additionally, due to agency staffing limitations data could not be collected by agency staff.

**Preference Assessments.** One of the limitations of the study is the choice of preference assessment used in the study. While it would have been preferable to have used a more objective preference assessment, it would have been difficult to gather the required materials as well as space needed. Instead, a questionnaire was used which was believed to have been sufficient for identifying what contingencies could be potential reinforcers, as well as being quick and easy to conduct. Unfortunately, the results from the preference assessments did not match the results of the study. It appeared as though the contingencies used did not have any reinforcing properties, as the participant stated that they had no interest in any of the offered rewards when the reminded of the rewards when reviewing the Social Story.
Recording Method. One of the potential limitations of the study is the choice of momentary time sampling as a recording method for gathering data during baseline and intervention. Momentary time sampling was selected for ease of implementation and was well suited to the environment where recording would take place. Despite this there are some disadvantages to using momentary time sampling. The amount of time spent actively observing the participant during momentary time sampling is limited in comparison to other recording methods. In momentary time sampling data is only collected based on observations made during the last second of an interval. Hypothetically, a behaviour that only occurs during the last second of every interval would appear as occurring at a 100.00% rate. A recording method such as partial and whole interval recording, or duration recording may have been more effective than momentary time sampling, as they rely on observations made over a longer period of time. However, it should be noted that recording methods such as whole interval recording also have a tendency to underestimate behaviour. While momentary time sampling may have suited the environment that observations took place in, future studies could possibly examine using other recording methods.

Multi Level Challenges

Client Level. One of the challenges noted on the client level was the client found being around other participants at the agency to aversive. It was hypothesized that the client found the presence of other participants to be aversive, as he would not participate in otherwise enjoyed activities when other were present (such as playing computer games). This may have had an effect on the intervention as the majority of activities provided at the agency are group based, and therefore options for activities at the agency where peers are not present is somewhat limited. Additionally, this made it difficult to provide reinforcement for engaging in group activities since initial engagement was quite limited. This made it difficult to associate group activities as an opportunity for reinforcement, rather than an aversive stimulus.

Program Level. One of the challenges encountered during the study on the program level related to the results of the preference assessments. During the study a questionnaire based preference assessment was used rather than a direct measure. However, the results from the preference assessment did not match observations made in the study, as it appeared that the contingencies chosen did not have any reinforcing properties. Since the preference assessment was unable to identify powerful reinforcers, there were some difficulties in finding a reinforcer that was motivating enough for the Premack principle to work. While it may have been desirable to have used a more objective measure, given the resources available at the agency and other considerations it would not have been possible to conduct one.

Organizational Level. One of the multilevel challenges observed during the research study on the organizational level is a shortage of staff members. During the study, there were some instances of the agency being short staffed due to a combination of vacation time and absences due to sickness. As a result groups had to be changed at times, ranging from changing the members of the group to changing the activity overall to accommodate more members. This makes data collection difficult at times as the participant may be moved to an activity where recording does not take place, or the research student may be asked to cover a different activity. Also, some activities may become less enjoyable for participants due to a larger number of members participating and potentially removing preferred activities. Additionally, there were some difficulties in providing rewards due to agency policy. During baseline the participant identified the computers in one of the quiet rooms as a preferred activity. While participants at the agency were allowed to use the computers unsupervised at the beginning of baseline, policy
regarding these computers changed as some participants were using the computers inappropriately. Afterwards, the policy stated that all participants cannot use the computers in the quiet room since supervision is not provided in those rooms during free time. However, it should be noted that other computers outside of the quiet room were available to the participant. However, the participant was not as interested in using these computers as they were based in the common room where there are other participants present.

Societal Level. Increasing on-task behaviour in adults with an ASD and an ID can be difficult at times due to challenges at a societal level. Some people may not see the benefits of increasing on-task behaviour and helping adults with ASD and an ID become more involved in the community. Increasing on-task behaviour is cited as a major contributor to personal development, as well as potentially helping build the participant’s social circle. Additionally, there is some stigma towards individuals with either an ASD or an ID. This can make it difficult to make community outings as reinforcing as possible as some individuals may feel resistant towards socializing with an adult with an ASD or an ID, even in a socially appropriate context.

Implications for the Behavioural Psychology Field

While the study did not support the usage of the Premack principle and Social Stories, there were some beneficial findings for the behavioural psychology field. The current literature supports the use of the Premack principle and Social Stories with the target population when used individually. However, there are a limited amount of studies examining its usage together so further research needs to be conducted before it can be concluded that it is ineffective at increasing on-task behaviour. This study can serve as a starting point for future research investigating the use of the Premack principle and Social Stories together in an intervention, despite the results indicating that the intervention was ineffective. Despite the lack of positive results found during the study, the groundwork for future studies seeking to investigate the efficacy of interventions using the Premack principle and Social Stories is laid out.

Recommendations for Future Research

Future research should include a longer baseline as well as intervention phase. Additionally, another recording method may be more effective, for example using whole interval recording may be more accurate than momentary time sampling as momentary time sampling is fairly inaccurate, although whole interval recording often underestimates the rate of a behaviour. Also, using a different preference assessment should be examined as it appeared that the contingencies chosen based on the results of the preference assessment were not reinforcing enough for the participant, which makes it difficult to use the Premack principle. Further studies could also include more participants, a control group, baseline reversal, different age groups, different populations, and future studies should seek to collect IOA as well.
References


Appendices

Appendix A

Consent Form

**Project title:** Evaluating the Effect of Using the Premack Principle and Social Stories on On-Task Behaviour for a 23 year-old male with an Intellectual Disability and an Autism Spectrum Disorder

**Principal Investigator:** Jonathan Hanson
**Agency Supervisor:** Edward Ocean
**College Supervisor:** Michelle Holloway
**Name of Institution:** St. Lawrence College
**Name of Partnering Institution/ Agency:** Community Living Kingston-CO2 Program

**Dear Parent/ Guardian:**

**Invitation**

Your son is being invited to take part in a research study being conducted at Community Living Kingston’s CO2 program. I am a 4th year student at St. Lawrence College in the Honours Bachelors in Behavioural Psychology Program. As of now I am currently on placement at the CO2 program. During my placement I am to develop and complete a research project, otherwise known as an applied thesis. If possible, I would like to ask for your son’s participation and assistance in the project. The information detailed in the form will help you better understand my project, what it is trying to accomplish, and the potential benefits and risks to your son. It is requested that you read the following information thoroughly and ask any and all questions you may have before you decide if you want your son to take part. We will also be seeking assent from your son as the study directly pertains to him, and he has the right to decide whether he participates or not. In addition to the consent form we have also provided an assent form for you and your son to review and sign if he is still interested in participating.

**Why is this Study Being Done?**

This study is being done to examine the overall effectiveness of using an applied behavioural analysis principle referred to as the Premack principle. The Premack principle involves making access to behaviours that are likely to occur dependent on the occurrence of behaviours that usually do not occur. Simply put the Premack principle focuses on using high likelihood behaviours as a way to encourage the occurrence of positive behaviours that do not occur frequently. Essentially, it focuses on using what we find enjoyable as motivation for completing tasks or activities we do not enjoy as much. An additional element to the study involves the usage of Social Stories. Social Stories are short stories that combine both words and pictures to help describe the importance of a social significant behaviour or skill. The goal of the research study is to examine whether these two used together in an intervention can help encourage more consistent participation in group activities and outings.

**What will you need if you do take part?**

The only action needed to take part in the research study would be for your son to complete a preference assessment. Preference assessments are conducted with the goal of identifying potential activities or objects that will help motivate your son to participate more consistently in group activities. The intervention would take place through your son’s day and at both the agency and in the community. The study focuses on evaluating whether providing rewards contingent on being engaged in group activities will increase overall levels of engagement in
Evaluating the Premack principle and Social Stories

As part of the study your son will be provided with a reward contingent on him remaining engaged in group activities for longer periods of time. While your son will be actively encouraged to participate in group activities he will never be forced to stay and participation in any activities is entirely voluntary. However, we will be encouraging leaving the activity in a more socially appropriate manner. Your son will be informed that he may leave the activity at any time as long as he informs a staff member first, and will be prompted to do so. The escape mand will be included within the Social Story. The prospective start date for the study would be October 31, 2016 with an end date of December 9, 2016. The study would take place during each group activity your son participates in at the agency throughout the week.

What are the potential benefits of taking part?
Participation in the research study may be potentially beneficial for your son as it may increase engagement in group activities, community excursions, and community jobs. Increasing engagement in these activities is cited as being important for personal development and building the skills necessary for fulfilling community involvement.

What are the potential benefits of this research study to others?
Results from this research may help further understanding in the area and help enhance practical applications of the techniques, while also encouraging further study into the subject including research into its application with different populations, or in different environments.

What are the potential disadvantages or risks of taking part? What happens if something goes wrong?
While the overall risks of taking part in the study are minimal, there are still some risks that should be noted. Some of the potential risks from participation include anxiety from being around large groups for large amounts of time, anxiety from being introduced to new situations, stress from task demands and there is the potential for peer conflict during group activities. While I have no reason to suspect anything will go wrong, it is important that you do contact me so that I can address any concerns or problems that may arise it to the best of my abilities, and I will also be able to consult the staff at the agency as well as my placement supervisor for the duration of the study. The quality of services provided for your son will in no way be altered regardless of whether they decide to participate or not.

What happens if something goes wrong?
These potential risks will be addressed by having the research student and staff monitor group activities for potential conflict, and to ensure they do not escalate. If they do escalate your son will be removed from the situation. The research student will also monitor the participant for signs of anxiety, or major changes in behaviour to make sure the intervention is not having an adverse affect on the participant. If such an effect is observed then your son will be moved to a quiet room or office and the research student will make a request to their field supervisor for the opportunity to speak to the participant along with the facilitator to make sure that they are comfortable with how the research study and intervention is proceeding. If anxiety does become an issue then teaching progressive muscle relaxation techniques may be an option for reducing anxiety. If your son cites any difficulties or frustrations with the research study or intervention it is important you contact either me, or my placement supervisor as soon as possible.

Will my son’s information collected in this project be kept private?
Every attempt is made to ensure that personal information gathered during the duration of a research study is properly protected. The only circumstances where confidentiality would not be maintained is if it was required by law, or the release of such information is necessary to prevent harm to your son or others. All documentation containing personal information must be kept in a
locked cabinet, and if it is stored electronically the computer must be password encrypted along with the file itself. The consent form will be stored securely at St. Lawrence College for 10 years. After the study has finished the research data will be stored securely for 7 years, after which the data will be destroyed. Any presentations, reports, and publications will not include any information that could potentially identify your son.

**Do you have to take part?**
Participation in the research study is entirely voluntary. It is entirely up to you and your son whether you decide to take part. The services provided for your son at the agency will in no way be affected should you choose to decline. If you decide that you want your son to participate in the research study you will be asked to sign this consent form. Providing consent does not mean you are obligated to participate in the study until its completion. You are free to withdraw your son from the study at anytime and no reason needs to be provided. If you do decide to withdraw at any point services at the agency will not be affected, and any data collected during the study will be disposed of. At any point during the research study you may request that any data collected not be used, again with no consequence. If you or your son decides to withdraw from the research study at any point then you may contact either myself or my college supervisor.

**Contact Information**
This research project has received ethical clearance by the Research Ethics Committee for Behavioural Psychology (REC-P) under the authority of the St. Lawrence College Research Ethics Board (SLC-REB). The project was developed under the supervision of Michelle Holloway my supervisor at St. Lawrence College. I appreciate your cooperation and if you have any additional questions feel free to ask me at JHanson15@student.sl.on.ca. You can also contact my college supervisor at MHolloway@sl.on.ca. If you have any concerns about the way this research is being conducted, or about your son’s rights as participant you may contact the SLC-REB Chair at reb@sl.on.ca

**Consent**
If you agree to take part in this research study, please fill out the following form and return it to me as soon as possible. A copy will provided to you so that you may store it in your own records. An additional copy of your consent form will be retained at the agency and in a secure location at St. Lawrence College.
By selecting the option below that grants consents and then signing this form I agree that:

[ ] The study has been explained to me.
[ ] All my questions were answered
[ ] Any potential benefits or disadvantages from participation were explained
[ ] I know that I may withdraw my son at anytime
[ ] I am free to ask questions at any point during the study
[ ] I have been told my information along with my son’s will be kept confidential
[ ] I understand that no information that would identify my son will be release or printed without asking me first
[ ] I understand I will receive a copy of this form for personal use
[ ] I understand that if I choose to provide consent my son will only take part in the study if he also provides verbal and written consent for participation

Please Select One:
I hereby consent for my son to participate in this research study

I do not give my consent for my son to participate in this research study
Hello, my name is Jonathan Hanson and I am a student at St. Lawrence College. I am doing a research project and I would like your help with it. What my project is trying to find out is whether providing preferred activities to people after they join group activities for long amounts of time helps them participate more. The only thing required from you during the study is to complete a quick quiz that helps us figure out what you like so that we can use it to motivate you. You never have to stay in an activity if you don’t feel comfortable. Just let a staff member or myself know and you can leave with no trouble at all. The hope is that providing an activity you like for staying in group activities will help you get involved more frequently as well as help you meet new people.

Right now we’re aiming for the study to begin on October 31, 2016 and for it to end on December 9, 2016. If you ever feel like the study is stressing you out let myself or your parent know and we will do our best to solve it. It is up to you whether you join the study or not. If you decide that you don’t want to be in the study anymore after it has started let me or your parent know and you’ll be allowed to leave with no problems. If you have any questions just ask, and if not just sign if you want to start!

I ___________________________________________ give my consent to participate in the study.
Appendix C
Social Story

Sometimes during the day there might be activities going on that day I don't like as much as others.

While I can't be forced to like these activities it is important that I give them a try anyways!

Besides if I keep trying new activities I might find some new ones I like and also get to know people in my groups better!

Participating involves completing my tasks if it's a job, or if it's a group activity I should try to stay with the group and participate in the activity and try joining in on conversations when I can.

If I'm having an off day or if I am feeling nervous during an activity I can always ask a staff member for help.

If I do want to leave an activity though I need to let a staff member know, and if I'm not at the agency I need to stay near them for safety.

Also, when if I'm participating in groups a lot then there's a good chance I'll get to do a special activity!
Appendix D
Modified Facts for Teachers and Staff
Efficient Functional Behavior Assessment: The Functional Assessment Checklist for Teachers and Staff: Part A

Student/ Grade: James Gordon  Date: Sept.15, 2016
Interviewer: Jonathan Hanson  Respondent(s): Carl Freud

Student Profile: Please identify at least three strengths or contributions the student brings to school. Has a sense of humour, is detail orientated, and has shown that they are capable of direct communication.

Problem Behavior(s): Identify problem behaviors

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<th>Tardy</th>
<th>Fight/physical Aggression</th>
<th>X Disruptive</th>
<th>Theft</th>
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<tbody>
<tr>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>Unresponsive</td>
<td>Inappropriate Language</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>Withdrawn</td>
<td>Verbal Harassment</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Verbally Inappropriate</td>
<td>Self-injury</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Describe problem behavior: Not at assigned activity, not participating during activity pacing outside/away from group, hand flapping, jumping/hopping, talks to self, head down on table at times if activity is seated.

Identifying Routines: Where, When and With Whom Problem Behaviors are Most Likely.

<table>
<thead>
<tr>
<th>Schedule (Times)</th>
<th>Activity</th>
<th>Likelihood of Problem Behavior</th>
<th>Specific Problem Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday 9:45am-11:30am</td>
<td>Food Bank</td>
<td>Low 1 2 3 4 5X 6</td>
<td>High All</td>
</tr>
<tr>
<td>Tuesday 9:45am-11:30am</td>
<td>Disney Group</td>
<td>Low 1 2 3X 4 5 6</td>
<td>High All</td>
</tr>
<tr>
<td>Tuesday 1:00pm-2:30pm</td>
<td>Bowling</td>
<td>1 2 3 4 5 6X</td>
<td>All</td>
</tr>
<tr>
<td>Wed. 1:00pm-2:30pm</td>
<td>Basic Cooking</td>
<td>1 2 3 4 5X 6</td>
<td>All</td>
</tr>
<tr>
<td>Thurs. 1:00pm-2:30pm</td>
<td>Food Bank</td>
<td>1 2 3 4 5X 6</td>
<td>All</td>
</tr>
</tbody>
</table>

List the Routines in order of Priority for Behavior Support: Select routines with ratings of 5 or 6. Only combine routines when there is significant (a) similarity of activities (conditions) and (b) similarity of problem behavior(s).
Complete the FACTS-Part B for each of the prioritized routine(s) identified.

<table>
<thead>
<tr>
<th></th>
<th>Routines/Activities/Context</th>
<th>Problem Behavior(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routine # 1</td>
<td>Basic Cooking</td>
<td>All</td>
</tr>
<tr>
<td>Routine # 2</td>
<td>Bowling</td>
<td>All</td>
</tr>
<tr>
<td>Routine # 3</td>
<td>Food Bank</td>
<td>All</td>
</tr>
</tbody>
</table>

Step 5
Efficient Functional Behavior Assessment: The Functional Assessment Checklist for Teachers and Staff: Part B

Routine/Activities/Context: Which routine (only one) from the FACTS-Part A is assessed?

<table>
<thead>
<tr>
<th>Routine/Activities/Context</th>
<th>Problem Behavior(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Cooking</td>
<td>All</td>
</tr>
</tbody>
</table>

Step 7

Provide more detail about the problem behavior(s):

What does the problem behavior(s) look like?
Leaves the room and paces back and forth outside while flapping/moving hands, and engaging in quiet self-talk. If the activity is seated he may lay his head on the table and not participate.

How often does the problem behavior(s) occur?
About half the time

How long does the problem behavior(s) last when it does occur?
10 minutes-30 minutes

What is the intensity/level of danger of the problem behavior(s)?
Low danger, High Intensity

Step 8

ANTECEDENTS: TRIGGERS AND SETTING EVENTS
What are the events that predict when the problem behavior(s) will occur? (Predictors).
Identify the trigger generally
1. In this routine, what happens most often just before problem behavior? Task
2. If you put this trigger in place 10 times, how often would it result in problem behavior? 7/10
3. Does problem behavior ever happen when (opposite of trigger or trigger absent)? Yes

<table>
<thead>
<tr>
<th>Triggers</th>
<th>Reprimands</th>
<th>Transitions</th>
<th>Structured/Non-academic</th>
<th>Isolated, no-one around</th>
</tr>
</thead>
<tbody>
<tr>
<td>XTasks</td>
<td>___</td>
<td>___</td>
<td>___</td>
<td>___</td>
</tr>
<tr>
<td>___Unstructured time</td>
<td>___</td>
<td>___</td>
<td>___</td>
<td>___</td>
</tr>
</tbody>
</table>

Identify specific features of the trigger
If tasks (e.g., group work, independent work, small-group instruction, lecture)…

Describe the task in detail (e.g., duration, ease of task for student), what features of it likely are aversive to the student and why is this hypothesized?

Task involves prepping one specific part of a meal and then assisting with cooking and clean up. Task my last from 30min-1hour. Activity non-preferred, loud noises, social conflict with peers, specific peers in area.

If unstructured time…

Describe the setting, activities, and who is around

If reprimand…

Describe who delivers the reprimand, what is said, and what the purpose of the correction is
### If structured, nonacademic activities

Describe the context, who is around, what activities are going on, what behaviors are expected?

Group of people typically varying from 2-4 people depending on activity. Activity either takes place at the agency, food bank, or bowling alley. At times peers whom James finds loud, or has had social conflict with.

### If transitions

Describe the activity that is being terminated and the one that is being transitioned to.
Identify whether any of the activities are highly preferred or non-preferred, which are structured versus non-structured.

### If isolated

Where did the behavior occur? What features of the environment might be relevant?

### Are setting events relevant?

1. Is there something that, when present makes it more likely that the trigger identified above sets off the behavior?
2. If yes, is this event present sometimes and absent others? Does the behavior occur only when the event is present?

<table>
<thead>
<tr>
<th>Setting Events</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>X Correction/failure in previous class</td>
<td>Conflict at home</td>
<td>Hunger</td>
</tr>
<tr>
<td>X Peer conflict</td>
<td>X Correction from adult earlier in day</td>
<td>X Lack of sleep</td>
</tr>
<tr>
<td>X Change in routine</td>
<td>__Homework/assignment not completed</td>
<td>__Medication (missed or taken)</td>
</tr>
</tbody>
</table>

### CONSEQUENCES

What consequences appear most likely to maintain the problem behavior(s)?

#### Identify the consequence generally

In the routine identified, when the trigger occurs and problem behavior happens, what occurs next?

1. What do you do? What do other students do? What activities happen or stop happening?
2. Narrow it down: Take each consequence identified above:
   a. Would the behavior still happen if that consequence couldn’t occur (e.g., if peer attention, no other students were around?; if your attention, would the behavior still occur if you were not around? If escape, would the behavior still occur if the task was easier?)
   b. Of the last 10 times you saw the behavior, how often did this consequence occur?

<table>
<thead>
<tr>
<th>Things that are Obtained</th>
<th>Things Avoided or Escaped From</th>
</tr>
</thead>
<tbody>
<tr>
<td>X adult attention</td>
<td>Other:</td>
</tr>
</tbody>
</table>
| X peer attention | __hard tasks
| ____activity | Other: Loud noises, crowds/ large amounts of people |
| ____money/things | X reprimands |
| | X peer negatives |
| | X physical effort |
| | X adult attention |

### Identify specific features of the Consequence

<table>
<thead>
<tr>
<th>Identify specific features of the consequence</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>If adult or peer attention is obtained or avoided.</td>
<td>Define who delivers attention, what they say, and how long the attention typically lasts. What does the student do following this</td>
</tr>
<tr>
<td></td>
<td>Staff, come join activity, 1 minute, pacing and hand flapping with some self-talk, back and forth at first but may be limited,</td>
</tr>
</tbody>
</table>
Evaluating the Premack principle and Social Stories

Step 11

| If an activity or request follows or is removed | Describe the specific activity including who else is present, what the activity consists of, and how long it lasts. | no. Typically attention at first, but then none after initial conversation |
| If tangible items are obtained or removed | Describe the specific item(s) obtained including who else is present and how long the student has access to the item. |
| If sensory stimulation possibly occurs or is removed | Describe the context, who is around, what activities are going on, what behaviors are expected? | Self-stimulation takes place after client has either left the immediate activity area or has gone outside and will typically only stay inside agency to self-stim if non-preferred peer is outside, staff and peers if still inside, cooking activity, or informal games if waiting for food to cook. Self-stimulation involves pacing back and forth, hand movement/ flapping, self-talk, hopping/ jumping up and down. |

SUMMARY OF BEHAVIOR

Identify the summary that will be used to build a plan of behavior support.

| Setting Events | Trigger | Behavior | Consequence |
| Correction earlier in day, peer conflict, change in routine, correction from adult earlier, lack of sleep | Tasks, structured non-academic activities. | Off-task | Adult attention, peer attention, avoid hard tasks, avoid reprimands, peer negatives, physical effort, adult attention, loud noises, large groups of people |

How confident are you that the Summary of Behavior is accurate?

| Not very confident | Very Confident |
| 1 | 6 |
| 2 | 5X |
| 3 | 4 |

Appendix E
Modified Facts for Teachers and Staff
Efficient Functional Behavior Assessment: The Functional Assessment Checklist for Teachers and Staff: Part A

Step 1
Student/ Grade: James Gordon  Date: November 9, 2016
Interviewer: Jonathan Hanson  Respondent(s): Janet Martin

Step 2
Student Profile: Please identify at least three strengths or contributions the student brings to school.
Strong communication skills, flexible and receptive to instructions from staff, is fairly happy and demonstrates good manners.

Problem Behavior(s): Identify problem behaviors

Step 3

<table>
<thead>
<tr>
<th>X Tardy</th>
<th>Fight/physical Aggression</th>
<th>Disruptive</th>
<th>Theft</th>
</tr>
</thead>
<tbody>
<tr>
<td>X Withdrawn</td>
<td>Inappropriate Language</td>
<td>Insubordination</td>
<td>Vandalism</td>
</tr>
<tr>
<td>Verbally Inappropriate</td>
<td></td>
<td>Self-injury</td>
<td></td>
</tr>
</tbody>
</table>

Describe problem behavior: Leaves group before activity is finished and will leave to pace and rub hands while not engaging in the activity.

Step 4
Identifying Routines: Where, When and With Whom Problem Behaviors are Most Likely.

<table>
<thead>
<tr>
<th>Schedule (Times)</th>
<th>Activity</th>
<th>Likelihood of Problem Behavior</th>
<th>Specific Problem Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wednesday</td>
<td>Basic Cooking</td>
<td>Low 1 2 3 4 5X 6 High</td>
<td>Withdrawn, task refusal, tardy</td>
</tr>
<tr>
<td>1:00pm-2:30pm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
</tbody>
</table>

Step 5
List the Routines in order of Priority for Behavior Support: Select routines with ratings of 5 or 6. Only combine routines when there is significant (a) similarity of activities (conditions) and (b) similarity of problem behavior(s). Complete the FACTS-Part B for each of the prioritized routine(s) identified.

<table>
<thead>
<tr>
<th>Routines/Activities/Context</th>
<th>Problem Behavior(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routine # 1 Basic Cooking</td>
<td>Withdrawn, task refusal</td>
</tr>
<tr>
<td>Routine # 2</td>
<td></td>
</tr>
<tr>
<td>Routine # 3</td>
<td></td>
</tr>
</tbody>
</table>

Efficient Functional Behavior Assessment: The Functional Assessment Checklist for Teachers and Staff: Part B

Step 6

Routine/Activities/Context: Which routine (only one) from the FACTS-Part A is assessed?

<table>
<thead>
<tr>
<th>Routine/Activities/Context</th>
<th>Problem Behavior(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Cooking</td>
<td>Withdrawn, task refusal</td>
</tr>
</tbody>
</table>

Step 7

Provide more detail about the problem behavior(s):

What does the problem behavior(s) look like?
Telling staff that they are not interested in the activity (meal usually not preferable), Pacing/ hand flapping, self-talk.

How often does the problem behavior(s) occur?
Once per activity/ week

How long does the problem behavior(s) last when it does occur?
Ranges from a couple minutes at a time to the duration of the activity

What is the intensity/level of danger of the problem behavior(s)?
There is no intensity or danger level

Step 8

ANTECEDENTS: TRIGGERS AND SETTING EVENTS

What are the events that predict when the problem behavior(s) will occur? (Predictors).

Identify the trigger generally

4. In this routine, what happens most often just before problem behavior?
5. If you put this trigger in place 10 times, how often would it result in problem behavior?
6. Does problem behavior ever happen when (opposite of trigger or trigger absent)?

<table>
<thead>
<tr>
<th>Triggers</th>
</tr>
</thead>
<tbody>
<tr>
<td>X Tasks Reprimands Transitions</td>
</tr>
<tr>
<td>X Unstructured time XStructured/non-academic activities X Isolated, no-one around</td>
</tr>
</tbody>
</table>

Identify specific features of the trigger

If tasks (e.g., group work, independent work, small-group instruction, lecture)…

Describe the task in detail (e.g., duration, ease of task for student), what features of it likely are aversive to the student and why is this hypothesized?

Typically occurs at the beginning of group, after the menu is announced, typically a result of not liking the menu, lack of interest in task
<table>
<thead>
<tr>
<th>If unstructured time…</th>
<th>Describe the setting, activities, and who is around</th>
<th>Unstructured time occurs while waiting for meal to finish cooking and usually the rest of the participants are around, and they will wait and play card/board games and socialize.</th>
</tr>
</thead>
<tbody>
<tr>
<td>If reprimand…</td>
<td>Describe who delivers the reprimand, what is said, and what the purpose of the correction is</td>
<td></td>
</tr>
<tr>
<td>If structured, nonacademic activities</td>
<td>Describe the context, who is around, what activities are going on, what behaviors are expected?</td>
<td>Setting is in the kitchen, staff and other group members, preparing for basic cooking meal/cooking, both off-task and pacing can occur during structured activities</td>
</tr>
<tr>
<td>If transitions</td>
<td>Describe the activity that is being terminated and the one that is being transitioned to. Identify whether any of the activities are highly preferred or non-preferred, which are structured versus non-structured.</td>
<td></td>
</tr>
<tr>
<td>If isolated</td>
<td>Where did the behavior occur? What features of the environment might be relevant?</td>
<td>Outside the building, likes the fact that it is quiet outside, maybe because he can be alone (can still be seen through window)</td>
</tr>
</tbody>
</table>
Evaluating the Premack principle and Social Stories

Are setting events relevant?
3. Is there something that, when present makes it more likely that the trigger identified above sets off the behavior?
4. If yes, is this event present sometimes and absent others? Does the behavior occur only when the event is present?

<table>
<thead>
<tr>
<th>Setting Events</th>
<th>Conflict at home</th>
<th>___Hunger</th>
</tr>
</thead>
<tbody>
<tr>
<td>___Peer conflict</td>
<td>X Correction from adult earlier in day</td>
<td>___Lack of sleep</td>
</tr>
<tr>
<td>X Change in routine</td>
<td>X Homework/assignment not completed</td>
<td>__Medication (missed or taken)</td>
</tr>
</tbody>
</table>

CONSEQUENCES
What consequences appear most likely to maintain the problem behavior(s)?

Identify the consequence generally
In the routine identified, when the trigger occurs and problem behavior happens, what occurs next?
3. What do you do? What do other students do? What activities happen or stop happening?
4. Narrow it down: Take each consequence identified above:
   a. Would the behavior still happen if that consequence couldn’t occur (e.g., if peer attention, no other students were around?; if your attention, would the behavior still occur if you were not around? If escape, would the behavior still occur if the task was easier?)
   b. Of the last 10 times you saw the behavior, how often did this consequence occur?

<table>
<thead>
<tr>
<th>Things that are Obtained</th>
<th>Things Avoided or Escaped From</th>
</tr>
</thead>
<tbody>
<tr>
<td>X adult attention</td>
<td>Other: ____________________________</td>
</tr>
<tr>
<td>peer attention</td>
<td>X hard tasks Other: ____________________________</td>
</tr>
<tr>
<td>X activity</td>
<td>X reprimands ____________________________</td>
</tr>
<tr>
<td>money/things</td>
<td>___ peer negatives ____________________________</td>
</tr>
<tr>
<td></td>
<td>X physical effort ____________________________</td>
</tr>
<tr>
<td></td>
<td>X adult attention ____________________________</td>
</tr>
</tbody>
</table>

Identify specific features of the Consequence

Identify specific features of the consequence

If adult or peer attention is obtained or avoided.
Define who delivers attention, what they say, and how long the attention typically lasts. What does the student do following this attention—is their a back-and-forth that occurs? Does behavioral escalation occur?

If an activity or request follows or is removed
Describe the specific activity including who else is present, what the activity consists of, and how long it lasts.

Staff, identifies menu and tries to find compromise with participant, under one minute. Will respond at first (ie will say I don’t like that, answer questions), will begin to become increasingly unresponsive

Pacing, alone usually, pacing/ hand twirling, typically for the remainder of the task (ie when cooking group is done)
Evaluating the Premack principle and Social Stories

If tangible items are obtained or removed
Describe the specific item(s) obtained including who else is present and how long the student has access to the item.

If sensory stimulation possibly occurs or is removed
Describe the context, who is around, what activities are going on, what behaviors are expected?

Will leave activity to pace by himself, sometimes he stays in the agency, sometimes he does not, expected behaviours are off-task and pacing.

SUMMARY OF BEHAVIOR
Identify the summary that will be used to build a plan of behavior support.

Setting Events
- Correction, change in routine, task not completed

Trigger
- Tasks, unstructured time, structured time, isolated no one around

Behaviour
- Tardy, withdrawn, work not done

Consequence
- Adult attention, access to automatic reinforcement

How confident are you that the **Summary of Behavior** is accurate?

<table>
<thead>
<tr>
<th>Not very confident</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5X</th>
<th>Very Confident</th>
<th>6</th>
</tr>
</thead>
</table>

Appendix F

GB Motivational Screening Tool

GB Motivation Screening Tool

Client: James Gordon  Date: Sept. 14/2016  Interviewer: Carl Freud

Informants’ Relationship to the Client:  Current or Past Diagnoses:
Agency Facilitator  ASD, ID

Behaviour Description (please define one only):
James is not with the group or activity and either has his head on the table, or is pacing back and forth while moving/ flapping hands, or hopping/ jumping, and sometimes engages in self-talk.

How frequently does the behaviour occur? (circle the answer that best describes your observations)

<table>
<thead>
<tr>
<th>More than once a day</th>
<th>Daily</th>
<th>Twice a week</th>
<th>Weekly</th>
<th>Twice a month</th>
<th>Monthly</th>
<th>Less than once a month</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

Setting Description:
Location varies from the client’s agency to various community outings such as going swimming, going bowling, working at the food bank, etc.

Behavioural Intervention(s) being Implemented (if applicable):
None

Instructions: The GB Motivation Screening Tool is a questionnaire designed to identify those situations which influence the occurrence of behaviour problems. To complete this questionnaire select one behaviour that is of particular interest / concern. Once you have very specifically identified the behaviour, read each question carefully and circle the answer that best describes your observations in regard to this behaviour.

**QUESTIONS**

1. Does the behaviour seem to occur when you stop paying attention to the person in order to attend to another person or task?

<table>
<thead>
<tr>
<th>Never</th>
<th>Almost</th>
<th>Seldom</th>
<th>Half the Time</th>
<th>Usually</th>
<th>Almost</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1x</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

2. When the behaviour occurs, you usually try to distract or calm the person with preferred activities (leisure items, snacks, toys, etc.)

   If yes, please specify the item:_____________

<table>
<thead>
<tr>
<th>Never</th>
<th>Almost</th>
<th>Seldom</th>
<th>Half the Time</th>
<th>Usually</th>
<th>Almost</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2x</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

3. Does the behaviour occur following a request to perform a task?

<table>
<thead>
<tr>
<th>Never</th>
<th>Almost</th>
<th>Seldom</th>
<th>Half the Time</th>
<th>Usually</th>
<th>Almost</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4X</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>
4. The person engages in repetitive "self stimulatory behaviours" such as body rocking, hand or finger waving, object twirling, etc. | Never | Almost | Seldom | Half the Time | Usually | Almost | Always |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5X</td>
<td>6</td>
</tr>
</tbody>
</table>

5. The behaviour occurs more frequently when the person is in physical or psychological discomfort. If yes, please specify: __________ | Never | Almost | Seldom | Half the Time | Usually | Almost | Always |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0X</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

6. The behaviour occurs in the presence of others. | Never | Almost | Seldom | Half the Time | Usually | Almost | Always |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5X</td>
<td>6</td>
</tr>
</tbody>
</table>

7. Does the behaviour occur if the person does not have his or her favorite items or objects? If yes, please specify item: __________ | Never | Almost | Seldom | Half the Time | Usually | Almost | Always |
<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

8. Engages in the behaviour to try to get people to leave him / her alone. (S)he wants to escape the person or the demands placed on them. | Never | Almost | Seldom | Half the Time | Usually | Almost | Always |
<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5X</td>
<td>6</td>
</tr>
</tbody>
</table>

9. The behaviour occurs regardless of what is going on in his or her immediate area, and independently of his or her surroundings. | Never | Almost | Seldom | Half the Time | Usually | Almost | Always |
<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5X</td>
<td>6</td>
</tr>
</tbody>
</table>

10. When the person has medical or psychological problems and these are treated, does the behaviour problem decrease? | Never | Almost | Seldom | Half the Time | Usually | Almost | Always |
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0X</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

11. Engages in the behaviour because (s)he enjoys being reprimanded or receiving negative attention. | Never | Almost | Seldom | Half the Time | Usually | Almost | Always |
<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1X</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

12. Engages in the behaviour to get access to items such as preferred toys, food, items, or drink. If yes, please specify item: Computer | Never | Almost | Seldom | Half the Time | Usually | Almost | Always |
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5X</td>
<td>6</td>
</tr>
</tbody>
</table>

13. Engages in the behaviour when he/she does not want to do something. | Never | Almost | Seldom | Half the Time | Usually | Almost | Always |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5X</td>
<td>6</td>
</tr>
</tbody>
</table>

14. Would the behaviour occur repeatedly in the same way, for long periods of time, even if no one else was around? | Never | Almost | Seldom | Half the Time | Usually | Almost | Always |
<table>
<thead>
<tr>
<th></th>
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<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6X</td>
</tr>
</tbody>
</table>
15. The person has a history of recurrent physical or psychological problems that increase this behaviour.

16. Engages in the behaviour to try to get a positive or negative reaction from you or a peer.

17. Engages in the behaviour when you or a peer have something that (s)he wants.

18. Engages in the behaviour when (s)he does not want to do or stop doing something.

19. Engages in the behaviour because there is nothing else to do. The person is bored with or under-stimulated by his or her surroundings.

20. The behaviour occurs in cycles. During a "high cycle," the behaviour occurs frequently; during a "low cycle," the behaviour rarely occurs. These cycles are caused by physical or psychological discomfort. If true, please specify the source of the discomfort: __________

21. Engages in the behaviour to draw attention to him or herself, or away from others.

22. Engages in the behaviour when you or a peer takes something away that (s)he wants.

23. The behaviour occurs in the presence of others.

24. Does it appear to you that the person performs this behaviour because it is compelling or satisfying?
25. Engages in the behaviour because (s)he is in physical or psychological pain.

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Almost</th>
<th>Seldom</th>
<th>Half the Time</th>
<th>Usually</th>
<th>Almost</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>0X</td>
<td></td>
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<td></td>
<td></td>
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<td>6</td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

**SCORING SUMMARY:**

<table>
<thead>
<tr>
<th></th>
<th>Attention</th>
<th>Tangible</th>
<th>Escape</th>
<th>Sensory</th>
<th>Discomfort*</th>
</tr>
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<tbody>
<tr>
<td>1.1</td>
<td>1</td>
<td>2</td>
<td>3.4</td>
<td>4.5</td>
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<td>6.4</td>
<td></td>
<td>7.3</td>
<td>8.5</td>
<td>9.5</td>
<td>10.0</td>
</tr>
<tr>
<td>11.1</td>
<td></td>
<td>12.3</td>
<td>13.5</td>
<td>14.6</td>
<td>15.0</td>
</tr>
<tr>
<td>16.4</td>
<td></td>
<td>17.2</td>
<td>18.5</td>
<td>19.5</td>
<td>20.1</td>
</tr>
<tr>
<td>21.3</td>
<td></td>
<td>22.4</td>
<td>23.4</td>
<td>24.6</td>
<td>25.0</td>
</tr>
</tbody>
</table>

**Total Score:** 13 14 23 27 1

**Mean Score:** 2.6 2.8 4.6 5.4 .2

**Relative Ranking:** 4 3 2 1 5

*Note: Discomfort refers to physical and/or psychological discomfort.

### Appendix G

**Naturalistic Observation of James**

**Date:** September 14, 2016  
**Observer:** Jonathan Hanson  
**Participant:** James Gordon  
**Time:** 10:00 a.m.-10:20 a.m.

<table>
<thead>
<tr>
<th>Antecedent</th>
<th>Behaviour</th>
<th>Consequence</th>
</tr>
</thead>
</table>
| 10:02 a.m.- 10:20 a.m.  
Asked by staff member to help gather ingredients for the baking activity | James states that the task is too hard and that they can’t do it | Staff member asks why the task is hard and what they need help with |
|  | James states again that they can’t do it and leaves the building and paces outside whilst handflapping and engaging in self-talk | James continues to pace and engage in self-stimulation outside |

**Date:** September 15, 2016  
**Observer:** Jonathan Hanson  
**Participant:** James Gordon  
**Time:** 1:00 p.m.-1:20 p.m.

<table>
<thead>
<tr>
<th>Antecedent</th>
<th>Behaviour</th>
<th>Consequence</th>
</tr>
</thead>
</table>
| 1:07 p.m.- 1:20 p.m.  
James is prompted that it is his turn to go bowling. | James tells the placement student that he doesn’t like 5-pin bowling and that he doesn’t want to bother. | Placement student tells James that while they know it isn’t their preference they may have fun anyways. |
| Participant says that they would rather just not bother with bowling overall and stands off to side of the group and paces while also handflapping. | Client is left alone to pace and self stimulate while the rest of the excursion group bowls. |
**Date:** September 19, 2016  
**Participant:** James Gordon  
**Target Behaviour:** Off-Task

<table>
<thead>
<tr>
<th>Antecedent</th>
<th>Behaviour</th>
<th>Consequence</th>
</tr>
</thead>
</table>
| 1:31pm-1:36pm  
James is prompted to continue playing board game with peer | James says that his peer can’t draw correctly and that its ruining the game. | Staff informs James that while his drawing maybe a little sloppy they have different coloured pencil crayons so they can tell each other apart. |
| | James begins to pace back and forth away from the group and cradles his hands up to his | Staff tells James he should rejoin since he will probably have fun. |
| | James rejoins the game and continues off with his peer from where they left off | Staff tells James that there happy he rejoined and restarts their previous conversation |
| 1:39 p.m.-1:40 p.m.  
One of James’ peers is trying to speak with him during the game but is stuttering | James becomes frustrated with his peer and says “I can’t understand what your trying to say” and leaves the room to go outside and pace and self-stimulate | James is left alone outside to pace and self-stimulate |

**Date:** September 21, 2016  
**Participant:** James Gordon  
**Target Behaviour:** Off-Task

<table>
<thead>
<tr>
<th>Antecedent</th>
<th>Behaviour</th>
<th>Consequence</th>
</tr>
</thead>
</table>
| 10:01 a.m.-10:07 a.m.  
James is asked what parts of the chicken caesar wraps he would like to help out with. | James tells staff member that he needs time to think and he will tell them in a bit. | James paces away from the cooking grouping while rubbing his hands and speaking to himself silently. |
| 10:12 a.m.-10:18 a.m.  
Staff member asks James whether he has made up his mind yet on what he wants to help with. | James says that they aren’t sure and says that they would rather not participate today | James goes outside to pace and flap his hands and hop and jump intermittently. |
| 10:19 a.m.-10:20 a.m.  
Peer whom James dislikes is near him outside and makes a loud noise | James leaves the area and rejoins the group in the kitchen area | James is asked to sit down and help chop vegetables which he does |
### Appendix H

**Momentary Time Sampling of On-Task Behaviour**

<table>
<thead>
<tr>
<th>Date</th>
<th>Intervals On-Task</th>
<th>Percentage of Intervals On-Task</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Baseline</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>September 21, 2016</td>
<td>Research Student Absent</td>
<td>Research Student Absent</td>
</tr>
<tr>
<td>September 22, 2016</td>
<td>0/30</td>
<td>0.00%</td>
</tr>
<tr>
<td>September 23, 2016</td>
<td>Participant Absent</td>
<td>Participant Absent</td>
</tr>
<tr>
<td>September 26, 2016</td>
<td>28/30</td>
<td>93.33%</td>
</tr>
<tr>
<td>September 27, 2016</td>
<td>14/30</td>
<td>46.66%</td>
</tr>
<tr>
<td>September 28, 2016</td>
<td>14/30</td>
<td>46.66%</td>
</tr>
<tr>
<td>September 29, 2016</td>
<td>16/30</td>
<td>53.33%</td>
</tr>
<tr>
<td>September 30, 2016</td>
<td>Participant Absent</td>
<td>Participant Absent</td>
</tr>
<tr>
<td>October 3, 2016</td>
<td>17/30</td>
<td>56.66%</td>
</tr>
<tr>
<td>October 4, 2016</td>
<td>14/30</td>
<td>46.66%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>103/210</td>
<td>49.05%</td>
</tr>
<tr>
<td><strong>Intervention</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>November 21, 2016</td>
<td>No Applicable Activities</td>
<td></td>
</tr>
<tr>
<td>November 22, 2016</td>
<td>14</td>
<td>46.66%</td>
</tr>
<tr>
<td>November 23, 2016</td>
<td>13</td>
<td>43.33%</td>
</tr>
<tr>
<td>November 24, 2016</td>
<td>2</td>
<td>.07%</td>
</tr>
<tr>
<td>November 25, 2016</td>
<td>Participant Absent</td>
<td></td>
</tr>
<tr>
<td>November 28, 2016</td>
<td>No Applicable Activities</td>
<td></td>
</tr>
<tr>
<td>November 29, 2016</td>
<td>18</td>
<td>60.00%</td>
</tr>
<tr>
<td>November 30, 2016</td>
<td>12</td>
<td>40.00%</td>
</tr>
<tr>
<td>December 1, 2016</td>
<td>16</td>
<td>53.33%</td>
</tr>
<tr>
<td>December 2, 2016</td>
<td>Participant Absent</td>
<td></td>
</tr>
<tr>
<td>December 3, 2016</td>
<td>Participant Absent</td>
<td></td>
</tr>
<tr>
<td>December 6, 2016</td>
<td>17</td>
<td>56.66%</td>
</tr>
<tr>
<td>December 7, 2016</td>
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</tr>
<tr>
<td>December 8, 2016</td>
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<tr>
<td>December 9, 2016</td>
<td>Participant Absent</td>
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Appendix I
Line Graph of Jame’s Daily Percentage of Time Spent On-Task
## Appendix J

### Equations

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Baseline</th>
<th>Intervention</th>
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<tbody>
<tr>
<td>Mean</td>
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</tr>
<tr>
<td>Median</td>
<td>46.66%</td>
<td>44.99%</td>
</tr>
<tr>
<td>PEM</td>
<td>N/A</td>
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</tr>
<tr>
<td>Treatment Improvement</td>
<td>-12.49%</td>
<td>-12.49%</td>
</tr>
</tbody>
</table>

**Baseline Stability**

\[
\text{Baseline Stability} = 46.66 \times 1.125 = 52.49 \\
\text{Baseline Stability} = 46.66 \times 0.875 = 40.83 \\
\text{Stable range} = 40.83 \text{ to } 52.49
\]

**Treatment Improvement**

\[
\text{Treatment Improvement} = \left(\frac{[42.92\% - 49.05\%]}{49.05\%} \times 100\right) = -12.49\% \\
\text{PEM} = \frac{3}{8} = 37.50\%
\]