

SNOEZELN FOUNDATION. ITALIAN SECTION

DOCUMENTATION CENTRE

EFFECTS OF SNOEZELN ON CHILD WITH AUTISM

**The Effects of a Snoezelen Environment on A Seven-Year-Old Male
with Severe Autism**

Abby M. Rozen York University

Abstract

This study was an exploratory study on the effects of a Snoezelen environment on a child with severe autism. As a repeated-measures single subject design it compared 10 behaviours across conditions of an ABA design a playroom and Snoezelen room over the span of 5 weeks. These behaviours either fell under that adaptive or maladaptive category. Consistent with the literature this study found a reduction of stereotypic behaviour in the Snoezelen room. As a single subject design a major limitation was the inability to conduct extensive statistical analyses and thus examined each behaviour by the mean of behaviours. A confounding variable disrupted the experiment and expressed the possibility that the subject's Snoezelen experience may have depended on a certain stimulus which changed throughout the experiment.

The Effects of a Snoezelen Environment on a Seven-Year-Old Male With Severe Autism

A number of studies have examined the effects a multisensory environment has on clients with profound multiple disabilities. The multisensory environment, commonly referred to as a Snoezelen environment, has provided support for this leisure activity to have potential benefits for this population. Only a minimal amount of research to date has examined the potential effects of Snoezelen on adults with autism; none have focused specifically on children with autism (Hogg, Cavet, Lambe & Smeddle, 2001).

This paper is an exploratory study that sets out to examine potential effects of Snoezelen in the reduction of maladaptive features of autism, specifically stereotypical self-stimulating behaviours (SSB). As a secondary factor this study will also examine Snoezelen's influence on potential adaptive behaviours.

Autism affects 2 to 5 out of every 10,000 children, and is generally thought to be caused by an organic defect in brain development (Field, Lasko, Mundy, Henteleff, Kabat, Talpins et al., 1997). Characteristics of autism include failure to develop language or other forms of social communication, failure to develop normal relationships, abnormal responses to at least one type of sensory stimulus, stereotypic movements, limited attention span, excessive off-task behaviour and touch aversion (Field et al., 1997). Thirty to 100% of these children have some sort of sensory difficulty integrating sensory information (Dawson & Watling, 2000 as cited in Watling, Deitz & White, 2001), which is a necessary process in order for a child to interact effectively with the world (Watling et al., 2001). If a child does not develop normally in terms of perceptive and sensory integration this often leads to maladaptive emotional and physical responses to stimuli in the environment (Ayres, 1979 as cited in Watling et al., 2001). Evidence has supported the idea that children with autism between the ages of 3 to 6 years differed in sensory processing from same-age controls (Watling et al., 2001).

Self-stimulating stereotypic behaviour (SSB) is a maladaptive behaviour not unique to those with autism, yet it is common across this population. These behaviours may be a result of either sensory overload or sensory restriction (Lovas et al., 1987, as cited in Shapiro, Parush, Green & Roth, 1997). SSB may provide stimulation that cannot be acquired otherwise (Carr, 1997 as cited in Shapiro et al. 1997). Even developmentally typical children would suffer adverse effects in sensory-deprived environments similar to the disjointed sensory perceptions of those with autism (Burns, Cox & Plant, 2000). Messbauer (n.d.) theorizes that in addition to SSB occurring as an attempt to self-regulate through overt behaviour to get enough sensory input or to eliminate sensory input, it also arises to allow the brain stem to produce biogenic amines either to excite, inhibit and the combination

thereof, the nervous system. Reduction of SSB has yet to be accomplished through therapy in mentally retarded children (Mason & Iwata, 1990 as cited in Shapiro et al., 1997). However Holmes (1993) and Reisman, (1993) have suggested that suppression of SSB can lead to dramatic improvements in the child's appropriate behaviour (as cited in Shapiro et al., 1997).

Current research has pointed towards the reduction of these maladaptive behaviours through Snoezelen. This leisure activity is based on the belief that through sensory and motor modalities those with profound intellectual disabilities interact with their environment (Cunningham et al., 1991 as cited in Lindsay, Black & Broxholme, 2001). Derived from the two Dutch words "snuffelen", to seek out, to explore and to sniff, and 'doezelen", to relax, Snoezelen is a philosophy that believes that people with disabilities have a right to leisure and relaxation (Thomas, 2002). Snoezelen originated in Holland in the late 1970's and was first defined by therapists Jan Hulsegge and Ad Verheul at the Dehartenburg Institute, a center for people with intellectual disabilities. These researchers were faced with the challenge of finding an appropriate leisure activity for adults with extreme sensory and developmental disabilities (Thomas, 2002). Snoezelen believes that daily activities for those with multiple disabilities are often confusing, threatening, difficult to control, understand or engage in and are ultimately stressful (Cunningham, Hutchinson & Kewin, 1991 as cited in Egan, 1998; Thomas, 2002; Hutchinson, 1994 as cited in Shapiro et al., 1997).

The main goal of Snoezelen is to provide an enabling, non-directive approach that fosters a sense of well being (Shapiro et al., 1997). The Snoezelen philosophy asserts that people with intellectual disabilities interact with their environment by primarily relying on their senses (Cunningham et al., 1991, as cited in Shapiro et al., 1997). The Snoezelen room is presumed to "facilitate increased awareness, environmental exploration, mental and physical relaxation, enjoyment, social skills, choices, feelings of restoration, and refreshment in their participants" (Cuvo, May & Post, 2001, pp 184). The Snoezelen environment establishes a client to reach a state of relaxation that enables other sensory modalities to be introduced, and once the optimal combination of sensory input is reached it allows balance to be achieved and the individual can take control (Messauer, n.d.) Benefits have been found to be highly individualized (Quon, 1997). Proponents believe that if the environment is non-threatening then the child may be motivated to explore (Kielhofner, 1985; Ruskin et al., 1984, as cited in Shapiro et al., 1997). A client who is profoundly intellectually disabled make take much longer to explore something to his or her satisfaction, and this timescale needs to be respected (Hulsegge & Verheul, 1997, as cited in Hong, 1996). According to King (1993) the Snoezelen environment can cause internal change in the child thereby reducing SSB, producing more adaptive behaviour and decreasing stress (as cited in Shapiro et al., 1997). Snoezelen has become internationally accepted as a method to improve the quality of life for people with special needs (Lindsay, Pitchaithly, Geelen, Broxholme & Ashby, 1997).

The emphasis has been placed on the non-directive approach fostered by Snoezelen (Haggart & Hutchinson, 1991 as cited in Hogg et al., 2001). Snoezelen is not a therapeutic activity but rather a leisure activity (Martin, Gaffan & Williams, 1998) designed to provide passive sensory stimulation (Chitsey, Haight & Jones, 2002). The Snoezelen philosophy asserts that leisure is a basic human right (Egan, 1998). In itself leisure is now widely accepted as having its own potential for self-development and self-realization (Hogg et al., 2001). According to Egan (1998) leisure needs to be defined in terms of participants' interpretation of an experience, rather than a specific activity or a period of time free from stress. The benefits are far reaching Egan continues, and may include self-expression, physical health, companionship and the development of social relationships, rest and relaxation, novel experiences, and a chance to meet the expectations of others. Leisure is best defined as an affective experience rather than a specific category of activities, and generally includes freedom of choice and intrinsic motivation (Egan, 1998).

Little research has been done to examine the effectiveness of Snoezelen as a therapeutic tool (Thompson & Martin, 1994). The founders resisted conducting formal research as they believed that it would be forced into a more objective and product-orientated dimension (Burns et al., 2000, Lindsay et al., 1997;). Ultimately the leisure aspect is more important in Snoezelen than any behavioural changes (Martin, Gaffan & Williams, 1998). Anecdotal reports of improvement in behaviour have been the majority of research published (Lindsay et al., 1997). On the whole different types of behaviour have been found to occur in Snoezelen compared to daily situations (Cook, 1995 as cited in Hong, 1996). Much of the literature demonstrates a wide range of positive outcomes (Hogg et al., 2001). However the lack of methodologically sound empirical research has not prevented special educators from employing Snoezelen environments with their students (Stephenson, 2002) and there are currently more than two thousand Snoezelen rooms in Europe and approximately one hundred in the USA (Chitsey et al., 2002). The general conclusion by consumers is that Snoezelen allows control of leisure and therefore clients, especially children, become more motivated, engaged, imaginative, ambitious and spontaneous (Quon, 1997).

The majority of research has focused on self-injurious behaviour, SSB, relaxation, enjoyment and facilitation of interpersonal relationships (Hogg et al., 2001). In 1994 DeBunsen found in her research at the Limington House School that intellectually disabled subjects did not display maladaptive behaviours in the Snoezelen room, and exhibited an overall behavioural improvement both in and outside of the environment. Furthermore, the time spent in Snoezelen allowed a chance to enhance the relationship between the client and the caregiver. Martin et al.'s 1998 study concluded that if there was a reduction in maladaptive behaviours it was likely for those subjects who's SSB was sensory reinforced. Lindsay et al.'s (1997) research (N=8) found a significant positive effect in Snoezelen's ability to improve adult subjects' concentration. A follow-up study by Lindsay et al.

(2001) further found that Snoezelen significantly increased the overall level of positive communication and decreased the overall level of negative communication. Cuvo et al. (2001) found tentative support for Snoezelen to promote greater engagement and reducing SSB compared to a living room baseline after observing subjects before, during and after Snoezelen. Although there was an increase in engagement in Snoezelen, there was no apparent difference in the before and after conditions that took place in the living room.

Hong's 1996 research lead to the conclusion that when Snoezelen includes the right stimulus for the level of the client considerable amounts of learning can occur beyond expectation. This provides a great sense of affirmation because the client can do something independently that is respected by the facilitator. Furthermore it has been found that clients prefer some stimulus to others in the Snoezelen environment (Thompson & Martin, 1994). This results in a pleasurable alternative to harmful self-stimulating behaviours. Long and Haig (1992) also found that extremely handicapped people responded well to the Snoezelen environment. Snoezelen has also been shown to improve average group scores (n=8) on concentration from baseline to assessments taken at midpoint and in final sessions (Ashby, Lindsay, Pitcaithly, Broxholme & Greenlen, 1995).

Shapiro et al., (1997) used children as subjects and found that through an increase in adaptive behaviours and a decrease in maladaptive behaviours Snoezelen had positive short-term effect on children with severe mental retardation. Fagny's 2000 study focused on adults with profound autism found a decrease in aggression, frustration and SSB in Snoezelen, with SSB and aggressive behaviours being reduced to one quarter of that in the classroom control. Symptoms of anxiety also occurred far less in Snoezelen. Fagny concluded that while there was short-term behaviour decreases maintenance over time would be poor or non-existent without Snoezelen interventions.

Most of the literature has ignored the issues of generalization and maintenance, and short-term benefits of Snoezelen tend to be very short or negative. No evidence of the maintenance of Snoezelen effects exists. There are two possible causes for this, first if the multisensory experience is acting on the central nervous system or the autonomic nervous system then benefits will be limited to the specific situation. Second, learnt skills will be more generalizeable than physiological states (Hogg et al., 2001).

Shapiro et al. (1997) suggested that follow-ups with specific populations were needed in order for generalization to the population. As there is a general lack of literature focusing on the potential benefits of Snoezelen for children and no research that focuses specifically on autistic children this study sets forth to fill the gap. SSB is a common to those with autism and perhaps the benefits of Snoezelen on both maladaptive behaviour and adaptive behaviour will generalize to this particular population, with potential short-term effects. This present study therefore hypothesizes that:

1. There will be a statistically significant reduction of SSB while the subject is in Snoezelen.

2. There will be a statistically significant increase in adaptive behaviours while the subject is in Snoezelen.
3. There will be moderate short-term effects in the 30-minute posttest following the Snoezelen.

Method

Subject

One 7-year-old male with severe autism was chosen out of convenience for this study. The subject suffers from severe global development disorder and is non-verbal, reliant on others for all dailies, but mobile. His SSB behaviours include vocalization, hand flapping, running, climbing, mouthing hand, mouthing clothing, mouthing objects and face rubbing. This child also suffers from epilepsy and pulmonary valve stenosis. He is on valproic acid (otherwise known as depakene). Consent for participation was given by his mother (Appendix A).

Design

This study was approved by the Bloorview MacMillan Children's Centre Research Ethics Review Committee and employed a repeated measures single subject design where the subject received the same treatment for 5 consecutive weeks. Each Saturday at 2:00 pm the subject was picked up from his home, taken to Bloorview MacMillan Children's Centre where a test, pretest posttest design was set-up. The subject spend 30 minutes in the playroom, then up to 30 minutes in the Snoezelen room and returned back for an additional 30 minutes in the playroom.

Apparatus

The playroom condition took place in a large room that measured approximately 20 x 20 feet. There were various toys in the room including Lego blocks, train set, books and bead and wire maze toys. There were also windows facing a waiting room that looked out onto a swimming pool.

The Snoezelen room was a brightly colored, dimly lit 12 x 10 foot room. The room had the following apparatus: bean bag chunkie chairs, bubble tube, bubble wall panel, Catherine wheel, evening breeze, fire optic light spray, interactive floor carpet, magiglow board, milk way carpet panel, mirror ball, mirrored line light panel, musical hopscotch, solar effects projector with "deep" which features underwater images and "shapeland" with bright abstract shapes, sparkle net fabric, stereo and speakers for music and a vibrating mattress pad. For a more detailed description see Appendix B.

Procedure

All 30-minute sessions were filmed to be rated by 3 trained, semi-blind raters at a later date. Raters were unaware as to which sessions in the playroom were pretest and posttest. A random number assigned by a computer program labeled each session, and these numbers were kept in

envelopes and opened at the time of the filming of that particular session. The same day and time was chosen for 5 weeks in order to control for any differences that occur across the time of day or across the week. On the first Saturday the subject arrived 30 minutes early in order to become habituated to the facilitator, a trained Snoezelen facilitator and the coordinator of the program at Bloorview MacMillan.

The facilitator engaged contact with the subject across both conditions, being sensitive to the subject's interests. During the playroom condition a compulsory 30 minutes was spent in the environment, however in the Snoezelen room the subject could dictate how long he preferred to stay in the room as per the Snoezelen philosophy. If the subject attempted during a Snoezelen session to leave the room (indicated by attempting to open the door) the facilitator attempted to reengage the subject. If he continued to express a desire to end the session the facilitator would allow him to do so.

Assessment

The sessions were rated across ten variables that fell under maladaptive or adaptive behaviours. Maladaptive behaviours included vocalization, flapping, running or climbing, mouthing hand or object, face rubbing, attempting to leave room and ignoring the facilitator when she attempted to initiate contact. Adaptive behaviours included laughter, focusing attention on an activity for 3 minutes or over and initiating contact. Snoezelen sessions were further rated across perceived enjoyment of the session, behaviour and time spent in room (see Appendix C for exact coding sheet). Statistical tests involved repeated measures ANOVA and descriptive statistics.

Operational Definitions

In general stereotypic behaviour is defined as the repetition of meaningless gestures or movements (Marshall & Firestone, 1999). For the purpose of this research this subject's stereotypic self-stimulating behaviour (SSB) is defined as flapping his hands, running, climbing, mouthing hand or object and face rubbing.

Inter-Rater Reliability

The filmed sessions were later rated by 3 raters, the primary research (rater 1), a rater that was unfamiliar with the subject (rater 2) and a rater who worked on the subject's applied behaviour analysis team (rater 3). Rater 1 rated all 15 sessions, Rater 2 rated 53% and Rater 3 rated the remaining 47%. Neither of the raters were aware of the hypotheses of the experiment, nor did they know which session they were coding unless it was in the Snoezelen condition.

Results

Inter-Rater Reliability

Inter-rater reliability (Pearson's r) ranged from .61 to 1.00 between the variables. Overall $r=.96$. See table 1 for specific correlations between variables.

Table 1

Correlations (Pearson's r) for inter-rater reliability

Behaviour	Pre-test	Test	Post-test
Vocalization	.97	.95	.98
Laughter	.94	1	.88
Flapping	.75	.61	.99
Face Rubbing	.87	1	1
Mouthing	.91	1	.97
Focus on activity for 3+ min	.97	1	1
Running & Climbing	.99	1	.96
Attempt to leave	1	.98	.99
Initiates contact	.96	.98	.91
Ignores Facilitator	1	1	.99

Note: Inter-rater reliabilities are between rater 1 and the combined ratings from two other raters for each condition.

Analysis of results on Maladaptive Behaviours

An alpha level of .10 was used for all statistical tests as this was an exploratory study. An adjustment was made to control for family-wise error.

Two maladaptive behaviours had a statistically significant p value. Flapping had a positive change with the Greenhouse-Geisser p -value at .009 ($df=1.1556$, $F =11.922$). Upon closer examination there was a significant difference between flapping pretest and flapping posttest (Greenhouse-Geisser $p=.002$, $df=1$, $f =47.610$). The means for flapping were 5.60 for pretest, 0.30 for test, and 3.60 for posttest.

Running and climbing was the other maladaptive behaviour with a statistically significant difference between Snoezelen and the playroom. The Greenhouse-Geisser p -value was .010, ($df=1.408$, $f=13.152$). Running and climbing pretest versus test showed a Greenhouse-Geisser p -value of .009 ($df=1.00$, $f=22.533$). Test versus posttest for running and climbing was significant at

Greenhouse-Geisser p-value at .005 (df=1.00, f=30.303). The means for this variable were as follows: pretest 8.10, test 0.80 and posttest 5.80.

The following means were found between conditions for maladaptive behaviours. See table 2 for a description of the means.

Table 2

Means for Maladaptive Behaviours between Conditions

Maladaptive Behaviour	Pretest	Test	Posttest
Vocalization	11.50	8.80	12.50
Face rubbing	1.70	0.80	1.80
Mouthing	3.20	2.20	5.80
Attempt to leave	2.40	3.50	2.30
Ignore facilitator	5.50	1.20	4.40

Analysis of results on Adaptive Behaviours

None of the p-values for the adaptive behaviours were at significant values. See table 3 for a description of the means.

Table 3

Means for Adaptive Behaviours between Conditions

Adaptive Behaviour	Pretest	Test	Posttest
Focus on activity for 3 or more minutes	3.90	1.20	2.40
Initiate contact	4.80	6.40	6.50
Laughter	1.30	19.00	1.20

Ratings of enjoyment in Snoezelen Room

Perceived enjoyment of the subject's experience differed from day to day and can be seen in Figure 1.

Figure 1

Ratings of Perceived Enjoyment in Snoezelen Room

Time spent in Snoezelen Room

The time that the subject chose to spend in the Snoezelen room also differed between days, see Figure 2 for exact amounts of time.

Figure 2

Time Spent in Snoezelen Room as Directed by Subject

Discussion

The purpose of this study was to examine three hypotheses: That there would be a statistically significant reduction of SSB in the Snoezelen room. The second hypothesis stated that there would be a statistically significant increase in adaptive behaviours while in the Snoezelen room. The final hypothesis theorized that there would be moderate short-term effects in the 30-minute posttest following Snoezelen. To recap, the results on assessment of Snoezelen effects on maladaptive behaviour suggest that Snoezelen had a positive effect in reducing two of the subject's SSB. No statistically significant effects were found for increasing adaptive behaviours. No evidence supported any short-term effects of Snoezelen. However it was a serious limitation of this study for $n=1$, as statistical investigation is near impossible. There were noticeable differences between means for most variables, and had there been more subjects there may have been statistically significant relationships between the conditions. As this is the case each variable will be examined on this assumption.

Vocalization decreased during Snoezelen, and remained essentially at the same level during the playroom conditions. This subject often screams when upset or extremely excited, and therefore the decreased level of vocalization provides tentative support for relaxation of the subject in the Snoezelen room. There was a significant reduction during Snoezelen for the subject's flapping behaviour. Flapping also occurred less, on average, in the posttest condition. This too provides evidence not only for the subject's possible relaxed state, but also for short-term effects of the Snoezelen environment. Previous research implies that a reduction in SSB is an indication of fulfilling sensory needs from the environment and this appears to have occurred with this subject. The subject's face rubbing only increased slightly during Snoezelen, but still implies that perhaps sensory needs were being met from the environment. Interestingly enough while mouthing decreased during Snoezelen it increased to a higher rate during posttest than in pretest. Further research needs to be done to examine the implications of this. This subject's maladaptive behaviours did appear to be sensory driven as suggested in other research (Shapiro et al., 1997).

Running and climbing also decreased during Snoezelen significantly. However, a confounding variable not considered were the difference in size of the Snoezelen room compared to the playroom. While it is possible that this reduction was a result of a relaxed mood it is also possible that this reduction occurred due to the fact that running and climbing behaviours were not really possible in the Snoezelen room. Attempts to leave also increased during Snoezelen, but also may have been due to the type of door. The Snoezelen room door was a sliding door, and during the research the subject did leave the room only to stand outside and roll the door open and closed. Such things often preoccupy those with autism and the researcher did experience a similar behaviour from another client with autism outside of this study. Ignoring the facilitator also decreased by a noticeable amount, and actually remained somewhat lower in the posttest than in the pretest. This does provide speculative support for the fostering of a positive relationship between client and facilitator as indicated by previous research.

This subject's posture did not allow the rater's to rate the frequency of smiling, however laughter was a large indicator of the subject's enjoyment of a condition, and his laughter increased greatly during Snoezelen, an indication that this was indeed a leisure activity for the subject. Interestingly the subject not only initiated contact more frequently during Snoezelen, but this carried over and the subject maintained the same elevated rate of contact during the posttest. This supports the idea that Snoezelen encourages positive relations between the client and facilitator, similar to the findings of Hutchinson and Haggart in 1991 (as cited in Shapiro et al., 1997). Focus on activity decreased from pretest during Snoezelen and was only slightly raised during posttest. This does not support Lindsay et al.'s 1997 study that found increases in concentration as a result of Snoezelen. However experimental subjects were made to do a specific task and here the subject was allowed to choose what activities he would engage in.

A confounding variable did drastically change the results of the experiment. Referring back to Figure 2 the reader can see a large difference in time spent in Snoezelen between days 1, 2, 5 and days 3 and 4. Much to the researcher and facilitator's surprise, this difference appeared to have been caused by the art in the Solar Effects Projector. Days 1, 2 and 5 the projector held "Shapeland" which consisted of abstract colourful shapes. Days 3 and 4 exhibited "Deep", an underwater scene, and during these sessions the subject was more difficult to engage and opted to leave less than half way into the session both times. There were actual certain parts of "shapeland" that had the subject laugh hysterically each time the projector rotated. Due to his choice to leave early on days 3 and 4 a reduction or increase in behaviours were difficult to establish on these days. One interesting difference between these days was the subject's enjoyment which can be gauged not only by his time spent in the room and the perceived enjoyment scores, but also by the amount of laughter emitted by the subject. See figure 3 for details.

Figure 3: Subject's Laughter Between Snoezelen Sessions

This supports Lindsay et al.'s conclusion that a client's enjoyment of a Snoezelen environment is variable according to client preferences (2001). Long & Haig (1992) suggested that designed change will give rise to an observable change in client behaviour, and this too is supported here.

When rating a Snoezelen experience purely by frequency of behaviour some of the subject's experience is lost. One of the raters asserted that she could tell which playroom sessions were pretest and which were posttest as during pretest he was more concentrated at the task at hand, during the posttest he was more explorative of his environment. This too needs to be further researched, and may have been a limitation of rater-bias. The rater who noticed this difference was someone who was well acquainted with the subject.

Ultimately this study did suffer from severe limitations that did not allow it to contribute much statistically significant support for the benefits of Snoezelen. However, upon closer examination this study did show effects of the Snoezelen environment on the subject's behaviours. A major accidental finding that has not been researched in previous literature was the effect of artwork in the projector on the subject's experience of the Snoezelen environment. Further research needs to address differences between not only art stimulus but also a variety of sensory objects in the Snoezelen room. While subjects have preferred certain stimulus in the room in other research, this is the first study to find that a single stimulus may dictate an entire Snoezelen experience. Further research needs to occur not only to establish whether this is common amongst those with autism, but also in other populations. Overall this study concludes that Snoezelen did affect the subject's maladaptive and adaptive behaviours, as well as encouraged a positive relationship between the facilitator and the

subject. As a result the parent of this subject has requested Snoezelen sessions to become an ongoing part of his treatment and leisure experience.

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Appendix A
CONSENT FORM

TITLE OF STUDY: The Effects of a Snoezelen Environment on a Seven-Year-Old Male with Severe Autism

INVESTIGATOR: Abby M. Rozen (Student)

Purpose of the study

Snoezelen is a multi-sensory leisure environment that was developed in the late 1970's by therapists Jan Hulsegge and Ad Verheul at the Dehartenburg Institute in Holland, a center for people with intellectual disabilities. Although Snoezelen is considered a leisure activity, current research is finding beneficial effects for some clients. The majority of studies refer to challenging behaviors, such as self-injurious behavior and stereotypical behavior. By clients obtaining stimulation through the Snoezelen room, they have had less of a need to engage in these challenging behaviors. Overall, the short-term and long-effects of a Snoezelen environment have been inconclusive. This study sets out to examine the immediate, short-term, and long-term effects of Snoezelen on the chosen client.

Description of the study

This is a single-subject, repeated measures 5-week study. During 5 consecutive Saturday's I will be picking up your son from your home at 1:45pm, and returning him shortly before 4:00pm. We will be driving in my car to the Bloorview MacMillan Children's Centre, at the McMillan site. We will spend 30 minutes playing in the playroom, and will then move into the community Snoezelen Room. After spending 30 minutes in there, we will then return to the playroom for an additional 30 minutes. This will all be videotaped and scored later for stereotypical behaviors by myself and two other raters. These tapes will be stored in my home, locked, for the next 5 years as per ABA standards.

In the Snoezelen room we will be using has a variety of different equipment, including a light projector, a Catherine's Wheel, vibrating massage mat, bubble tube, bean bag chairs, musical-light hopscotch, bubble wall, disco-ball, and other sensory light activities. The floors in this small room are padded, and the light and music levels can be controlled. Overall a Snoezelen room is a relaxing environment with different activities that do not need intellectualizing to be enjoyed.

As Snoezelen is not a therapy or medical intervention, but simply a leisure activity, no alternatives have been offered.

Potential harms

As Snoezelen is not considered a medical intervention or a therapy, there are no potential risks. If your son exhibits any discomfort or expresses a desire to leave that I may recognize, he will not be forced to stay. You are aware of the flashing lights in the room, and have provided me with the information that this will in no way affect your son negatively, such as a seizure.

Potential benefits

The good thing about this study is that it will be a chance for your child to relax and enjoy himself in this multi-sensory leisure environment. If there is a reduction in your son's self-stimulating behavior, it means that he is relaxed and finding stimulation through other sources. Ideally, we will find a lowered amount of self-stimulating behavior, as the Snoezelen room may fulfill a stimulation substitution role.

Confidentiality

Confidentiality will be respected and no information that discloses the identity of the subject will be released or published without consent unless required by law. The results of the tests described above will be used for research purposes only in the context of this study. We would need your permission and signed consent to send these test scores to another professional involved in your son's care.

Participation

Participation in this study is voluntary. You have the right to decide not to allow your son to be a part of this study. You also have the right to withdraw your son from this study at any time. If your son expresses any desire to be removed from the Snoezelen room at the time of the study, we will do so immediately and continue the research as planned the following week. If you do not want to participate or if you choose to withdraw at a later date, this will not affect the quality and care of your child during ABA sessions with myself, Abby Rozen.

For questions and further information

Please do not hesitate to contact myself, Abby Rozen, the primary investigator at (905) 731-5533, Lorraine Thomas at 1800-855-0511 to get Bell Operator. When prompted give (416) 422-

7049. You can contact both of us with any questions or concerns you may have in regards to this study, Monday to Friday, 9am-4:30pm. If you reach voice mail, please leave your name and number. We will call you back as soon s we can.

Please complete the consent portion of this form below.

I have taken part in research at this Centre in the past. _____
Yes No

I am currently participating in another research study at this Centre. _____
Yes No

The name of this study is _____

The researcher, named below, has explained the study to me. I know the quality of care with Abby Rozen, or any future care at Bloorview MacMillan Children’s Centre will not be affect if I chose not to be in the study. I know I may ask questions now, and in the future, about the study or the research procedures. When the study concludes, I will be given a copy of all findings.

I hereby consent to my son’s participation in this study.

Print Name Signature Date

Investigator’s Signatures

Appendix B
Community Snoezelen Room
Equipment Description and Content

EQUIPMENT	DESCRIPTION
<u>Bean bag chunkie (red and blue)</u>	Who can resist a brightly coloured beanbag chair filled with poly beads? Sit on it and you're enveloped in a billowing cloud. Punch it, and you can hear the beads rustle. Hug it close and it provides intense proprioceptive support.
<u>Bubble Tube</u>	Streams of bubbles rise inside an illuminated column of water. The bubbles slowly change colour as they float to the top proving a great visual effect. The plastic tube gently vibrates and hums for added stimulation
<u>Bubble Wall Panel</u>	This panel features random columns of bubbles that float to the top, changing colours as they go. It is great for visual stimulation and can be used directly with an interactive switch to control the light (for visual effects) or the bubbles (for hearing effects)
<u>Evening Breeze</u>	A large white fan which must be turned on manually by hitting the large surface mounted switch. This gentle sensation is often pleasurable for those who find the wind outdoors too strong and overwhelming.
<u>Fibre Optic Light Spray</u>	Light travel through the cables of this spray to give a glimmering effect. The cables are smooth to the touch and can be draped over a user's body or explored with his/her hands. The spray is also great for individuals with limited vision. Gathering the ends of the cables together provides an extremely bright visual stimulus for tracking.
<u>Interactive floor carpet</u>	Placing physical pressure on this interactive fibre optic carpet creates a stunning light effect of shimmering colours. Remove your weight from it, and it goes off. Step back on it, and it comes back on! It reinforces cause and effect through any form of movement: walking, crawling, pushing, jumping and provides visual and tactile stimulation.

<p><u>Magiglow Board</u></p>	<p>This board is used with a lighted writing device to create glowing pictures that gradually fade away. This activity is great for eye-hand coordination and creativity. If an individual cannot operate the writing device independently, you can use hand-over-hand guidance to assist them. You can also try placing the user's hand on the board so you can trace around it.</p>
<p><u>Milky way carpet wall panel</u></p>	<p>Fibre optics woven into the pile of the black carpet provide both visual and tactile stimulation as they create a shimmering effect of continually changing colours. A switch can also be plugged in so that the colours can be turned on and off, reinforcing cause and effect.</p>
<p><u>Mirror ball</u></p>	<p>Light from the projector creates colored reflections on the floor and walls for added visual arousal.</p>
<p><u>Mirrored Line Light Panel</u></p>	<p>Thin strands that glow in fluorescent colours as they are exposed to ultraviolet black light. This creates a unique tactile experience that is visually stimulating. To increase the effect of the black light, turn off the overhead projector.</p>
<p><u>Musical Hopscotch</u></p>	<p>The brightly coloured squares on a mat correspond to the panel on the wall. The wall panel can be activated by stepping, crawling, rolling, or pressing the squares on the mat. On the simple program, stepping on a square will cause the corresponding square on the wall panel to light up while a musical tone sounds.</p> <p>There are eight different programs available which are labeled and can be set using the dial on the sidewall panel. The volume of the musical tones can also be adjusted using the second dial on the wall panel. The musical hopscotch is great for providing tactile, auditory, and visual feedback.</p>

<p><u>Solar Effects Projector</u></p>	<p>This projector rotates special effect wheel which creates patterns and pictures that move slowly around the room. The images are great for visual stimulation and tracking. Simply changing the Effect wheel can change the atmosphere from vibrant to tranquil, or just plain funky! Pictures and patterns include: “Deep” which features underwater images, and “Shapeland”, a swirl of brightly coloured abstract shapes.</p>
<p><u>Sparkle net fabric</u></p>	<p>Soft, white nylon tricot material is embedded with sparkles that catch the smallest amount of light passing over the fabric. Use the fabric to create a puffy cloud like effect on the ceiling or to create a cozier room setting. Great for enhancing ‘make-believe’ and story telling!</p>
<p><u>Stereo and speakers (music)</u></p>	<p>The inclusion of stimulating yet comforting music can greatly enhance the Snoezelen experience for clients. Selections range from serene ocean sounds, classical compositions by the masters or lullabies e.g. “Ascension”: Lush harmonies blend with gentle melodies for a deep calming effect “Heavenly Realms”: divine sounds and peaceful offerings</p>
<p><u>Vibrating mattress pad</u></p>	<p>This is a soft comfortable pad, which is great for relaxation and for users who enjoy vibration. The intensity and position of the vibration can be adjusted using the remote control. Pillows can be used to help with positioning and comfort</p>

Appendix C

CODING SHEET

Coder: _____ Session#: _____ Date: _____

Vocalization / Screaming:	<i>Total:_____</i>
Laughter:	<i>Total:_____</i>
Flapping:	<i>Total:_____</i>
Running / Climbing:	<i>Total:_____</i>
Mouthing Object or hand:	<i>Total:_____</i>
Remaining focused on activity for 3 minutes or over:	<i>Total:_____</i>
Face Rubbing:	<i>Total:_____</i>
Attempts to leave room:	<i>Total:_____</i>
Ignoring facilitator when attempts of contact:	<i>Total:_____</i>
Initiates Contact:	<i>Total:_____</i>

SNOOEZELEN SPECIFIC:

1) Rate the subject's perceived enjoyment of the session:

	1	2	3	4	5
Not at	Somewhat	Neutral	Somewhat	Enjoyed	
All	Disliked		Enjoyed		

2) Behavior during treatment: **1** **2** **3**

1=Irritable and not cooperative, 2= partial cooperation, 3=relaxed and cooperative

3) How long was the period of time spent in the room?: _____ min