Behavioural Intervention for Anxiety
in an Adult Male
Diagnosed with Asperger’s Syndrome.

by

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ABSTRACT

Asperger’s Syndrome has only recently been formally recognised. In the literature it is generally considered part of the Autistic Spectrum Disorders. Asperger’s Syndrome is a lifelong condition and individual prognosis varies. Studies have shown elevated incidence of mood disorders including anxiety in this population. While there is much research regarding the effectiveness of cognitive behavioural and behavioural treatments for anxiety in general, there is little research regarding their effective application for those with Asperger’s Syndrome in particular. The following research illustrated the successful implementation of an empirically supported treatment for Social Anxiety Disorder with a fifty two year old client with Asperger’s Syndrome, in a community based setting.

A literature review of Asperger’s Syndrome and empirically validated treatments for anxiety disorders provided a context for the study. A brief history of Asperger’s Syndrome, the challenges in its diagnosis and its association with mood disorders was reviewed. This was followed by an examination of special considerations when assessing and treating individuals with Autistic Spectrum Disorders.

The experimental study involved a single subject AB design. The participant was a client of a community mental health agency who lived with his aging mother. She took care of his daily living needs such as meal making and transportation. The broad goal for his treatment with the agency was to increase independent living. The specific goal of this study was to increase independent bus riding. Anxiety had prevented the participant from using the city bus independently for over thirty years. Gradual in vivo exposure and a relaxation technique were used to increase independent bus riding in a community
based setting. Treatment was developed collaboratively, with the participant, his mother and his case manager. At termination the participant was able to complete an entire bus ride unaccompanied to a predetermined destination with only the walk between his home and the bus stop remaining a challenge.

Overall treatment was a success however a number of suggestions were made for future research. Key among these was the suggestion that independent exposure sessions be included in any treatment design to compensate for the limited support resources available for individuals with Asperger’s.
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Chapter I: Introduction

Asperger’s Syndrome is a lifelong condition and individual prognosis varies, however studies show that most individuals with AS tend to depend heavily on their families and others for support throughout their lives (Khouzam, El-Gabalawi, Pirwani & Priest, 2004). Khouzam et al. note that Asperger’s Syndrome has only recently been formally recognised and was listed for the first time in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) in 1994. A consensus is beginning to emerge that Asperger’s Syndrome is part of a spectrum of disorders referred to as Autistic Spectrum Disorders (Ozonoff & Rogers, 2003). Key features of the disorder include social impairment, restricted interests, repetitive behaviours, and motor clumsiness. Individuals with this disorder do not, however, suffer a delay in language development and they tend to have normal to above normal intelligence (Khouzam et al.). A high incidence of mood disorders has been found in all age groups of this population, such as, anxiety and depression, and there is neuroanatomical evidence to support this finding (Attwood, 2004). Despite the prevalence of mood disorders, there is little research regarding effective treatments for this population, particularly for adults.

In 1998 the Ontario government set a plan in motion to establish a “flexible, coordinated and accountable system of community based services to deliver needed services and support to those with serious mental illness as close to home as possible.” (Ministry of Health and Long Term Care, n.d.). The aim of this plan was to enable individuals to set and realize their personal goals, to maximise their well-being and independence, and to supply individuals with the skills and resources to support them in this quest. Accountability, outcome measures, and evidence-based research were important components of the plan and were underlined by Newman (1998) in his report,
The Consultative Review of Mental Health Reform in the Province of Ontario. The government’s focus on community based services that are evidence based, and the fairly recent recognition of the Asperger’s diagnosis, underlined the need for research into evidence based treatment for this population.

The aim of this study was to assess the application of a combination intervention with an adult man with Asperger’s Syndrome and anxiety in a community based setting. The participant lived with his aging mother and was dependent on her for his transportation. The focus of the intervention was to expand his independent living skills by increasing independent bus riding. It was hypothesised that gradual in vivo exposure therapy and a relaxation technique would increase his ability to take a return trip on the city bus unaccompanied, between his home and a predetermined destination. The treatment focused on behavioural techniques because of the subject’s difficulty when verbally describing his thoughts and feelings related to his anxiety.

Overview

To provide a framework for the study, literature regarding Asperger’s Syndrome and Anxiety was reviewed. A brief history of Asperger’s Syndrome was outlined and the challenge in diagnosing Asperger’s described. This was followed by a discussion of its epidemiology, etiology and prognosis. The characteristics of Asperger’s that increase the propensity for mood disorders were examined. To assess empirically validated treatments for anxiety, the DSM-IV-TR (American Psychiatric Association, 2000) criteria for anxiety were used as a starting point, with a focus on Social Anxiety Disorder and Generalized Anxiety Disorder. Finally specific issues to consider when designing treatments for those with Asperger’s Syndrome were highlighted.
Following the literature review, the study was described in terms of the methodology and the results. The methodology section began with a brief background regarding the subject. The assessment process described the informed consent procedure, the self diagnostic questionnaire related to anxiety, and the semi-structured interview. Based on the information gathered, a hypothesis was developed using the SORC model of Goldfield and Sprafkin (1976) and treatment was designed using an AB research design. The dependent and independent variables, the data gathering procedures, the development of an exposure plan, and the techniques used to manage anxiety were outlined. Treatment implementation and alterations during treatment were reviewed.

The extent to which the intervention succeeded was described in the results section. The increase in independent bus riding behaviour was assessed in terms of the subject’s progress on the exposure hierarchy. Anxiety levels during exposure were also examined. The discussion section of this thesis, evaluated the findings of the study, its strengths and limitations, and identified areas for further research.
Chapter II: Literature Review

Asperger’s – a Brief History

Some of the key milestones in the evolving understanding of the concept of Asperger’s Syndrome were outlined by Khouzam et al (2004). In 1943 in the United States, Leo Kanner (1943, p. 217) published an account of “autistic disturbances of affective contact”. In this account he described a number of symptoms, including qualitative impairment in social interaction, qualitative impairment in communication, and restrictive repetitive and stereotyped behaviours, interests and activities. During a similar period independent work occurred in Austria. Hans Asperger, described what he referred to as “autistic psychopathy” (Asperger, 1991, p. 37). Khouzam et al (2004) highlighted some of the key discrepancies between the two descriptions. With regard to communication, Asperger’s noted no delay in language development. In addition Asperger listed normal intelligence as well as poor coordination and motor clumsiness.

Wing (1981) expanded on Asperger’s original work and coined a new term “Asperger’s Syndrome” to replace “autistic psychopathy”. The purpose of this name change was to avoid the association of psychopathy with sociopathic behaviours. The expanded work was based on a sample of individuals who had all been referred to a psychiatric clinic with severe handicaps, adjustment problems or comorbid psychiatric illnesses. The modified description of Asperger’s Syndrome included a lack of normal interest and pleasure in human company, a limited urge to communicate during the first years of life and a total absence of, or very restricted pretend play. The description of the development of linguistic skills and intelligence differed from Asperger’s original description. With regard to linguistic skills, impoverished speech including inappropriate rote learning and use of speech was noted. With regard to intelligence, a thought
processes “confined to a narrow, pedantic, literal, but logical, chain of reasoning” (p.118) was described. Often this chain of reasoning was based on unlikely starting points which appeared unaffected by context.

Over time the question has been raised as to whether Asperger’s Syndrome and Autism are separate disorders, or variations of a disorder along the same continuum (Wing, 1981). Wing and Gould (1979) found that certain problems which affected early childhood development tended to cluster together around a triad of symptoms. These symptoms were among those previously described by Kanner (1943), namely qualitative impairment in social interaction, qualitative impairment in communication, and restrictive repetitive and stereotyped behaviours, interests and activities. Wing (1981) noted that each aspect of the triad could vary in degree of severity and with any level of intelligence as measured on standardised tests. She used this finding to make the argument that the term “autistic spectrum” would be more meaningful, rather than seeing Asperger’s as a separate diagnostic category from Autism, as it is in the DSM-IV-TR. Wing (1981) suggested that Asperger’s Syndrome should be considered a type of autistic spectrum disorder (ASD).

Khouzam et al., (2004) described the evolution of the recognition of Asperger’s Syndrome in key classification and diagnostic manuals. It was included for the first time in the International Classification of Diseases in 1990. Initially the DSM III and the DSM III-R classified atypical children with Asperger’s type symptoms as having childhood onset Pervasive Developmental Disorder (PDD) and PDD not otherwise specified. In 1994 Asperger’s Disorder was included in the DSM – IV for the first time as a Pervasive Developmental Disorder subtype, with separate diagnostic criteria from autistic disorder.
Etiology and Diagnosis of Asperger’s

The precise cause for Asperger’s is at present undetermined, however factors such as genetics, metabolism and infections are being investigated (Attwood, 2007). To facilitate a diagnosis of Asperger’s a number of different assessment protocols have evolved such as the DSM-IV-TR (American Psychiatric Association, 2000), Gillberg and Gillberg’s (1989) classification and the Adult Asperger Assessment criteria of Baron-Cohen, Wheelwright, Robinson and Woodbury-Smith (2005). There are, however, differences in the details of the parameters used in these protocols. For example, with regard to communication, the DSM-IV-TR noted no clinically significant general delay in language development. Baron-Cohen et al., (2005) echoed this criterion; however they expanded their description including qualitative impairments in verbal and/or non verbal communication. Gillberg and Gillberg’s (1989) description of language development included delayed language development as well as superficial and pedantic use of language, misinterpretation of spoken language and non-verbal communication problems. Other differences in criteria related to cognitive development or intellectual level and self-help skills or motor clumsiness. The DSM-IV-TR and Baron-Cohen et al., (2005) indicated no clinically significant delay in cognitive development and self help skills, while Gillberg and Gillberg (1989) had no requirement regarding intellectual level and included motor clumsiness as a criteria. (For details see Appendix A).

A consensus has begun to emerge in the literature suggesting that Autism and Asperger’s Syndromes are more similar than different (Ozonoff & Rogers, 2003). The fact that understanding of Asperger’s Syndrome is evolving has implications for the generalisation and interpretation of epidemiology, treatment and outcome review studies. On the one hand there is a lack of consistency in the way researchers differentiate
between Asperger’s Syndrome and Autism (Howlin, 2000) which makes findings
difficult to generalise; on the other, the similarities between the two allow for the
possibility of exploring treatment applications across the two populations.

**Challenges in Diagnosing Asperger’s**

Asperger’s appears to have a later onset than autistic disorder (Wing, 1981).
Howlin and Asgharian (1999) found that the average age of diagnosis was over eleven
and that many were not diagnosed until their late teens or even adulthood. Diagnosis
appears to be complicated by the myriad of ways in which symptoms manifest
themselves (Barnhill, 2007). Many symptoms commonly associated with Asperger’s also
change with mood, for example, a decrease in self care and adaptive functioning is
common with depression (Stewart, Barnard, Pearson, Hansan & O’Brien, 2006).
Individuals with Asperger’s have difficulty with identifying feelings and some may
express their feelings in confusing or unusual ways that might be misinterpreted as a
psychosis (Berney, 2004). In some individuals, symptoms may be hidden if their
intellectual ability is high and the environmental support is effective, but this cannot be
maintained over the long term as unexpected situations arise (Frith as cited in Barnhill,
2007.) There is also a lack of clarity regarding the differentiation between symptoms that
are a part of Asperger’s and those that are features of a coexisting psychiatric disorder,
such as affective disorders (Tsai, 1966).

Wing (1981) noted that the condition of Asperger’s Syndrome can only be
assessed based on patterns of behaviour and developmental history. Furthermore she
maintained that all features of Asperger’s can be found to varying degrees in the normal
population.
**Prognosis**

The duration of Asperger’s is lifelong but the prognosis varies for each individual (Khouzam et al., 2004). The lack of specialised support systems impacts heavily on those with Asperger’s and their families. Failure to provide necessary support in a timely manner can lead to a downward spiral of rejection and low self-esteem, possibly resulting in severe emotional and psychiatric problems in later life (Tantam, 2000). Most adults with Asperger’s depend heavily on their families to find jobs and accommodation (Barnhill, 2007).

Findings differ with regard to the quality of life through the adult years. Some authors have emphasised level of IQ and social skills as key determinants (Howlin, 2000) while others have focused more on levels of support. Thomas (2004) defined disability as a social pathology, emphasising the effectiveness of person centred planning in tailoring support to an individual’s needs. This assertion was supported in a study by Renty and Roeyers (2006) that looked at the quality of life in high functioning adults with Autistic Spectrum Disorder (ASD). The study found that support characteristics, rather than disability characteristics, were related to quality of life. Relevant support characteristics included perceived informal support and formal support relating to issue of accommodation, interpersonal relationships, daytime activities, and ASD information.

**Asperger’s and Mood disorders**

The elevated incidence of mood disorders including anxiety and depression in all age groups of individuals with Asperger’s Syndrome has been highlighted in the literature (Attwood, 2004; Barnhill, 2007; Howlin, 2000). Attwood (2004) has described a number of predisposing factors. The unusual profile of cognitive, social and emotional
abilities, as delineated in the diagnostic criteria for Asperger’s Syndrome, increases the propensity for mood disorders. Genetic factors have also been found to play a role, as indicated by the higher than expected incidence of mood disorders in families of those with Asperger’s Syndrome. Furthermore, modeling of family members with mood disorders has an impact on the vulnerable individual. Finally the literature notes that neuro-anatomical abnormalities have been identified which affect emotional perception and regulation.

_Anxiety as described by the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR)_

The DSM-IV-TR (American Psychiatric Association, 2000) lists twelve different anxiety disorders. Of these, Social Phobia or Social Anxiety Disorder and Generalized Anxiety Disorder will be the focus of discussion, as these are most relevant to this study.

Social Anxiety Disorder is described as a clinically significant anxiety reaction, often leading to avoidance behaviour, resulting from exposure to social or performance situations. The typical onset of Social Anxiety Disorder may be gradual or sudden, provoked by a particularly stressful or humiliating experience usually during the mid teens. Anticipatory anxiety often maintains the anxiety cycle. The diagnosis of Social Anxiety Disorder should not be given if the behaviour can better be accounted for by another mental disorder or if the fear is reasonable given the context of the situation. The DSM-IV-TR notes that the duration of the disorder is often life long but the severity may fluctuate with life stressors and demands. The term Generalised Social Anxiety Disorder is used when fears are related to most social situations. The DSM-IV-TR suggests that this more generalised manifestation of anxiety may result from deficits in social skill.
The term Generalized Anxiety Disorder is used when an individual has experienced six months of persistent and excessive worry of a more generalised nature which causes impairment in social, occupational or other important areas of life. The worry is far out of proportion to the actual likelihood or impact of the feared event.

**Empirically Validated Treatments for Anxiety**

In the literature of empirically validated treatments for anxiety disorders, both behavioural and cognitive behavioural treatments (CBT) have been described (Crits-Christoph, Frank, Chambless, Brody & Karp, 1995; DeRubeis & Crits-Christoph, 1998); however, the effectiveness of the components of the CBT have not been clarified (DeRubeis & Crits-Christoph, 1998). Data regarding the effectiveness of anxiety treatments for adults, fifty five years of age or older, is limited and where support exists, it is not as robust as the data available for younger adults (Ayers, Sorrell, Thorp & Wetherell, 2007). Some of the most commonly used behavioural and cognitive components of treatment include psychoeducation, self-monitoring, cognitive therapy/restructuring, rehearsal of coping responses, exposure treatment, relaxation training and social skills training (Tsai, 2006).

Psychoeducation is used to increase the client’s understanding of the disorder to develop an active collaboration in the development of the treatment. A key component is the explanation of the interrelationship between thoughts, behaviour and the physiological aspects of anxiety, which help establish and maintain the anxiety.

Self monitoring involves an individual gathering data on the antecedents, behaviour, and consequences relating to their own experience of anxiety using the cognitive, somatic, affective and behavioural components. Therapist and client then
assess this data in terms of the interrelationship between the various components, the perception of threat and environmental factors eliciting anxiety. Cognitive therapy/restructuring focuses on the principle that anxiety is related to inaccurate perceptions or beliefs of potential threats. The goal is to re-evaluate the thoughts and beliefs related to the anxiety, which focus on expected negative outcomes and somatic symptoms of anxiety.

Exposure treatment involves the development of a hierarchy of anxiety provoking situations from least to most distressful. The individual is exposed to each level until the anxiety subsides and the next level can be attempted. In conjunction with exposure, coping mechanisms such as relaxation are learned which allow for the management of physiological arousal and the creation of an alternative pleasant focus for the individual. Systematic desensitization, a procedure involving a relaxation and an exposure component, has been found to demonstrate significant effects for treatment of anxiety reactions in over one hundred outcome studies (Wolpe, Brady, Serber, Agras & Liberman, 1973). Rehearsal of coping responses involves repeated practice of coping responses, while being faced with internal or external anxiety provoking cues. The focus is on gradual response adjustment. An example of a coping response would be replacing catastrophic thoughts with more realistic outcomes. Social skills’ training is used primarily for Social Anxiety Disorder.

*Empirically Validated Treatments for Comorbid Disorders*

There are differences in the literature regarding the effectiveness of CBT versus behaviour therapy in dealing with comorbid disorders. Butler, Fennel, Robson and Gelder, (1991) have suggested that it is more difficult to deal with multiple problems
such as anxiety and depression using only behavioural methods. They suggest that low motivation and reservations about treatments, and ways of thinking that generate anxiety can be more effectively dealt with through cognitive methods. Hopko, Lejuez and Hopko, (2004) have suggested the contrary as they explore the effectiveness of Behavioural Activation Therapy (BA) as a treatment protocol for depression and anxiety. Behavioural activation is defined by Hopko, Lejuez, Ruggiero and Eifert (2003, p.700) as “a therapeutic process that emphasises structured attempts at engendering increases in overt behaviors that are likely to bring the patient into contact with reinforcing environmental contingencies and produce corresponding improvements in thoughts, mood, and overall quality of life.” It is based on the principle that negative affect and corresponding maladaptive cognitions can be influenced via an increase in behaviour. Although BA has traditionally been used for depression, Hopko et al., (2004) postulate that both anxiety and depression are functionally similar as they involve avoidant behaviour; depression because stimuli are no longer reinforcing and anxiety because stimuli are aversive.

Treatment for depression involves behaviour activation, that is, gradually exposing a patient to positive environmental contingencies to increase response contingent reinforcement. Treatment for anxiety involves gradually exposing the client to aversive situations to facilitate the extinction process. A study by the authors provides evidence that a behavioural activation treatment may provide a protocol that integrates the two strategies to effectively target depression and anxiety.
Assessment and Treatment of Anxiety for Individuals with ASD – Special Considerations

The constructs stress and anxiety were not clearly delineated in the literature. Groden, Baron and Groden (2006) used the term stress. They noted that there is currently no theory on the role of stress in ASD, or an understanding of the specific ways in which stressors and overall stress levels influence behaviour. In assessing anxiety in individuals with ASD, factors such as cognition, self report, overt behaviour, quality of performance, and physiology are key. Romanczyk and Gillis (2006) noted the limitations of objective assessment as cognitions are not accessible, self–report is not necessarily accurate, and generally speaking information regarding physiology is not easily available. A number of observable behaviours have been linked with the modulation of sensory arousal by individuals with ASD and may serve as indicators of stress (Baron, Lipsitt & Goodwin, 2006). Stereotypical behaviour, or behaviour that is repetitive and apparently without cause or function, may be engaged in to attain homeostasis. Pattern of response to novel sensory arousal may include orienting away from or avoiding rather than becoming receptive to or orienting towards the novel stimuli, thus limiting sensory intake. Habituation to repeatedly presented stimuli may be slow or there may be failure to habituate. Attwood (1997) noted that as anxiety levels increase, symptoms of Asperger’s tend to increase, for example, rigidity in thought and insistence on routine.

Self control has been highlighted as a key factor in managing anxiety. The literature indicated that self-monitoring, self-instruction and self-reinforcement play a significant role in establishing self control (Groden et al., 2006). According to Groden et al., however, there has been little formal study of coping strategies of persons with ASD. They suggested that attributional style, the management of environmental factors,
expansion of individual skills, and the implementation of techniques to prepare for transition are all factors that might modulate effective self control. Attributional style refers to the extent to which individuals believes they can control their fate. It affects the likelihood that they will use self control strategies. In managing environmental factors, issues such as constant pressure to comply with the demands of society (Howlin, 2000), a reluctance to accept change (DSM-IV-TR, American Psychiatric Association, 2000), and exposure to particular sensory experiences (Attwood, 1997) should be taken into account. Client involvement in treatment planning is critical. With regard to the expansion of individual skills and the implementation of techniques to prepare for transition, Groden et al., (2006) suggested that recognising stressors and having mastery of coping mechanisms makes it more likely that a stress reduction procedure will be used. They also highlighted the need to teach and reinforce “proactive” (p.31) self control strategies before and “reactive” (p.31) self control strategies during, and after the stressor occurs.

There is little systematic research data available regarding the application of CBT for clients with Asperger’s and anxiety disorders (Attwood, 2004). One study by Cardaciotto and Herbert (2004) found CBT successful in reducing symptoms of Social Anxiety as well as comorbid Depression for a twenty three year old individual with Asperger’s. Treatment focused on social situations such as meeting new people. Cognitive restructuring, role playing, and weekly homework assignments were included. Homework involved thought listing, cognitive restructuring focused on social situations, and in vivo exposure based on specific social skills identified and rehearsed during in session role plays. Despite inclusion of a social skills training component in the treatment, improvements in the client’s social skills were limited. The authors postulate
that a longer course of social skills training might be required to remedy more deep-seated deficits.

When adapting CBT for those with Asperger’s, Attwood (2004) has suggested paying particular attention to affect, communication, and cognitive restructuring. With regard to affect he has proposed education regarding the manner in which emotions may be used or misused, and ways to identify various intensities of emotional expression. He has suggested that explanations should make use of imagery rather than verbal reasoning, for example the use of a thermometer to indicate degrees of emotion. To facilitate effective communication between the client and the counsellor, definition and interpretation of words and gestures should be clarified. To encourage greater flexibility in perceiving and interpreting situations and the intentions of others cognitive restructuring, using logical evidence, should be considered, as events are often interpreted literally and false assumptions made.

Attwood (1997) noted that in designing any treatment for individuals with Asperger’s, information should be gathered regarding the individual’s social behaviour, language, interests and routines, motor clumsiness, cognition, sensory sensitivities, and ability to generalise. Some of the tools that have been suggested in the literature to manage emotions such as anxiety, anger and sadness include a physical release of energy, relaxation through reading, deep breathing and imagery, and distraction such as listening to music (Attwood, 2004). Engaging in a favourite and familiar activity may also provide an increased sense of relaxation and allow for intense enjoyment, security, comfort and relaxation. It should be noted that gestures of affection may be perceived as uncomfortable and may not be effective in comforting these individuals. Medication has also been used to manage anxiety.
Context for the Current Study

The understanding of Asperger’s syndrome is still evolving and while there seems to be agreement on the core list of issues to consider, there seems to be a lack of clarity regarding the extent to which impairment should be demonstrated in the areas of social interaction, intelligence, language, and motor clumsiness. The lack of agreement on a clear definition of symptoms also contributes to the difficulty in distinguishing between Autism and Asperger’s. Aside from a lack of agreement regarding criteria, there are also challenges regarding diagnosis. Symptoms seem to manifest themselves relatively late, from the age of eight to ten, and symptoms within the same individual change over time affected by factors such as mood and maturation. In addition, the ability to convey thoughts and feelings with clarity, can make diagnosis challenging. In making an accurate diagnosis therefore, information regarding the individual’s developmental history and patterns of behaviour is vital. The lack of consensus regarding the symptoms of Asperger’s makes it difficult to study issues such as epidemiology, etiology, and effective treatment.

The prognosis for individuals with Asperger’s appears to vary depending on a number of factors such as intelligence, comorbid disorders and community/family support. There were differences of opinion with regard to the importance of the influence of intelligence in the quality of life for such individuals. Some researchers saw intelligence as a key factor, while others believed perceived informal support and individually tailored formal support played a greater role. Researchers have indicated that social and sensory issues as well as comorbid and physical conditions are some of the key barriers to community integration.
With regard to mood disorders, research indicated a particularly high prevalence of anxiety and depression among adults with Asperger’s and there is neuro-anatomical evidence to indicate difficulties with regard to perception and regulation of emotions. Factors that have been suggested as major precipitators of anxiety include social contact, changes in routine and idiosyncratic sensory experiences.

The literature examining empirically validated treatments for anxiety highlighted controversial findings. Some authors indicated CBT as the treatment of choice, while others believed that behaviour therapy in the form of exposure therapy alone was the most effective. This difference of opinion was mirrored in the literature regarding the treatment of complex comorbid conditions. Some suggested CBT, while others suggested behaviour therapy, particularly in the form of Behaviour Activation Therapy. Proponents of Behaviour Activation Therapy believe that an individual has more control over their behaviour than their emotional state. Within CBT treatments, the relative contribution of the behavioural and cognitive components has not been fully investigated.

Further factors that may influence the effectiveness of treatment include available funding and the client’s commitment to treatment. The ability of the client to clearly describe their cognitions and emotions in relation to their own anxiety will also influence the selection of treatment. Despite the fact that there was a great deal of emphasis in the literature on the inclusion of social skills as part of any treatment for individuals with Asperger’s, social skills were minimally addressed in this study. The treatment described here was viewed as a small part of an overall treatment program which might be used to promote independent living for the participant. In a more comprehensive program social skills might however form a critical component.
The literature seems to indicate that the most effective treatment for an individual with Asperger’s Syndrome would be tailored to the unique manifestation of their symptoms, their needs, and their support systems. Exposure and relaxation were highlighted as highly effective in the treatment of anxiety. The current study focused on tailoring and applying a combination intervention including exposure and relaxation to an individual with Asperger’s Syndrome, in a community setting, to facilitate independent use of the city bus.
Chapter III: Method

Participant

Mr. A. was a 52 year old single male diagnosed with Asperger’s who lived with his aging mother. He was working towards the development of independent living skills with the support of a community mental health agency. He had not used the bus unaccompanied for approximately thirty years due to his anxiety related to possible social encounters. In consultation with Mr. A. and other relevant individuals in his ecology, the goals of his treatment were set. The target behaviours selected for intervention were to increase independent bus riding and decrease related anxiety. Mr. A. was assigned to the student as part of a placement experience.

Background on the Participant

A note written by Mr. A.’s mother in his case file described a history of adjustment difficulties with his school routines and social life, accompanied by behavioural problems. Despite these struggles he obtained a Masters of Arts degree in Sociology over a period of fourteen years. Although he had no record of hospitalisations for psychiatric treatment, he had made one suicide attempt as a teen and he had been involved in therapy and support programs periodically throughout his life. Due to his difficulty with social interactions Mr. A. had experienced both anxiety and depression and was taking medication to alleviate these symptoms.

Research Design

A single subject AB design was used where A was the baseline phase and B was the treatment phase. The primary dependent variable was independent bus riding which
was defined as Mr. A. taking the bus unaccompanied to a destination of his choice. The secondary dependent variable was anxiety level. Anxiety was defined as the self report of the client’s internal state. The participant defined anxiety as: “A great deal of tension when there are a lot of people around and people may be looking at me in line, walking on the sidewalk (especially when someone passes on the street) or on the bus.” The independent variable was proximity of the student to the participant during the bus trip. Student proximity to the client was gradually reduced guided by parameters set collaboratively with the client through development of an exposure hierarchy.

Independent bus riding was assessed before and during exposure using an exposure hierarchy based on the work of Bourne (1995) and Leahy and Holland (2000). Anxiety levels were assessed during exposure using the Participative Units of Discomfort Scale (SUDS) (Wolpe, Brady, Sebber, Agras & Liberman, 1973) to provide feedback regarding the effectiveness of anxiety management.

**Setting and Material**

The study was conducted in a community based setting using the local city bus. The destination of the trip was a local Tim Horton’s, a coffee and donut shop. The participant purchased city bus tickets for his travel and provided his own funds for breakfast at Tim Horton’s. An application for a disability pass made bus travel more affordable for the participant. The student was able to travel on the city bus for free using her St. Lawrence student card. When it became clear that abdominal breathing was an ineffective relaxation strategy for the participant, music was used as a substitute, and an MP3 player was purchased by the participant.
Assessment Measures and Results

Assessment and treatment planning took place over the course of four weeks during four one hour meetings. Assessment included a questionnaire, an interview and the use of the Stimuli-Organism-Response-Consequence (SORC) model (Goldfield and Sprafkin, 1976).

A modified version of a self-diagnostic questionnaire developed by Bourne (1995) was used to assess Mr. A.’s anxiety symptoms (Appendix B). Results indicated that Mr. A. suffered from symptoms of Social Anxiety and Generalized Anxiety Disorder.

An interview framework (Appendix C) based on the work of Attwood (1997) was used to assess Mr. A’s experience of Asperger’s symptoms and how they might impact on his anxiety and implementation of any treatment program. The interview and observations of overt behaviour during the assessment period highlighted a number of key issues. His typical twenty-four hour routine included two periods of sleep, one between approximately 7:00am and 11:30am and second between 8.00pm and 1.00am. He had three meals a day, provided by his mother and if they did not go out together, he read or watched television. Mr. A. confirmed his difficulty with social interactions. He related his challenge in leaving home to his uncertainty of what pedestrians and passing drivers might be thinking of him as well as past experiences of bullying. He mentioned anxiety relating to teenage students in particular. In describing his experience, he used individual concrete examples and did not generalise his ability to cope in proximity to others from one situation to another. He noted his preference for routine and advance notification of any change in plans. His interests were history, politics, and western movies. With regard to motor dexterity, Mr. A. indicated that he had no difficulty
walking, but found it difficult to stand for long periods of time. He also reported difficulty with writing and he noted a preference for check marks in any self-monitoring of behaviour. He did not indicate any particular sensory sensitivity.

The SORC model (Goldfield and Sprafkin, 1976) was used to assess variables that appeared to maintain the lack of independent bus use. The SORC is used to provide a framework within which to understand the function of an individual’s behaviour, select an intervention and monitor treatment (Farmer & Nelson-Gray, 2005). An individual’s behaviour or response (R) is studied within the context of variables in the environment namely stimuli(S) or antecedent conditions, and consequences(C), as well as variables within the individual or organismic (O) variables. Variables within the individual include biological characteristics and learning history. Information for the analysis was based on file records, the interview and behavioural observations during the assessment period. Results of the analysis are discussed below.

With regard to organismic variables, records indicated that Mr. A. had a long history of difficulty with social situations, which included being bullied. His parents had attempted to shelter him from harm and he had relied on them for all of his daily living needs into adulthood. As he completed his studies, he did not assume any of the responsibilities for independent living, and he retreated into the security of his home, which further impoverished his behavioural repertoire. With regard to biological factors, he had recently been diagnosed with Asperger’s Syndrome, and was also on medication for anxiety and depression. At fifty two years old he was very unfit and at times his digestive problems made it difficult to leave the house. He was overweight, wore thick glasses, walked slowly and slightly stiffly. He was however always neat, clean and polite.
Discriminative stimuli were assessed in relation to independent bus use. Mr. A. identified crowding as a discriminative stimulus which increased his anxiety. The more crowded the environment, the greater his reported anxiety. Discriminative stimuli, which he reported reduced anxiety, included seeing Tim Horton’s and being near home. Seeing Tim Horton’s signalled an enjoyable experience and being near home signalled a safe environment. Establishing operations, or variables which appeared to affect the performance of the participant from one occasion to the next, were sleep and physical fitness. The amount of sleep obtained by the participant on the previous night appeared to impact on his anxiety response and ability to cope. The client’s level of physical fitness affected the degree of the physical challenge in walking between his home, the bus stop and Tim Horton’s.

Both short term and longer term consequences of his behaviour were assessed. The short term consequence of covert and overt behaviours related to independent bus use and the avoidance of anxiety provoking situations was reinforcement. Overt behaviour took the form of not leaving the house independently. Covert behaviours included Mr. A.’s reported thoughts and feelings of uncertainty when in public. He described that when others passed him in cars or on the street, they were thinking negatively about him. These thoughts appeared to act as a punisher, which reduced the likelihood that he would go out independently. Anticipatory anxiety appeared to play a role, as his expectation of negative experiences increased his feelings of anxiety. The longer term consequence of his behaviour was decreased opportunities for positive confidence building experiences out of the home, and maintenance of the avoidant behaviour. As all of his basic needs were addressed by his mother, the necessity to
become more self reliant as his mother aged, was not attended to. Mr. A. had difficulty describing his physical responses to the anxiety.

Mr. A. knew how to catch the bus. He also had a good sense of direction, and a good memory. It was hypothesised that the key factors that maintained his lack of independent bus use were anticipatory anxiety based on past experiences, the lack of exposure to positive experiences through independent bus use and the availability of others to take care of daily living needs.

**Selection of Intervention**

To overcome Mr. A.’s challenges, a combination intervention was indicated, and was comprised of in vivo desensitisation exposure therapy and relaxation exercises in the form of abdominal breathing. The aim of the exposure therapy was to increase successful independent bus riding experiences and the focus of the abdominal breathing was to provide Mr. A. with a tool to manage his anxiety during exposure. As Mr. A. demonstrated difficulty in expressing his thoughts and feelings, the treatment focus was behavioural, based on the principles of Behavioural Activation Therapy. Furthermore, file records had indicated systematic desensitisation as one of previous treatments that had shown promise.

**Measures During Baseline and Treatment**

The *exposure hierarchy* was used to assess level of independent bus riding and was developed in collaboration with Mr. A. The hierarchy was based on the most recent bus trip Mr. A. had taken with the student to the Community Mental Health office. During this trip nearly all the seats were taken, but there were still a few single seats left
unoccupied (estimate 5). Mr. A. rated the degree of anxiety he felt for each level of exposure, on a scale from zero to ten where zero indicated absolute calm and ten indicated the worst anxiety experienced by the participant. Below is a description of the hierarchy.

<table>
<thead>
<tr>
<th>EXPOSURE</th>
<th>Distress</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catch bus to Tim Horton’s – accompanied all the way (student next to client) Client sitting near the front, but not in handicap seat.</td>
<td>4</td>
</tr>
<tr>
<td>Catch the bus to Tim Horton’s – accompanied all the way, student on seat opposite or as close as possible, but still in view of client. Client sitting near the front, but not in handicap seat.</td>
<td>5</td>
</tr>
<tr>
<td>Catch the bus to Tim Horton’s – accompanied all the way, student one seat behind client or as close as possible, but behind client i.e. out of view. Client sitting near the front, but not in handicap seat.</td>
<td>6</td>
</tr>
<tr>
<td>Catch bus to Tim Horton’s, student two rows behind client for trip. Client sitting near the front, but not in handicap seat.</td>
<td>7</td>
</tr>
<tr>
<td>Catch bus to Tim Horton’s, student at back of bus or as close as possible to back and, and client in front or as close as possible (not in handicapped seats, if possible).</td>
<td>8</td>
</tr>
<tr>
<td>Bus to Tim Horton’s, student at back of bus, gets off one stop before end of trip, and meets client at Tim Horton’s. Client sitting near the front, but not in handicap seat.</td>
<td>9</td>
</tr>
<tr>
<td>Bus to Tim Horton’s, student at back of bus, gets off ¼ of stops before end of trip and meets client at Tim Horton’s. Client sitting near the front, but not in handicap seat.</td>
<td>10</td>
</tr>
<tr>
<td>Accompanied ½ way from start of trip, rest on own. Client sitting near the front, but not in handicap seat. Met at Tim Horton’s by student.</td>
<td>10</td>
</tr>
<tr>
<td>Accompanied ¾ way from start of trip, rest on own. Client sitting near the front, but not in handicap seat. Met at Tim Horton’s by student.</td>
<td>10</td>
</tr>
<tr>
<td>Catching the bus all the way to Tim Horton’s alone. Met at Tim Horton’s by student.</td>
<td>10</td>
</tr>
</tbody>
</table>

Data regarding independent bus riding was recorded by the student during baseline and on completion of each treatment session using level on the exposure hierarchy as an indication of progress. For each round trip, two data points were recorded; one on the trip away from home, and one on the return trip. These data points
were graphed to assess Mr. A’s progress from baseline to treatment, and over the course of treatment sessions on the trip to and from Tim Horton’s.

The *SUDS* was used to assess anxiety levels during treatment. The scale for the SUDS was modeled on the anxiety ratings used when developing the anxiety hierarchy, with zero indicating absolute calm and ten indicating the worst anxiety experienced by the participant. The participant was introduced to the SUDS scale and trained in its application during two return bus trips prior to exposure. Mr. A. was asked to assess his anxiety at three different points during each bus ride, namely before, during and after the bus ride. He was however asked to record his anxiety ratings only twice during each round trip, once after the trip away from home and once after the return trip. This was to minimise the demands placed on him during exposure because of his flustered state.

During the first trial session Mr. A. noted that he felt different levels of anxiety during different parts of the trip and provided a more detailed breakdown, including the walk to and from the bus stop, and waiting at the bus stop. The SUDS assessments were thus expanded to cover eleven components of the entire round trip starting and ending with his anxiety level at home at the beginning and at the end of the round trip. A detailed breakdown of these components is described in Appendix D. Mr. A. thus assessed his anxiety using SUDS scale for all eleven components of each round trip. He continued however to record his ratings at only two points during exposure; once on arrival at Tim Horton’s and once on his return home, using the form in Appendix D. This process was used successfully during a second training session and continued during treatment.

Eleven data points were recorded for each treatment session and graphed over the course of treatment to assess the trend of Mr. A’s anxiety. Anxiety levels for each component of the bus trip over the course of treatment were also aggregated and the mean, standard
deviation and median calculated, to provide a broad indication of overall anxiety levels during the various components of exposure.

**Baseline Data**

Baseline data regarding independent bus riding was gathered over a two week period during the treatment planning phase. Prior to commencement of treatment no independent bus rides were initiated by Mr. A. A baseline was developed based on three bus trips initiated by the student where Mr. A. was accompanied. During these bus trips the student sat next to Mr. A. on the bus as had been the custom of others accompanying him in the past.

**Ethical Approval/Consent**

As this research involved a human participant, a research proposal was presented for ethical clearance from the St. Lawrence College Research and Ethics Committee for Psychology. Once clearance was obtained the participant was approached for consent.

Mr. A’s permission was sought to implement in vivo exposure and anxiety management techniques as part of a thesis project, with a view to increasing independent bus use. During the initial meetings Mr. A. was informed that the counsellor was a student working under the supervision of two supervisors, one from the agency with whom he was affiliated and the other from St. Lawrence College. He was also informed of the behavioural orientation of the student, the need for team work for effective treatment and the focus on evidence based treatments. Questions and concerns of the participant were addressed.
Procedure

In collaboration with the participant, the bus route for exposure was selected. To reduce the potential for experience of crowding and teen aged students during the trip, the bus route and time of day for exposure sessions were carefully considered. Further factors that were taken into account were the utility of the bus route for daily living, and the reinforcement value of the final destination. Tim Horton’s, was a highly desirable destination for the participant. This was made more salient by the fact that he elected to have a late breakfast there on the days of exposure. The Tim Horton’s was also within walking distance of a grocery store.

To manage his anxiety during exposure, the participant was taught abdominal breathing based on procedures described by Bourne (1995). He was also taught to minimise the potential for social encounters on route by avoiding eye contact with others.

Treatment took place over a period of eight weeks between Oct 15th and Dec 5th and included twelve, two hour return trips between Mr. A’s home and Tim Horton’s. The trips were prearranged to allow for predictability and recovery time. Trips were planned for Monday and Wednesday morning every week starting at 9.30am, depending on participant availability and the weather. Each trip included two exposure opportunities, the trip to Tim Horton’s and the trip home. On the first intervention trip, the participant was given the opportunity to elect at which level of the hierarchy to begin exposure. On commencement of each subsequent trip, during the walk to the bus stop he was given verbal reinforcement regarding his progress on the previous trip. He was then reminded of the hierarchy and the next step he had to take in his progression towards his goal. He could either repeat the previous exposure level, or advance to the next level. To foster
greater independence in walking to and from the bus, the student walked slightly behind the participant most of the way.

During exposure the participant had been instructed to use abdominal breathing to manage his anxiety, however during the training period, the participant indicated that he did not find this method helpful. It was also noted that because of his poor physical fitness and his breathlessness when walking to the bus stop, this method was not effective for him and an alternative method was sought. When asked how the participant coped when he did become anxious on the bus or walking along the sidewalk, he indicated that he “tried to think of other things”. Cognitive distraction appeared to be a viable alternative. Before each exposure, the participant was prompted to identify a movie he had recently seen or a book that he had recently read, to use as a distraction when he became anxious. During the walk to the bus stop, the student provided further distraction by talking to him about his favourite topics. To provide an independent source of distraction, an MP3 player was suggested and the participant was provided with the opportunity to borrow one during his fourth return trip. He decided to purchase his own player and selected the music from one of his favourite Western movies to download. Mr. A. reported that he had also discussed the option of the MP3 player with his doctor who supported the idea, and noted that listening to music reduced the chances for social contact.
Chapter IV: Results

During the twelve treatment sessions involving return trips between Mr. A’s home and Tim Horton’s, Mr. A. progressed from having been accompanied by the student for the entire trip, to completing the return bus ride and the walk to Tim Horton’s independently. To be able to complete the journey on his own however, he still had to master the walk between his home and the bus stop.

Progress on the exposure hierarchy compared proximity of the student to Mr A. during the baseline and treatment sessions. This progress is illustrated in Figure 1.1. Although the baseline represented only three points, Mr. A. reported that he had not caught the bus unaccompanied for over thirty years. Progress on the exposure hierarchy was monitored separately for the trip to Tim Horton’s, and the return trip.

On the trip to Tim Horton’s, Mr. A. progressed rapidly through the levels of the hierarchy once treatment began. Only once was an exposure level repeated. Exposure level six was repeated on the fifth and sixth treatment session. This was the first time the client was on the bus alone for a brief period of time, and required to walk to Tim Horton’s on his own.

On the return trip, Mr. A, progressed in four treatment sessions to exposure level five, the point just before he would be required to ride on the bus unaccompanied for a short period of time and begin the walk home alone. Mr. A. did not however wish to walk between the bus stop and his home alone. The walk was longer and the street and sidewalk traffic busier than the walk between the bus stop and Tim Horton’s. This meant that only once it became possible to meet him at the bus stop immediately on his arrival on his trip home, was he willing to increase his exposure. Mr. A was able to complete the entire trip to Tim Horton’s unaccompanied for the first time on the ninth treatment
session. This made it possible for the student to drive to Tim Horton’s, which provided the means to meet him as he arrived at the bus stop on his trip home. On the tenth treatment session, Mr. A. repeated exposure levels of the previous session, however on the eleventh treatment session, he progressed from level five to level nine on the exposure hierarchy on the return trip thus completing the entire return trip on the bus independently. He was met on his arrival at the bus stop on his way home by the student, to be accompanied on the walk home. Mr. A. remained at exposure level nine for the trip to and from Tim Horton’s for the last treatment session.

Fig 1.1: Level of Exposure to Independent Bus Riding based on Exposure Hierarchy
The table below provides a summary of anxiety levels during various components of the trip. Results indicated that, on average, being at home at the beginning (M=1, SD=0) and the end (M=1, SD=.43) of the treatment session was the least anxiety provoking, while on average, the bus trip home (M=4.25, SD=1.36) and walking home (M=4.67, SD=1.56) was the most anxiety provoking part of the trip.

Table 1

*Summary of SUDS ratings during the trip to and from Tim Horton’s*

<table>
<thead>
<tr>
<th></th>
<th>Trip to Tim Horton’s (T/H)</th>
<th>Trip Home</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Home</td>
<td>Walk to bus</td>
</tr>
<tr>
<td>Mean</td>
<td>1.00</td>
<td>3.83</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.00</td>
<td>1.40</td>
</tr>
<tr>
<td>Median</td>
<td>1.00</td>
<td>3.50</td>
</tr>
</tbody>
</table>

SUDS ratings at home at the start and finish of the exposure and SUDS ratings at Tim Horton’s ranged between zero and three, confirming that he saw both home and Tim Horton’s as non anxiety provoking. SUDS ratings remained constant between level two and three at Tim Horton’s despite the fact that from the fifth treatment session Mr. A. arrived unaccompanied by the student.
Figure 1.2 indicates anxiety levels while waiting for the bus. Anxiety levels remained low, fluctuating between two and three, except on one occasion where it increased to four. Mr. A. was accompanied by the student during his wait at the bus stop on return trips to Tim Horton’s throughout treatment.

![Figure 1.2: SUDS rating while waiting at Bus Stop](image_url)
Figure 1.3 shows Mr. A’s SUDS ratings during the bus ride. Initially his anxiety ratings increased as the exposure increased and the student moved further away from Mr. A. on the bus. The third treatment session showed a marked difference in anxiety. A SUDS rating of two was recorded on the trip to Tim Horton’s and seven, on the trip home. The biggest difference between the two trips was the crowding on the bus. The bus was nearly empty on the trip to Tim Horton’s and nearly full on the trip home. On the fifth treatment session anxiety ratings for both legs of the journey were high, at seven on the trip to Tim Horton’s and six on the trip home. This was the first time Mr. A. was entirely unaccompanied on the bus for a part of the trip. From then on however, regardless of increased time unaccompanied on the bus, he maintained anxiety levels between two and four on both his trips to and from Tim Horton’s. He managed to do this despite variability in the number of passengers on the bus, how close they sat to him or how they behaved in relation to him. Even with the bus generally being more crowded on the way home, there was no trend indicating increased anxiety. SUDS ratings did not rise on the eleventh exposure, the first time Mr. A. completed the return leg of the journey alone. The levelling off of SUDS ratings between three and four indicated that Mr. A. was able to manage his anxiety in spite of increased exposure. A further change observed from the eighth exposure was that Mr. A. began to explore sitting in different places on the bus to try to increase his comfort level.
Figure 1.3: Suds rating on Bus on trip to and from Tim Horton’s.
Figure 1.4 highlights SUDS ratings during the walk between Tim Horton’s and the bus stop. During his walk from Tim Horton’s to the bus stop Mr. A. was always accompanied by the student and his SUDS ratings levelled off at 2. From the fifth treatment session however he walked to Tim Horton’s unaccompanied. Despite this his SUDS ratings remained between two and three. Low SUDS ratings indicate that Mr. A. did not find this portion of the trip anxiety provoking.

Figure 1.4: Suds rating on walk to and from Tim Horton’s
Figure 1.5 records SUDS ratings on the walk to and from home. This was the most anxiety provoking part of the trip including SUDS ratings as high as eight during the first and third round trips. The third treatment session indicated the biggest difference in anxiety ratings, between three on the walk to the bus stop and eight on the walk home. It is possible that this difference related to the difference in the crowding on the bus immediately preceding the walk home, as discussed in figure 1.3. Throughout exposure the participant was accompanied by the student between his home and the bus stop. As it became clear that abdominal breathing would not be effective in managing anxiety for Mr. A. during baseline and the first treatment session, this was replaced by distraction. During the walks between his home and the bus stop, the student conversed with Mr. A. on topics of interest to him. Mr. A was also prompted to think of a favourite book or movie when he became anxious. Eventually music replaced thoughts of books or movies, and served as a source of distraction independent of the student. On the tenth treatment session, Mr. A. used his own MP3 player for the first time with music of his choice and his anxiety levels decreased to a rating of three. Anxiety levels increased slightly again on the final treatment session on the trip home. A possible explanation for this is that the batteries for the portable music device went flat and his music was no longer available.
One extraneous variable that may have had an impact on Mr. A.’s anxiety was his changing level of fitness throughout the program. The first time Mr. A. walked to the bus stop he was very out of breath and had to stop a number of times to rest. He became aware of his unfit state and undertook to exercise ten minutes a day on his treadmill on the days that he did not take the bus. Once he acquired his MP3 player, he also began to use it during exercising and reported finding the experience much more pleasurable. Over the course of exposure it is possible that the stress related to the physical effort was reduced as he became fitter.

**Maintenance**

The main outstanding challenge was the walk between Mr. A.’s home and the bus stop. Mr. A.’s mother indicated an interest in maintaining and building on the gains made by her son. Guidelines were discussed for completion and maintenance of the program in collaboration with Mr. A. and his mother. Written instructions based on these
discussions were shared with support staff at the agency to be used in their continuing work with this family (Appendix E). Further suggestions were also discussed with agency staff regarding maintenance of the program, including the possibility of arranging to meet the participant at this specific Tim Horton’s once a week once he was able to complete the bus trip independently. A major obstacle for both Mr. A. and his mother in continuing the program at the time was the encroaching winter weather. It appeared most likely that they would resume the program in the spring.
Chapter 5: Discussion

Summary of Results

This study confirmed the effectiveness of gradual in vivo exposure in increasing independent city bus use, for a fifty two year old male with Asperger’s Syndrome. Within twelve treatment sessions over a period of eight weeks, Mr. A. was able to take a bus unaccompanied to a predetermined destination for the first time in more than thirty years. Only the walk between his home and the bus stop remained a challenge. The role of the relaxation technique in this study is not however clear, because of the need to adjust its application to meet the needs of the participant. Reports from the participant indicated that music was a preferred and effective means of distraction during exposure.

Strengths

The strengths of the study were that it focused on the needs of one individual, allowing for detailed examination of his situation, and a tailoring of the program to his needs. The destination of the trip was both appealing and useful to Mr. A. His special interest was evoked through his active selection and procurement of music to download onto his portable music device. Collaboration with the participant and his mother throughout the process ensured commitment as well as acceptance of the treatment process. The participant’s input allowed for realistic gradation of in vivo exposure resulting in his moving rapidly from one level of the hierarchy to the next, despite a number of variables in the environment which could not be controlled. Examples were the number of people on the bus, and their seating on the bus in relation to the participant. Recording of data played a key part in the success of the treatment as it proved a powerful feedback mechanism for the participant. Initial recording of stress levels when
developing the exposure hierarchy were later used to provide feedback as the participant progressed through exposure levels and his recorded stress levels reduced. A further strength of the study was that it was conducted in an applied setting.

Beneficial side effects of the intervention were also noted. The participant indicated that he used music as a distraction in other anxiety provoking outings with his mother, as well as during exercise session on his treadmill. Walking to and from the bus, increased Mr. A’s awareness of his unfit state, and resulted in his development of an exercise program at home.

Limitations

There were a number of limitations to this study. It is difficult to draw conclusions regarding the relaxation component of the study because it did not remain constant. Initially abdominal breathing was used, followed by cognitive distraction and then music. There was also a considerable delay between the time the possibility of music was explored and the procurement and use of a device tailored to the participant. Ideally an effective relaxation technique should have been established before the start of exposure. However, the fact that the participant managed to increase his exposure level despite changes in the relaxation techniques, brings into question the importance of its form.

With regard to the measurement of stress there are a number of limitations. Stress levels of the participant were not measured during baseline. During exposure, measurement relied to some extent on the participant’s memory. Although there were eleven different times during the trip where measurement of stress was required, Mr. A.
recorded his stress ratings only twice during the trip. Accuracy of the stress ratings can also be questioned because they relied on self report.

A confounding variable in the study was the presence of the experimenter during exposure. The positive relationship between the client and the student may have impacted on the client’s motivation to make progress. Finally, it is not possible to generalise the success of this treatment to a wider population without replication of these results, as this was a single participant design.

**Multilevel Challenges to Service Implementation**

From a systems perspective, a number of challenges were noted. A lifetime of interdependency between the participant and his mother made independent living particularly challenging for this participant. While he was the client of the community based agency, the involvement of the mother in any treatment would be crucial to its success despite the fact that she was not a client. A real challenge for the agency staff was time. While the staff had only one hour a week allocated for this participant, this exposure program required a minimum of two hours per treatment session. On a community wide basis there is limited specialised support for individuals with Asperger’s Syndrome and their families. The lack of understanding of the general public with regards to Asperger’s Syndrome also increases the challenge in integrating such individuals into the community, and increases the burden of support for families and professionals working in this field.
Contribution to the Field of Behavioural Psychology

The study appeared to support the premise of Behavioural Activation which suggests that focused attempts to change overt behaviours will result in changes in covert behaviour i.e. thoughts and feelings, leading to improved quality of life. Results showing the self reported decrease in anxiety despite increased exposure, confirmed this premise. Despite reports that those with Asperger’s have difficulty adjusting to change, in vivo exposure appears to be effective in enabling such individuals to master anxiety provoking situations fairly rapidly. Behavioural Activation further avoids the challenges that may be faced when working with clients with Asperger’s Syndrome who have difficulty identifying or expressing their feelings.

Recommendations for Future Research

To enhance treatment practicality given the time constraints of staff working in the field, future research might focus on including an element of self exposure between sessions. Greater focus on self-control strategies, recognition of stressors and mastery of coping mechanisms before during and after stress could enhance effectiveness of self exposure. In a situations where habituation to change is slow and there is a need for consistency and repetition to adjust to change, providing the tools to develop exposure strategies and then supporting and monitoring this process may be more effective than direct participation in exposure. To lend further support to the principles of behaviour activation, data regarding the participants’ depression and anxiety before and after treatment should also be included.
References


Appendix A: Criteria for Asperger’s Syndrome

Table 1.1: Comparison of diagnostic criteria for Asperger’s syndrome, adapted from DSM-IV-TR (American Psychiatric Association, 2000), Gillberg and Gillberg (1989) and Baron-Cohen, Wheelwright, Robinson and Woobury –Smith (2005).

|---|---|---|
| Qualitative impairment in social interaction, as manifested by at least two of the following:  
  - marked impairment in the use of multiple nonverbal behaviours such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction.  
  - failure to develop peer relationships appropriate to developmental level  
  - a lack of spontaneous seeking to share enjoyment, interests, or achievements of interest to other people (e.g., by a lack of showing, bringing, or pointing out objects of interest to other people)  
  - lack of social or emotional reciprocity | Severe impairment in reciprocal social interaction, showing in  
  - inability to interact or play reciprocally with age-peers  
  - a lack of normal desire to be in the company of age peers  
  - a lack of appreciation of social cues, resulting in odd, socially or emotionally inappropriate behaviour, usually thought to reflect “coldness”, “stiffness”, “emotional bluntness/immaturity”, “extreme egocentricity”, or”(unintentional) play acting” (such as in the movies from early period). | A. Qualitative impairment in social interaction  
  - Marked impairment in the use of multiple nonverbal behaviours such as eye-to-eye gaze, facial expression, body postures, gestures to regulate social interaction.  
  - Failure to develop peer relationships appropriate to developmental level  
  - No interest in pleasing others, no interest in communicating his/her experience to others, including lack of spontaneous seeking to share enjoyment, interests or achievement with other people; lack of showing, bringing or pointing out objects of interest.  
  - Lack of social or emotional reciprocity (e.g. not knowing how to comfort someone; and/or lack of empathy).  
  - Difficulties in understanding social situations and other people’s thoughts and feelings. |
<table>
<thead>
<tr>
<th>DSM-IV-TR</th>
<th>Gillberg and Gillberg</th>
<th>Baron-Cohen, Wheelwright, Robinson and Woobury –Smith</th>
</tr>
</thead>
</table>
| Restricted repetitive and stereotyped patterns of behaviour, interests, and activities, as manifested by at least one of the following:  
  • encompassing preoccupation with one or more stereotyped and restricted patterns of interest that is abnormal either in intensity or focus  
  • apparently inflexible adherence to specific, non-functional routines or rituals  
  • stereotyped and repetitive motor mannerisms (e.g., hand or finger flapping or twisting, or complex whole-body movements)  
  • persistent preoccupation with parts of objects | An all-absorbing, circumscribed interest in a participant, such as meteorology, astronomy or Greek history. This interest may change in content over the years, but its fundamental style remains in that it goes to extremes, excludes most other activities and is adhered to in a repetitive way and relies on rote memory rather than meaning and connection.  
  • A stereotyped way of trying to introduce and impose routines or the particular interest in all or almost all aspects of ordinary life. | B. Restricted repetitive and stereotyped patterns of behaviour, interests, and activities  
  • Encompassing preoccupation with one or more stereotyped and restricted patterns of interest that is abnormal either in intensity or focus  
  • Apparently inflexible adherence to specific, non-functional routines or rituals  
  • Stereotyped and repetitive motor mannerisms (e.g., hand or finger flapping or twisting, or complex whole-body movements)  
  • Persistent preoccupation with parts of objects/systems  
  • Tendency to think of issues as being black and white (e.g., in politics or morality), rather than considering multiple perspectives in a flexible way. |
<p>| The disturbance causes clinically significant impairment in social, occupational or other important areas of functioning. | Prerequisite: The disturbance causes clinically significant impairment in social, occupational or other important areas of functioning. |</p>
<table>
<thead>
<tr>
<th>DSM-IV-TR</th>
<th>Gillberg and Gillberg</th>
<th>Baron-Cohen, Wheelwright, Robinson and Woobury –Smith</th>
</tr>
</thead>
</table>
| There is no clinically significant general delay in language (e.g., single words used by age 2 years, communicative phrases used by age 3 years). | Speech and language problems showing as  
  - delayed language development as compared with expected given the child’s social language background,  
  - superficially perfect expressive language with a strong tendency to become formal and pedantic and usually with a flat, staccato-like prosody, and  
  - mild or moderate impairment of language comprehension with concrete misinterpretations of spoken language against a background of much better expressive language skills. | Prerequisite: There is no clinically significant delay in language (e.g., single words used by age 2 years, communicative phrases used by age 3 years).  
C. Qualitative impairments in verbal or non-verbal communication  
  - Tendency to turn any conversation back on self or own topic of interest  
  - Marked impairment in the ability to initiate or sustain a conversation with others. Cannot see the point of superficial social contact, niceties or passing time with others unless there is a clear discussion point/debate or activity.  
  - Pedantic style of speaking, or inclusion of too much detail  
  - Inability to recognise when the listener is interested or bored. Even if the person has been told not to talk about their particular obsessive topic for too long, this difficulty may be evident if other topics arise.  
  - Frequent tendency to say things without considering the emotional impact on the listener (faux pas). |
<p>| Non-verbal communication problems, with limited or clumsy gestures and little or inappropriate facial expression. | | |</p>
<table>
<thead>
<tr>
<th>DSM-IV-TR</th>
<th>Gillberg and Gillberg</th>
<th>Baron-Cohen, Wheelwright, Robinson and Woobury –Smith</th>
</tr>
</thead>
</table>
| There is no clinically significant delay in cognitive development or in the development of age-appropriate self-help skills, adaptive behaviour (other than in social interaction), and curiosity about the environment in childhood. | Motor clumsiness  
No requirement regarding the child’s intellectual level. | There is no clinically significant delay in cognitive development or in the development of age-appropriate self-help skills, adaptive behaviour (other than in social interaction or skills linked to social awareness e.g. personal hygiene). |
| Criteria are not met for another specific Pervasive Developmental Disorder or Schizophrenia. | | Prerequisite: Criteria are not met for another Pervasive Developmental Disorder or Schizophrenia. |
| | | D.Impairments in imagination  
• Lack of varied spontaneous make believe play appropriate to developmental level  
• Inability to tell, write or generate spontaneous unscripted or un plagirised fiction.  
• Either lack of interest in fiction (written or drama) appropriate to developmental level or interest in fiction is restricted to its possible basis in fact (e.g. science fiction, history, technical aspects of film). |
| | | Delays or abnormal functioning in each of A-D occur across development.* |

* Adults diagnostic tool added criteria to DSM because  
− No communication abnormalities were included in the DSM despite the difficulties in the domain of pragmatics, and  
− The numbers of criteria were so few that risk of over diagnosis. (Howlin, 2000).
Appendix B: Anxiety Questionnaire adapted from Bourne (1995).

Questionnaire based on the classification of anxiety disorders of the DSM-IV (Diagnostic and Statistical Manual of Mental Disorders -Fourth Edition).

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Do you ever have spontaneous anxiety attacks that come out of the blue? (Only answer yes if you do not have any phobias).</td>
</tr>
<tr>
<td>2.</td>
<td>Have you had at least one such attack in the last month?</td>
</tr>
<tr>
<td>3.</td>
<td>If you had an anxiety attack in the last month, did you worry about having another one? Or did you worry about the implications of your attack for your physical or mental health?</td>
</tr>
</tbody>
</table>
| 4. | In your worst experience with anxiety did you have more than three of the following symptoms?  
   o Shortness of breath or smothering sensation  
   o Dizziness or unsteady feeling  
   o Heart palpitations or rapid heartbeat  
   o Trembling or shaking  
   o Sweating  
   o Choking  
   o Nausea or abdominal distress  
   o Feelings of being detached or out of touch with your body  
   o Numbness or tingling sensations  
   o Flushes or chills  
   o Chest pain or discomfort  
   o Fear of dying  
   o Fear of going crazy or doing something out of control. |
5. Does fear of having panic attacks cause you to avoid going into certain situations?

6. Which of the following situations do you avoid because you are afraid of panicking?
   - Going away from home
   - Shopping in a grocery store
   - Standing in a grocery store line
   - Going to department stores
   - Going to shopping malls
   - Driving on surface streets far from home
   - Driving anywhere by yourself
   - Using public transportation (buses, trains, etc).
   - Going over bridges (whether you are the driver or the passenger)
   - Flying in planes
   - Riding in elevators
   - Being in high places
   - Going to a dentist’s or doctor’s office
   - Sitting in a barber’s or beautician’s chair
   - Eating in restaurants
   - Going to work
   - Being too far from a safe person or safe place
   - Being alone
   - Going outside your house
   - Other ______________________________

7. Do you avoid certain situations not primarily because you are afraid of panicking, but because you are afraid of being embarrassed or negatively evaluated by other people? (Your embarrassment could subsequently lead you to panic).

8. Which of the following situations do you avoid because of fear of embarrassing or humiliating yourself?
   - Sitting in any kind of group (for example at work, in school classrooms, social organisations, self-help groups)
   - Giving a talk or presentation before a small group of
<table>
<thead>
<tr>
<th>People</th>
</tr>
</thead>
<tbody>
<tr>
<td>o Parties and social functions</td>
</tr>
<tr>
<td>o Using public restrooms</td>
</tr>
<tr>
<td>o Eating in front of others</td>
</tr>
<tr>
<td>o Writing or signing your name in the presence of others</td>
</tr>
<tr>
<td>o Dating</td>
</tr>
<tr>
<td>o Any situation where you might say something foolish</td>
</tr>
<tr>
<td>o Other.</td>
</tr>
</tbody>
</table>

9. Do you fear and avoid any one (or more than one) of the following?
   - o Insects or animals, such as spiders, bees, snakes, rats, bats or dogs.
   - o Heights (high floors in buildings, tops of hills or mountains, high-level bridges)
   - o Driving
   - o Tunnels
   - o Bridges
   - o Elevators
   - o Airplanes (flying)
   - o Doctors or dentists
   - o Thunder or lightning
   - o Water
   - o Blood
   - o Injections or medical procedures
   - o Illness such as heart attacks or cancer
   - o Darkness
   - o Other ____________________

10. Do you have high degrees of anxiety usually only when you have to face one of these situations?

11. Do you feel quite anxious much of the time but do not have distinct panic attacks, do not have phobias, and do not have specific obsessions or compulsions?

12. Have you been prone to excessive worry in the last six months?
13. Have your anxiety and worry been associated with at least three of the following six symptoms?
   - Restlessness or feeling keyed up or on edge
   - Being easily fatigued
   - Difficulty concentrating or mind going blank
   - Irritability
   - Muscle tension
   - Sleep disturbance (difficulty falling or staying asleep, or restless unsatisfying sleep).

14. Do you have recurring intrusive thoughts such as hurting or harming a close relative, being contaminated with dirt or a toxic substance, fearing you forgot to lock your door or turn off an appliance, or an unpleasant fantasy or catastrophe? (You recognize that these thoughts are irrational but you can not keep them from coming into your mind.)

15. Do you perform ritualistic actions such as washing your hands, checking, or counting to relieve anxiety over irrational fears that enter your mind?
Appendix C: Interview regarding Asperger’s Symptoms, Daily Routine and Bus Travel Anxiety

In order to gain a better understanding of how you experience Asperger’s Syndrome, please answer the following questions:

1. Could you please describe a typical twenty-four hour period in your life at present.

2. Describe how you experience social interactions with others.

3. What are your interests, how do you like to spend your time during your waking hours?

4. How important is routine to you? Do you require notice of any changes in routine in advance, and how much time do you need to adjust?

5. Do you have any particular difficulty with motor dexterity such as eye-hand coordination and walking? Please describe this.

6. Do you have any particular sensory sensitivity, such as loud noises, that might bother you?

7. Can you describe exactly what you find anxiety provoking regarding travelling on the bus?

Note: Demonstrated ability to generalize will be observed through client conversation and behaviour.
### Appendix D: SUDS Scale

<table>
<thead>
<tr>
<th>Exposure</th>
<th>Anxiety Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
</tr>
<tr>
<td>At Home</td>
<td></td>
</tr>
<tr>
<td>Walk to bus stop</td>
<td></td>
</tr>
<tr>
<td>Wait at bus stop</td>
<td></td>
</tr>
<tr>
<td>Ride on bus</td>
<td></td>
</tr>
<tr>
<td>Walk to Tim Horton’s</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Record scores for above at Tim Horton’s</td>
<td></td>
</tr>
<tr>
<td>At Tim Horton’s</td>
<td></td>
</tr>
<tr>
<td>Walk back to bus stop</td>
<td></td>
</tr>
<tr>
<td>Wait at bus stop</td>
<td></td>
</tr>
<tr>
<td>On bus home</td>
<td></td>
</tr>
<tr>
<td>Walk home</td>
<td></td>
</tr>
<tr>
<td>At home at end of trip</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Record scored for above on arrival at home</td>
<td></td>
</tr>
</tbody>
</table>

0 = absolutely calm

10 = the worst anxiety you have ever had
Appendix E: Instructions for Completion and Maintenance of Program.

- Once Mr. A. is able to take the bus trip to and from Tim Horton’s independently gradually walk further and further behind Mr. A. to and from the bus stop near home as follows:
  1. One step behind Mr. A.
  2. A foot behind Mr. A.
  3. Three feet behind Mr. A.
  4. Six feet behind Mr. A.
  5. Twelve feet behind Mr. A.
  6. About one block behind Mr. A.
  7. Mr. A. should walk alone to the bus stop and be met at Tim Horton’s for coffee.

- During steps 1 to 6, wait for Mr. A. to return from Tim Horton’s in the library nearby and walk home with him repeating the walk back in the same way you have walked with him to the bus stop.

- Once step 6 has been reached, arrange to meet Mr. A. at Tim Horton’s.

- This process should be continued once or twice a week as your schedule permits to maintain gains.