ASPERGER DISORDER AND THE TOMATIS METHOD: A CASE-STUDY

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B.A. (Hons)

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- My mother- this is for you!

Summary

ASPERGER DISORDER AND THE TOMATIS METHOD: A CASE-STUDY

(Keywords: Tomatis method; Asperger disorder; communication; interpersonal relationships; psychological well-being.)

This study aimed to determine what the effect of participation in a Tomatis Programme (TP) would be on the psychological well-being and communication ability of a 14 year old, white adolescent boy with Asperger Disorder (AD). A mixed method design in the form of a single case-study was used. Qualitative data were obtained via semi-structured interviews, spontaneous sketches and observation. Quantitative data were gathered by means of projective drawings and the Profile of Mood States (POMS). Seven main categories with twenty-one sub-categories emerged from the qualitative data, and were supported by the quantitative data. Results indicated improvement in Interpersonal Communication and all six domains of psychological well-being as defined by Ryff (1995) with most significant areas being: Environmental Mastery, Personal Growth, Autonomy and Positive Relations. The Tomatis Method (TM) proved to be a successful form of treatment to enhance psychological well-being and interpersonal communication skills in an AD patient. More effective communication and better family relationships can be achieved and therefore youth with AD can be empowered to adjust their behaviour accordingly. The TM prepared the participant for a next phase in therapy where he specifically can focus on more effective social skills with peers. Further research involving more participants and a control group is needed.

Opsomming

ASPERGERVERSTEURING EN DIE TOMATIS METODE: 'N GEVALLESTUDIE

(Sleutelwoorde: Tomatismetode; Aspergerversteuring; kommunikasie; interpersoonlike verhoudinge; psigologiese welsyn.)

Die doel van hierdie studie was om te bepaal wat die effek van deelname aan 'n Tomatisluisterprogram (TP) op die psigologiese welsyn en kommunikasievermoë van 'n 14-jarige, blanke adolessente seun met Aspergerversteuring (AV) sal wees. Daar is van 'n gemengdemetode ontwerp in die vorm van 'n enkelgevallestudie gebruik gemaak. Kwalitatiewe data is verkry deur semi-gestruktureerde onderhoude, spontane sketse en observasies. Kwantitatiewe data is versamel deur middel van projektiewe tekeninge en die Profile of Mood States (POMS). Sewe hoofkategorieë en een-en-twintig subkategorieë het vanuit die kwaliatiewe data ontstaan, en is deur die kwantitatiewe data ondersteun. Resultate dui op die verbetering van sy kommunikasievermoëns asook verbeterings in al ses die domeine van psigologiese welsyn soos omskryf deur Ryff (1995). Die grootste verbeterings is in die volgende areas gevind: Omgewingsbemeestering, Persoonlike Groei, Outonomie en Positiewe Verhoudings. Die Tomatismetode blyk 'n suksesvolle behandelingsmetode vir AV pasiënte te wees, veral wat die verbetering van hul psigologiese welsyn en interpersoonlike kommunikasievaardighede aanbetref. Meer effektiewe kommunikasie en verbeterde gesinsverhoudings bemagtig jeug met AV om hul gedrag daarvolgens aan te pas. Die Tomatisprogram het die deelnemer voorberei vir 'n volgende fase in terapie waar daar spesifiek op sosiale vaardighede met sy portuurgroep gefokus kan word. Verdere navorsing met meer deelnemers asook 'n kontrolegroep word benodig.

LETTER OF CONSENT

We, the co-authors, hereby give consent for Lindi Nel to submit the following manuscript for purposes of a mini-dissertation. It may also be submitted to the *South African Journal of Psychology* for publication.

Mrs. D.K. Kirsten
Supervisor

Prof. W.F. du Plessis
Co-supervisor

INTENDED JOURNAL AND INSTRUCTIONS TO AUTHORS

Intended Journal: South African Journal of Psychology

The manuscript as well as the reference list have been styled according to the above journal's specifications.

(Manuscript submission guidelines to follow.)

Instructions to Authors

The original typewritten manuscripts plus two copies must be submitted to the Editor: Professor N. Duncan, Department of Psychology, University of the Witwatersrand, Private Bag X3, WITS, 2050. e-mail: duncann@umthombo.wits.ac.za

The manuscript must be accompanied by a letter stating that the paper has not been previously published, is the author's/authors' own original work and all listed authors must sign the letter to indicate their agreement with the submission. The manuscript should be typed in Times New Roman, in 12-point font, double spacing with generous margins, on one side of the page only. The first page should contain the title of the paper, the author's/authors' name(s) and address(es), and the name and address of the author to whom correspondence should be addressed. The abstract should be on a separate page. The text of the paper should start on a new page. Tables and figures should be numbered consecutively and submitted on separate A4 pages attached to the manuscript. The appropriate positions in the text should be indicated. Once the article has been accepted for publication, a computer diskette must also be submitted. ASCII is the preferred text format. The diskette should be clearly marked.

The format of the articles should conform to the requirements of the *South African Journal of Psychology: Guide to authors,* which is based on the Publication Manual of the American Psychological Association.

Illustrations and figures: These should be prepared on A4 sheets. One set of original illustrations and figures on good-quality drawing paper, or glossy photo prints and three sets of copies, should accompany the submission. The figures should be clearly labelled. Authors are requested to pay particular attention to the proportions of figures so that they can be accommodated in single (82mm) or double (170mm) columns

after reduction, without wasting space. Figures should be numbered consecutively in Arabic numerals (Figure 1, Figure 2), and descriptive captions listed on a separate sheet of A4 paper. Graphs should be fully inscribed, and points should be indicated with standard symbols. All illustrations and figures should be grouped together at the end of the manuscript, and their appropriate positions in the text should be indicated. Figures and illustrations should preferably be supplied in electronic format, 300dpi, in .tif or .eps format.

ASPERGER DISORDER AND THE TOMATIS METHOD: A CASE-STUDY

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ASPERGER DISORDER AND THE TOMATIS METHOD

(Abbreviated Title)

Asperger disorder and the Tomatis Method: A case-study

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ABSTRACT

This study aimed to determine what the effect of participation in a Tomatis Programme (TP) would be on the psychological well-being and communication ability of a 14 year old, white adolescent boy with Asperger Disorder (AD). A mixed method design in the form of a single case-study was used. Qualitative data were obtained via semi-structured interviews, spontaneous sketches and observation. Quantitative data were gathered by means of projective drawings and the Profile of Mood States (POMS). Seven main categories with twenty-one sub-categories emerged from the qualitative data, and were supported by the quanlitative data. Results indicated improvement in Interpersonal Communication and all six domains of psychological well-being as defined by Ryff (1995) with most significant areas being: Environmental Mastery, Personal Growth, Autonomy and Positive Relations. The Tomatis Method (TM) proved to be a successful form of treatment to enhance psychological well-being and interpersonal communication skills in an AD patient. More effective communication and better family relationships can be achieved and therefore youth with AD can be empowered to adjust their behaviour accordingly. The TM prepared the participant for a next phase in therapy where he specifically can focus on more effective social skills with peers. Further research involving more participants and a control group is needed.

Word count = 168

Asperger Disorder (AD) is currently conceptualised as a neurodevelopment disorder and belongs to a group of childhood-onset disorders, collectively termed as *pervasive developmental disorders* (Ghaziuddin, 2002; Volkmar & Klin, 2000). According to the DSM IV-TR (APA, 1994) Asperger disorder is characterized by: (i) qualitative impairment in social interactions; (ii) restricted repetitive and stereotyped patterns of behaviour, interests and activities; (iii) clinically significant impairment in social, occupational or other important areas of functioning; and (iv) lack of any clinically significant general delay in language and cognitive development. AD is often related to autism with regard to deficits in social interaction and restricted or obsessive interest patterns, but characterized by less severe language and cognitive impairments (Ghaziuddin, 2002; Freeman *et al.,* 2002; Volkmar & Klin, 2000).

Due to profound deficits in nonverbal communication, the child with AD will exhibit severe difficulties in social interactions, including relating to parents and siblings (Meyer & Minshew, 2002). Participating in family functioning can either be non-existing or chaotic as the danger of conflict appears to be so much higher (Gutstein & Whitney, 2002). This could be a result of relative weaknesses in the area of listening comprehension as AD patients commonly experience problems in organizing their thoughts and in processing auditory stimuli. Deficiencies at understanding nonverbal cues are also commonly experienced (Griswold, *et al.* 2002). Children with AD do not attempt to repair communication, nor attempt to ensure that they accurately receive others' communication. They make no attempt to aid the listener when he or she communicates confusion, or to regulate their conversation to ensure that topics of interest match their social partner's ideas (Landa, 2000). Children and youth with AD are typically thought to be socially stiff, socially

awkward, emotionally blunt, self-centred and inflexible (Koning & McGill-Evans, 2001). Other areas of dysfunction in AD includes difficulty to face life's challenges, an inability to be autonomous, general low self-esteem, rigid thinking patterns, a fear of change and high levels of anxiety and depression (Barnhill & Myles, 2001). In summary, AD patients seem to be as disconnected from themselves as they are from the world around them.

It is clear that AD has a profound impact on *psychological well-being*, since the latter, according to Ryff & Singer (1996), is ultimately an issue of engagement in living, being able to accept one's self and one's past life, being able to be independent, and to continually grow and expand as a person. Psychological well-being is also universally expressed in leading a life of meaning and purpose, having warm and trusting interpersonal relations and being able to master one's environment by creating contexts suitable for one's psychological needs (Ryff & Singer, 1998; Snyder & Lopez, 2002).

An increasing number of individuals are being diagnosed with AD (Ehlers & Gillberg, 1993) and it has been estimated that as many as 48 per 10 000 children could be affected (Kadesjo, Gillberg & Nagberg, 1999). Its occurrence is five times more likely in boys than in girls (Nash & Bonesteel, 2002). Children with AD are therefore receiving increasing attention due to the uniqueness of their disability; improved diagnosis and consequent rising numbers; paucity of literature on treatment and parental frustration, lack of services and limited professional understanding (Little, 2002).

Various forms of treatment for AD have been suggested (Luke, 2000). Today, comprehensive interventions appear to hold the most promise for individuals with AD. These treatments often include parent counselling, behaviour modification, special and general education in a highly structured environment, sensory integration training, music therapy, speech therapy, occupational therapy, social skills training and psychopharmacology (Luke, 2000). Currently available psychiatric medications are quite effective but should, however, be used sparingly and only when other strategies to reduce maladaptive behaviour have been properly tried and have failed to bring about the desired changes (Luke, 2000; Szatmari, *et al.* 2003).

Obscurities inherent in autistic spectrum disorders, including AD and the diversity of therapeutic approaches, necessitate ongoing research for identifying the most effective treatment methods and strategies for children and youth with autism and AD (Myles & Simpson, 2002). Autism and AD are characterised by common difficulties in the areas of communication, socialization and psychological well-being. Since the Tomatis Method (TM) of sound stimulation has been used to facilitate communication in autists for several decades (Gilmor & Madaule, 1982; Tomatis, 1991), it merits consideration in terms of its potential impact on AS. Comprising sensory-neural integration training, the TM involves a combination of sound stimulation and counseling which evolved from research by Alfred Tomatis (1920-2001), a French ear-nose-throat specialist. After confirming a relationship between hearing and speech empirically (Tomatis, 1978; 1996), further clinical observation made him differentiate between hearing (passive accommodation) and listening (active perception) (Tomatis, 1978, 1996). He also posited that listening could be impaired by early childhood trauma, despite intact hearing capability (Tomatis, 1996). Based on decades of clinical engagement with autistic individuals, they were characterised in terms of a refusal to

listen (Tomatis, 1991). Having become convinced of the interaction between hearing and listening, and language and speech and the individual's psychological state, Tomatis devised a system of listening re-eduation, based on opening up the listening function in listening impaired individuals (Gilmor *et al.,* 1989; Tomatis, 1978). The apparatus, developed for this purpose, the Electronic Ear, was devised to train the listening function (Gilmor *et al.,* 1989; Tomatis, 1978). The process is conducted in two stages:

(i) the phase of passive listening, during which the participant's hearing is stimulated by Mozartian music, progressively filtered. The resultant micro-gymnastic of the middle ear muscles, leads to a tonification of the ear drums and the transformation of the sound stimulation into energy impulses which are relayed to the brain, via the sub-cortical and cortical structures (Neysmith-Roy, 2001). Followed by exposure to the mother's voice recorded and modified to simulate prenatal listening, Tomatis believes that the original in utero "desire to communicate" is re-activated.

(ii) The active phase involves more sound stimulation, interspersed by repetition of words into a microphone, passing through the electronic ear, resulting in vocal feedback enriched in the middle and high frequencies. Whereas passive listening is aimed at increasing receptive listening, this phase is geared towards improving expressive listening, i.e. improved self-control over one's own language and speech.

Initial applications of the TM with singers and musicians were soon extended to a much broader clientele, including learning disordered children, musicians and autists. Although no statement concerning AD sufferers could be found among Tomatis' publications, it is assumed that they would be amendable to being "opened up" in

term of listening too, in view of their chronic communication disorders, albeit of lesser severity than in the case of pure autists.

The results of several studies involving the TM indicated that it facilitates reduced depression, anxiety and fatigue and enhances interpersonal relations and self-control (Coetzee, 2001; Du Plessis & Van Jaarsveld, 1988; Gilmor, 1999; Rourke & Russel, 1982). Additionally it enables individuals to become more aware of their social and physical surroundings, making them more responsive (Tomatis, 1991). In non-clinical samples, such as young adult musicians it also led to significantly increased vigour/activity (Du Plessis *et al.,* 2001). Once listening is facilitated it leads to enhanced intra-personal sensitivity (self-listening), as well as increased communication and vocalization, resulting in improved interpersonal relationships (De la Roque, 1998; Gilmor, 1999).

Despite the above studies, the impact of the TM on autistic individuals has hardly been evaluated. Published case histories of Tomatis treatment are limited to contributions by Madaule (2003), as well as brief clinical vignettes by Gilmor & Madaule (1989).

To the researcher's knowledge, only one formal evaluation of the TM with autistic individuals has been published to date (Neysmith-Roy, 2001). This study of six cases, including an AD child, involved formal pre-post assessments. Positive behaviour changes in these severely autistic boys suggested that the TM could prepare these children to learn basic skills necessary for coping with the demands associated with their unique problems. However, no single case study involving AD could be found.

Researches currently search for the most effective methods and strategies for children and youth with AD (Myles & Simpson, 2002). The aim of this single case-study was to determine what the effect of participation in a Tomatis Programme (TP) would be on the psychological well-being and communiaction skills of a 14 year old, white adolescent boy with Asperger Disorder (AD)

METHOD

Design

A mixed method design, single using both qualitative and quantitative methods, in the form of a single case-study format was used (Morse, 2003). The qualitative data was used to explore the psychological well-being status and communication skills of the participant prior to the TP. The identified categories then served as a conceptual framework to identify and link themes in observations and interviews throughout the programme. The results of the quantitative data served to enrich the qualitative data at pre0post test level (Morse, 2003).

Participant

The participant was a 14-year old white adolescent male, named Jake. He is the middle child and has an older brother Tim (18) and a younger brother Alf (8). During early - and middle childhood he was physically and emotionally abused by his father, who also had severe learning -, behaviour - and emotional problems. He was indecently assaulted by his older brother, Tim, for the last two years. His father died from lung cancer when Jake was 11 years old. Jake has a special bond with his mother, younger brother and grandmother (who died three weeks prior to this study).

He attended mainstream education up to Grade 7, where he struggled to cope socially and academically, and was marginalized and bullied.

Although Jake was always different from other children, he was only diagnosed with AD at age 13 after assessment by a multidisciplinary team. A thorough psychiatric, neuropsychological and psychological assessment revealed AD, major depression and mild mental retardation. Psychotropic medication, (Risperdal, 0.5mg daily & Flueoxitine, 20mg daily), special education placement, attendance of a Tomatis programme as well as family therapy and parental guidance were advised. Because no other provision for learners with special educational needs and mild mental retardation was available in any of their local schools, Jake had to relocate to a new town where he became a boarder, away from his mother. A difficult adjustment period was foreseen and therefore the Tomatis programme started off immediately after Jake had arrived at his new school. His teachers and hostel guardians were prepared for managing a child with AD. Although support measures were in place, Jake initially found it difficult to adjust, and some of the boarders (due to lack of insight) initially bullied him.

Jake's main behavioural -, emotional -, cognitive - and social problems were typically reflected in AD symptoms. These varied from lack of eye contact, depression and self-injury, severe learning difficulties, ineffective coping skills, poor self-acceptance and a lack of environmental mastery, autonomy and personal growth. He also experienced a vast array of relational difficulties at home with his older brother and at school with teachers and peers.

Information gathering methods

The qualitative and quantitative data were gathered simultaneously.

Methods of qualitative data gathering

Individual, semi-structured interviews were conducted with the participant, his mother, teachers and members of the multi-disciplinary team before, during and after the TP. The main focus of the interviews was to determine his level of functioning and how they experienced him. The participant wrote various spontaneous sketches before, during and after the TP, reflecting on his daily experiences. Participative observation took place, the researcher kept continued self -reflection notes and had weekly reflective discussions with her mentor (Marshall & Rossman, 1995).

Quantitative measuring instruments

The participant drew several projective drawings, the Draw-a-Person (DAP) and Draw-a-Tree (DAT) of Goodenough (1947). The qualitative aspects of the drawings gave insight in the participant's behaviour and current emotional state (Goodenough, 1947; Harris, 1964). The Profile of Mood States (POMS), consisting of a checklist of 65 items, were used to measure various mood states including Tension-Anxiety, Depression-Dejection, Anger-Hostility, Vigour, Fatigue and Confusion (McNair, Lorr & Droppelman, 1992). High test-retest reliability, internal consistency and construct validity are reported with an alpha coefficient ranging from 0.78-0.93. (McNair *et al.*, 1992; Terry, Lane & Fogarty, 2003). This correlates well with an alpha of 0.72 found in a South African study by Du Plessis *et al* (2001).

Procedure

The study was introduced to Jake and his family after the multi-team evaluation and written, informed consent was obtained. The existing baseline dataset of the multidisciplinary team was supplemented with the POMS data, where after the gathering of qualitative data followed. Jake completed three Tomatis programmes (TP) to total 150 half-hour sessions (four sessions per week) over a period of six months. A three week break preceded each programme. The TP comprised of three phases; a first preparatory phase called the 'inverse sonic birth' (Madaule, 1994; Tomatis, 1991), lasting fifty sessions. During this phase Jake was exposed to progressively more extensively filtered reproductions of Mozart's symphonies. The second phase, lasting fifty sessions, comprised of listening to filtered music and a recording of his mother's voice. The final phase, lasting fifty sessions, constituted audio-vocal training where he articulated words into a microphone, alternated with music. The Electronic Ear modified the verbal input to feed back his voice, enriched in the middle and high frequencies. The higher frequencies are transformed into energy impulses in the inner ear, relayed to the cerebral cortex and distributed throughout the body. The purpose of this is to enhance vigour and to stimulate and encourage the person's original "desire to communicate" (Tomatis, 1991) thus reinforcing one's communication both interpersonally and intrapersonally (Kierman, 1986; Madaule, 1994; Tomatis, 1991; 1996; Van Jaarsveld & Du Plessis, 1988). Due to logistical difficulties, Jake had to be transported to and from the Tomatis listening centre by the researcher. During their journeys, they had regular conversations, which became an important part of the procedure. The conversations mainly consisted of feedback on Jake's daily activities and well-being. Jake's mother

also phoned the researcher regularly asking specific questions about his behaviour problems, where upon parental guidance and practical advice were given.

Data Analysis

Content analysis was used to analyse the qualitative data from the multiple data sources in a constant comparative manner (Strauss & Corbin, 1998). Data reduction began as soon as the important themes, categories and subcategories were identified (Marshall & Rossman, 1995). Relevant theoretical perspectives were introduced in order to align the analyses with established theory. The six dimensions of psychological well-being of Ryff & Singer's (1998) were found to be the most compatible with the categories found. The POMS, DAP and DAT were scored according to manual instructions (Goodenough; McNair, Lorr & Droppelman), whereafter the results were integrated with the qualitative findings in order to enhance the results.

Various strategies were used to enhance the trustworthiness of the data gathering and interpretation process: the researcher, as psychologist, was trained in interviewing and clinical observation skills; reflective discussion with supervisor and peer review; all interviews were tape recorded and transcribed; the use of multiple data sources; triangulation of multiple data sources; grounding interpretations in the literature and description of findings in a rich, detailed manner (Breakwell, 1995; Marshall & Rossman, 1995; Wilson,1995).

RESULTS

The results of this case-study (see Figure 1) were clustered into seven main categories, comparable with the 6 dimensions of psychological well-being described

by Ryff and Singer (1998): Environmental Mastery, Personal Growth, Purpose of Life, Autonomy, Self-Acceptance and Positive Relations with others. The seventh main category was identified as Interpersonal Communication, due to the strong emphasis the TM places upon it.

(Figure 1 here)

Environmental Mastery

The ability to master one's environment is regarded as one of the key dimensions of psychological well-being (Ryff & Singer, 1996). This entails amongst others the subcategories of mastery and competence in managing every day affairs, effective use of opportunities and the ability to create a context suitable to one's personal needs.

Mastery and competence in managing every day affairs. Children with AD often find it difficult to manage their environment and everyday affairs (Barnhill & Myles, 2001; Forrester & Aston, 2002). A remarkable improvement was found in this area, specifically regarding shopping, self-care, travelling arrangements, problem solving behaviour and academic achievement. One inevitable skill that Jake had to master when relocating away from his mother, was to do his own *shopping*. At home he never wanted to go shopping alone.

> His mother stated: *I always used to check the prices, Jake always used to stay in the car when we went into the shops.*

During the programme, he started to feel more competent in dealing with strangers and new situations, making shopping a less frightening event.

A few weeks into the programme Jake proudly announced: *On Thursday I'm going to town to shop for a bicycle. If it costs R600, I'll buy it!*

Good *self-care* is another special ability that is needed if an AD patient is to become socially independent (Wing, 1981). After the TP, Jake was more competent at caring for himself.

His mother said: *He was not able to do much for himself in the past. Nowadays he would cook a meal and close his curtains at night when I am not at home.... He even went to town on his own for his haircut - he's much more self-supporting.*

Another important aspect of environmental mastery that emerged was Jake's competence in making his own *travelling arrangements* since becoming a boarder. In the beginning of the year, Jake solely relied on his mother to arrange his weekend lifts to and from home. He was also afraid to go back to school after a weekend and usually tried to postpone it until Monday mornings.

Near the end of the programme Jake's mother reported: *Nowadays he organises his lifts on his own and he started to go back on Sunday afternoons. He is still moaning, but in the end he gets into the car.*

Youth with AD have also been reported to have poor social judgement and *problem solving behaviour* (Ehlers *et al.*, 1997). This was confirmed before the TP when Jake's mother reported that he would never make his own plans and rather ask others for help. During the programme Jake became more competent in solving problems and he demonstrated this when his cell phone was stolen at the boarding

house. He immediately went to the kitchen staff, requested them to phone his mother, asked her to phone his number and determine who answered.

Afterwards his mother said: *When his cell phone got stolen he really handled the situation well, he made his own plan.*

Most students with AD frequently experience significant *academic problems* and this was confirmed by Jake's pre-programme data set (Frith, 1991; Griswold *et al.,* 2002; Siegel, Minshew & Goldstein, 1996). According to his mother and school reports, Jake's marks were always much below average. At the end of Grade 8 in the special school he received three prizes for academic achievement and his mother proudly announced that things were really going well on an academic level.

Effective use of opportunities in the environment was another area in which remarkable improvements emerged. According to Jake's mother, he experienced difficulties in identifying opportunities in his environment especially regarding opportunities to make friends and to prove himself.

Utilise opportunities to make friends. This subcategory is related to Personal Relations, however it is thought to significantly illustrate improved environmental mastery. Jake usually just had one friend and his friendships never lasted long. This is normal for youth with AD, because they are typically thought to be socially stiff and self-centred (Myles & Simpson, 2002). During the course of the programme, Jake however, started to make effective use of opportunities to make friends. He started to visit neighbours and showed some social interest in two specific girls in his class. These findings are supported in the TM literature were children often start to reach

out to others and demonstrate a rekindled desire to utilise opportunities to make friends (Madaule, 1994; Neysmith-Roy, 2001).

Utilise opportunities to prove oneself. Children with Asperger Disorder usually suffer from low self-esteem (Barnhill & Myles, 2001; Koning & McGill-Evans, 2001). As result of their low self-esteem, they are not aware of, or not using opportunities to prove themselves. Jake also used to hold back and just accepted whatever people had to say about him. His aunt used to tell him that he was not worth anything and he started to believe this statement. When his mother recently remarried, he sang his favourite song at the wedding ceremony, which his aunt also attended.

> Jake explained: *I decided to show all of them that I can sing. Afterwards my aunt came to me with tears in her eyes and she apologized. She now realizes that I do have a talent!*

Utilise opportunities in the environment. Jake slowly but surely became aware of opportunities in his environment and started to utilise them effectively. Upon his return to school one Sunday afternoon, he discovered that he forgot his school-case at home. His mother said that this usually meant the end of the world. Jake however recalled a specific kombi usually being driven from his hometown to his new town on Tuesday mornings. He organised for his school-case to be brought to him and according to his mother he coped surprisingly well without his school-case for two days. The bullying Jake experienced initially left him helpless and out of control. Children with AS often become victims of social harassment and bullying (Myles & Simpson, 2002; Wing, 1981). During the TP however, he utilized environmental resources and created situations to addressing his need to stop the bullying – either calling a teacher or a prefect to come to his rescue. Because of Jake's singing talent,

he was offered the opportunity to record his own CD after completion of the TM. Jake made use of this opportunity and said it was a dream come true.

Ability to create contexts suitable to personal needs. When Jake started to identify and utilise the above-mentioned environmental opportunities, he also started demonstrating improved ability to address his personal needs and to handle unforeseen circumstances comfortably and without the usual catastrophic reaction.

Personal Growth

Optimal psychological functioning requires not only that one grows and develops as a person, but also that one continues to develop one's potential, and to grow and expand as a person (Ryff & Singer, 1996).

Continued personal development. Children with AD are rigid and anxious and find it difficult to grow personally (Ghaziuddin, 2002). It was however found that Jake managed to transform his sense of personal stagnation into a feeling of continued development. Because of his unfinished business around his father's death and their relationship, he used to experience recurring, upsetting dreams regarding his father, revealing personal stagnation.

After the programme Jake reported: *I do not get those bad dreams anymore.* His self-injurious behaviour also disappeared completely.

Self viewed as growing and expanding. Graph 1 illustrates a clear modification of negative mood states and the self as growing and expanding. A pre-post test

comparison revealed decreased Tension-anxiety Depression,-dejection Fatigue and Confusion, as well as an increase in Vigor and Anger-hostility.

(Graph 1)

Develop new behaviour and attitudes. In order to grow personally, one should develop new and appropriate attitudes and behaviour.

Less rigid attachment to non-living things. Individuals with AD often have rigid attachment to non-living objects, restricted and bizarre interests, a fear of changing things and it almost appears as if they are unable to develop new attitudes and behaviour (Myles & Simpson, 2002; Szatmari, 2003). In Jake's case, this was illustrated by his rigid attachment to a small wagon in the garden at home. Before the TP, Jake's mother explained: *Jake watches that wagon for hours. Sometimes he pushes it around. No one else is allowed to touch it. Every time he arrives home, he immediately goes to the wagon.*

During the TP it appeared as if Jake started to develop a more appropriate and less rigid attachment towards the wagon, and it was confirmed during the final interview with his mother.

Mother: Nowadays Jake fusses less about the wagon. He now just checks on it from time to time.

Allowing change. Before the TP Jake had a fear of change and preferred things to stay the same. This was also confirmed in the literature (Barnhill, *et al* 2002). Because of this fear, he never wanted to move furniture in his room and he was an extreme perfectionist. After the TP, he seemed more relaxed and demonstrated a willingness to change and decided to move his radio away from its usual place

closer to the window. He also did not mind his brother moving his things on his desk, when he recently got a new computer. His mother unknowingly confirmed our observation of his more relaxed approach when saying: *Jake is much more at ease with things.*

Sense of improvement in behaviour over time.

More appropriate eye contact. One of the most prominent symptoms of AD is a lack of eye-contact which lasts into adulthood (Barnhill & Myles, 2001; Ghaziuddin, 2002; Gilmor & Madaule, 1982; Meyer & Minshew, 2002; Myles & Simpson, 2002). Before the programme Jake felt that he would never be able to grow and develop new skills.

Jake: *I cannot look people in their eyes, I was never able to do it and I don't know why.*

After the programme Jake started to report a change in behaviour when he proudly wrote in a letter: "My life has completely changed, I can now look up. I look people in the eye!" He also started to make eye contact with both psychologists participating in the multi-team.

Willingness to venture. Before the TP Jake was afraid to venture and seemed to control his fear by following rigid behaviour patterns. For example, he never looked straight into a camera when a photo was taken. However, on the last day of the programme, he was asked to appear with his therapist on a photo. Without needing much persuasion, he agreed and directly looked into the camera! While listening to the music, Jake would usually just stay in his cubicle, even though the earphone's cord enabled him to move around. As the programme continued he became more venturesome and started to move out of his room and walked up and down the

corridor. One day he even got out of his room, walked straight up to another psychologist (who was part of the multi-disciplinary team), looked her straight in the eyes and greeted her in a happy, clear and audible voice.

Reduction in obsessions. Children with AD have restricted interests, which are usually obsessively internalised and takes up much of their time (Forrester & Aston, 2002). During pre-assessment, Jake would always draw a specific duck whenever he was asked to draw. While undergoing the programme, he only drew the duck once more. Thereafter, as can be seen in Figure 2, his obsessive traits diminished as his drawings became less structured and more abstract.

(Figure 2 here)

One specific obsession, which did not disappear, was his obsessions with time. When the planned time schedule was broken, he became very nervous. It seemed as if he used punctuality and time as mechanisms to make his environment more controllable and predictable. AD is associated with obsessive-compulsive disorder and explains why Jake has a preference for experiences that are controllable rather than unpredictable (Baron-Cohen; 2002, Freeman *et al.*, 2002).

Purpose in Life

The definition of maturity also emphasizes clear perceptions of beliefs that give life purpose, a sense of directedness and intention (Ryff & Singer, 1996). This implies the ability to make sense from suffering, death and heartache (Christopher, 1999).

Beliefs that give purpose to life. As clearly illustrated in Figures 3, Jake had a different view on his grandmother's death before and after the programme. Before he only viewed it as negative and sad, and believed that he would never survive without her because she was the only one who understood him. In Figure 4b he was able to reframe the same situation in a more positive way. This shows a greater sense of meaning in life and death. Jake has a living relationship with his Creator and often declared: *My whole life is good because of God. I only sing gospel songs.*

(Figure 3a & 3b here)

Feelings that give purpose to past life. The abuse that Jake suffered at his father's hand and his father's early death left Jake with emotional scars and a sense of unfinished business. When he entered the active phase of the TP, he was able to speak about these events for the first time. This was a very emotional time for Jake, but at the end he was able to say: *I can now talk more about my father, I am not angry with him anymore.* Although he could release his anger, he still needs to work out what purpose this negative experience with his father had in his past.

Modification of Autonomy

AD patients become very dependant on the judgement of others and seldom strive to be autonomous, possibly because they are so anxious and rigid (Ghaziuddin, 2002; Myles & Simpson, 2002). Ryff (1989) equates autonomy with attributes such as self-determination, independence, internal locus of control, individuation, and internal regulation of behaviour. Erikson (Craig, 1996) stated that from a developmental

perspective, autonomy is one of the psychosocial tasks to master and refers to the ability to do things on one's own, without feeling ashamed of oneself (Craig, 1996).

Self-determination and self-evaluation. Although Jake became the victim of bullying and teasing because of his singing, he proudly announced: *They say I sing like a 'grandpa', but I'll keep on singing.* Two weeks after completing the programme, he entertained his classmates by singing in front of them. They all enjoyed his performance and applauded him. Jake clearly started to evaluate himself by his own standards.

Independence. Adolescents with AD do not strive for independence because they usually are aware of their inability to master things on their own which peers/siblings are capable of doing (Dellve, *et al.,* 2000). Jake used to be extremely dependant of his mother.

> She described it as follows: *He is always in my shadow. He follows me wherever I go. It used to be so bad, that if I suddenly turned around, we would bump into each other. It felt as if he was threatening my personal space.*
>
> *When he started to listen to the music, it became better.*

While undergoing the TP, Jake also showed increasing independence. At the start of the TP, he usually waited for me to take him into his cubicle, but later on he started going there by himself. A gain in independence was also illustrated by his enhanced Environmental Mastery.

Ability to resist social pressures. Jake has always been very religious and still has a close relationship with his Creator. Thus he has set values, norms and standards and strong convictions. This, on the one hand, can be seen in a positive light as it

indicates Jake's ability to resist negative peer pressure. On the other hand this leaves him unable to investigate new ideas and different views on life. In the light of the above this would seem to be an important area of discussion should future therapy with him be possible.

Positive Relations

Ryff (1989) defined positive relations with others as warm, trusting interpersonal relations and strong feelings of empathy and affection. Children with AD show serious impairment in the ability to form personal relationships. They typically experience difficulty in developing and maintaining friendships (Dellve, *et al.* 2000; Landa, 2000; Little, 2002; Williams, 2002, Wing, 1981). Jake used to struggle with the development and maintenance of friendships and was very attached to non-living objects. During the TP he managed to improve his relationships with his family, peers and the broader community.

Warm, trusting interpersonal relations. The most significant improvement in personal relations emerged from within Jakes family. He managed to develop warmer and more trusting relationships with his mother, newly acquainted stepfather and his older brother. Jake had extreme difficulty in maintaining a positive relationship with his older brother, Tim. According to Dellve *et al.,* (2000) this appears to be normal, because the siblings of children with AD often feel that they are the targets of provocation because of their brother/sister and then project or act their anger out onto the AD sibling.

> Their mother said: *Jake always had problems with Tim. Tim once said that Jake ruined his life. He often shouts and swears at Jake.*

Jake demonstrated his ability to turn this abusive relationship into one with the potential to grow, when he said: *I have decided that Tim is not going to mess with me anymore.* Three months after the TP Jake revealed that Tim has been indecently assaulting him for the past two years. They are now busy reconstructing their relationship.

Relationships with *peers and schoolmates* are often areas in which AD patients have difficulties, because they struggle to maintain friendships. Consequently, they are victimized and become socially withdrawn (Dellve, *et al.*, 2000; Little, 2002). Before the TP Jake's mother reported that Jake usually just had one friend and one of his primary school teachers wrote that he always stood alone during breaks. After the TP he started to reach out to others.

> Current teacher: *He used to be mostly alone, but lately he would, at times, talk to two specific girls.*

Broader community. The social competence of children with AD is best observed in their interaction with strangers or in unfamiliar situations (Gutstein & Whitney, 2002). Jake's improved ability to reach out to others was also demonstrated in the broader community, when he (out of his own) started to make contact with one of the psychologists in the multi-team. Psychologist: *He used to be very shy but started to greet me out of his own while looking me straight in the eye.*

A warm and trusting relationship also developed between the researcher and Jake. He slowly became more informal and spontaneous. He started to phone her and showed some interest in her whereabouts. He also formed a special bond with the sound engineer who helped him to record his personal CD. Although they saw each other

only once, they have been corresponding through letter writing since.

Strong empathy and affection. Children with AD have low levels of empathy which complicate their relationships (Baron-Cohen, 2002). Jake showed some empathy when he was informed that the researcher/therapist had to go to hospital for an operation. He phoned her and was able to sympathize. Later, although never verbally saying it, Jake wrote to her that he loved her.

Understanding the give and take of human relations is another aspect in which Jake improved. AD sufferers' social behaviour problems arise from a lack of ability to understand and apply the rules governing social behaviour. They are naïve, peculiar and unwilling to compromise (Wing, 1981). Jake usually expected his family to follow his interests, desires and beliefs, rather than attending to their desires and beliefs (Baron-Cohen, 2002). After the programme he became more aware of the give and take of human relationships when, for the first time, he willingly attended a concert in which his older brother, Tim, took part. He also wrote a letter of thanks to the sound engineer who recorded his personal CD. While his researher/therapist was in hospital for emergency surgery, he also sent several SMS's to enquire regarding her well-being. From the results it is clear that the TM enabled Jake to improve the quality of his existing relationships, but that he still needs practice in successfully initiating and maintaining new friendships with peers.

Self-Acceptance

Self-acceptance is defined as a central feature of mental health as well as a characteristic of a positive attitude towards self and the acceptance of one's past life

(Christopher, 1999; Ryff & Singer, 1996). Another area of dysfunction in AD includes difficulty to face life challenges, general low self-esteem and a feeling of disconnection with the self (Barnhill & Myles, 2001). Jake's mother explained that Jake had problems with looking in a mirror from a very young age and that he never liked to do it. During Jake's last three sessions of the TP, he illustrated a more *Positive attitude towards the self* when he was confronted with looking in a mirror. Afterwards his mother noted: *He started to peek at himself in the mirror.*

Positive feelings about past life. The poor relationship between Jake and his older brother, Tim, was previously discussed. Jake seemed to be very disappointed in his elder brother and only recalled negative incidents. At the end of the TP, Jake started to remember positive events as well, which contributed to more positive feelings about his past. He made an important statement showing his ability to reframe those negative memories in a more positive way:

> He said: *When I listened to the music, I remembered that Tim taught me to ride my bicycle. And at some other time, he also protected me from a snake. He helped me at many occasions.*

The wagon in their garden also seemed to represent negative memories and his over concern with it seemed to show his disappointment with his past. After his concern with the wagon reduced, his mother explained: *"It is as if that wagon brought a lot of pain along with it from the farm."*

Interpersonal Communication

Spontaneous and authentic communication as well as effective nonverbal communication all form part of a person's ability to communicate effectively (Gilmor, 1999).

Spontaneous and authentic communication. At the beginning of the researcher's work with Jake , he was very reserved and spoke little on their way to the listening centre. He accepted all instructions without hesitation or complaint and did not respond to any kind of humour. More spontaneous communication was observed when Jake entered the last phase of the programme. Not only did he speak more, he also started complaining and moaning (more assertively) and began to laugh and make his own jokes.

> His previous schoolteacher said: *Jake is a reserved boy who never takes part in class discussions.*
>
> Where as his current teacher commented: *Nowadays it is easier for Jake to take part in discussions. Where he once refused to speak English, he is now at least trying - although it is still difficult.*

One of the symptoms of Asperger disorder is that the patients are extremely self-centred in their communication, they prefer to talk about the things that interest them only (Scott, 1985). Jake's conversations were limited to his family, motorcars and gospel songs and because of this egocentric communication style it was difficult for people to relate with him. His communication slowly became more authentic and less egocentric. Conversations between Jake and the researcher usually centred around himself, but nearing the end of the TP, he one day suddenly asked her: *"Do you have brothers and sisters too?"* During the final interview with the researcher, his mother

remarked that Jake used to demand whatever he wanted, but he is now showing more consideration.

Effective non- verbal communication. Asperger's disorder patients are significantly poorer than comparative patients at the recognition and production of nonverbal communication (Scott, 1985). The eye contact of children with AD is poor and their gestures are not consistent with their speech (Williams, 2002). As previously discussed, Jake had difficulty with eye contact. Not only did he himself become aware of improvement in this area of his life, but his teacher recently said that Jake now looks people more in their eyes. Jake's mother described a situation where one of his favourite singers gave a performance in church: *He didn't look down for a moment, he looked her in her eyes for the whole time.*

DISCUSSION

Significant enhancement clearly occurred across all six domains of psychological well-being with the most meaningful changes in Environmental Mastery, Purpose in Life, Personal Relations and Autonomy. The first three domains, are regarded as universal core aspects of psychological well-being (Wissing & van Eeden, 2002). Communication skills improved and were marked by spontaneous, authentic communication, as well as more effective non-verbal communication. Negative mood states such as Tension-Anxiety, Depression-Dejection, Fatigue and Confusion-Bewilderment were reduced. The above-mentioned findings are consistent with the effect of the TM (Coetzee, 2001; Du Plessis, Vermeulen & Kirsten, 2004; Gilmor, 1982; Rourke & Russel, 1982; Roy, 1980). Due to interaction between the researcher, Jake, the sound stimulation and broader environmental impact, it is impossible to

explain the results in linear terms. Therefore they will be discussed in terms of the impact of the TM, aspects of positive psychology, and a developmental perspective.

Firstly the positive outcome is associated with 75 hours of listening and specifically stimulation of the desire to communicate (Tomatis, 1991), which reduces the extent of non-listening and thus opens up the individual for real listening and communication. That Jake was eventually perceived to make eye contact could also be ascribed to improved listening, in view of the neurological link between the auditory and visual nerves (Tomatis 1991). Finally the process of sound stimulation virtually became an auditory "holding environment" (Winnicot, 1960), providing Jake with the stability to trust more, reach out, and express himself. In this regard the uniqueness of the study context, i.e. the extended researcher/therapist-client contact was highly complementary to the sound stimulation. By experiencing her daily consistency in fetching and returning him to boarding school, coupled with empathy, warmth, genuineness and unconditional acceptance, optimal conditions conducive to change were created. However it is impossible to gauge the impact of the therapeutic relationship per sé, in view of its entwinement with the sound stimulation. The researcher however, acknowledges that her personal exposure to the TM as a Masters student, and her familiarity with psychotherapy, contributed to a favourable context for change. Thus the emergency of more positive emotions was a function of sound stimulation and relaxation embedded in a significant relationship of trust and consistency.

Secondly, viewed from the perspective of Positive Psychology, the results obtain special significance in terms of Frederickson's (2001) broaden and build theory. Positive emotions broaden and build one's thought-action repertoires and

enduring personal resources which culminate in interpersonal flourishing (Ryff & Singer, 2000). Jake's therapeutic "journey" throughout the study demonstrated this as he broadened his urge to explore, take in new information and expand himself in the process (Csikszentimihalyi, 1988; Ryan & Deci, 2000). Furthermore, his behaviour reflected increased mindfulness, another prominent feature of psychological well-being, defined as "the clear and single-minded awareness of what happens to us in the present reality" (Brown & Ryan, 2003). Mindfulness is also associated with aspects of openness to experience, involving receptivity to and interest in new experiences, which AD sufferers usually do not have. Arguable the TM stimulated the process of increasing mindfulness as it makes one more aware of what is happening in the present moment (Coetzee, 2001). Predictably AD sufferers have low mindfulness since they are blunt, restricted, doing things automatically, not paying attention to anything around them and remain preoccupied with the past. Activities in which Jake participated, like drawing, writing and the therapeutic discussions, also contributed to enhanced mindfulness, as it enabled him to become more mindful with regard to shopping, checking prices and identifying new opportunities to prove himself. Mindfulness may also be important in disengaging individuals from automatic thoughts, habits and unhealthy behaviour patterns as was seen in his reduced neatness and obsessions. It may facilitate well-being through self-regulated activity and fulfilment of basic psychological needs for autonomy, competence and relatedness which were all found in the results. The above-mentioned findings are supported with other research on the TM associated with personal growth (Coetzee, 2001; Du Plessis, Vermeulen & Kirsten, 2004). The results showed that Jake was able to grow away from negative emotions and a sense of stagnation towards more flexibility involving less rigid thinking and behaviour patterns. His efforts to venture into his environment,

be autonomous and reach out to improve relationships, all had a positive effect on his self-esteem and sense of self-efficacy. This could have led to an internal locus of control, reduced learned helplessness and withdrawal. These outcomes also resonate with Kobasa's (1979) hypothesis that people who believe that they can control events, who are committed to people and activities, and who accept change tend to remain healthier. Clearly all the above processes create positive cycles influencing one another.

Increased Anger-Hostility, as reflected in Graph 1, should not be interpreted negatively in this context. Whereas Jake used to internalise his anger, which resulted in depression and self-injury, the TM enhanced his interoceptive awareness and mindfulness of what he was feeling at that moment. Being in touch with his anger, helped him to utilize it constructively by assertively protecting his personal boundaries, thus putting an end to being indecently assaulted. His enhanced need to communicate, reduced anxiety and increased vigour, helped him to create a context suitable to his psychological needs and well-being.

Thirdly, from a developmental perspective, the findings confirmed significant developmental gains. In terms of Erikson's (1963), psychosocial developmental tasks involving trust, autonomy, initiative, industry and identity, it could be argued that Jake never fully mastered these development tasks because of his disconnection with the world around him. Ryff's definition of psychological well-being is partially based on Erikson's assumptions (Ryff & Singer, 2000). As a result of the sensory-neural integration training and counselling, Jake clearly learnt to be more trusting, became more autonomous and took initiative. By personally organising transport, doing his

own shopping, recording his personal CD and solving problems, he demonstrated increased industriousness and hence less inferiority – evidence of personal growth. Since the above-mentioned changes also denote improved self-acceptance, it augurs well for age-appropriate identity development, despite the severity of his disorder.

Although significant changes occured, Jake still has a long way to go and needs constant practice in social skills and ongoing psychotherapy to address identified areas of growth. It however appears that the TM laid a basis to overcome barriers within and around himself, which provided agencies and pathways to flourish.

CONCLUSIONS

From the discussion it is clear that attending the TM has been highly beneficial to Jake. The therapeutic outcome encompassed his thought patterns, behaviour, level of functioning and interpersonal motivation. Surprisingly these changes occurred despite the chronicity and severity of his condition, early childhood hardships and indecent assault. Furthermore, cases of autistic spectrum disorder, responding well to the TM, were predominantly treated at pre- or primary school level. However, the uniqueness of the treatment context of sound stimulation, protracted personal contact with and counseling by the researcher/therapist, and time spent together during traveling, has to be acknowledged as major non-specific factors in the therapeutic outcome.

Thus it is concluded that, despite the complications of adolescence and the constraints of his diagnosis, Jake's symptoms have become less debilitating through attending the

TM. Concomitantly his level of psychological well-being has been meaningfully enhanced, although the long term retention effect remains to be seen.

LIMITATIONS AND RECOMMENDATIONS

Although the findings provided a rich description of enhanced psychological well-being as a result of attending the TM, design limitations have to be noted. Firstly, because of the qualitative nature of the single case-study, as well as the potential role of his medication, findings are only applicable to this study. It is recommended that further research be undertaken, making use of control groups but it might be difficult due to the different combinations of symptoms and the unique subjective world of each AD patient. Thus more controlled research is needed involving both experimental - and control groups of AD patients. A follow-up study of Jake after several months would also be instructive.

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FIGURE 1 : Main and subcategories illustrating improvement in psychological well-being and communication skills

FIGURE 2 : ***An example of Jake's drawings before and after the TP***
Note *Outline enhanced for clarity of reproduction*

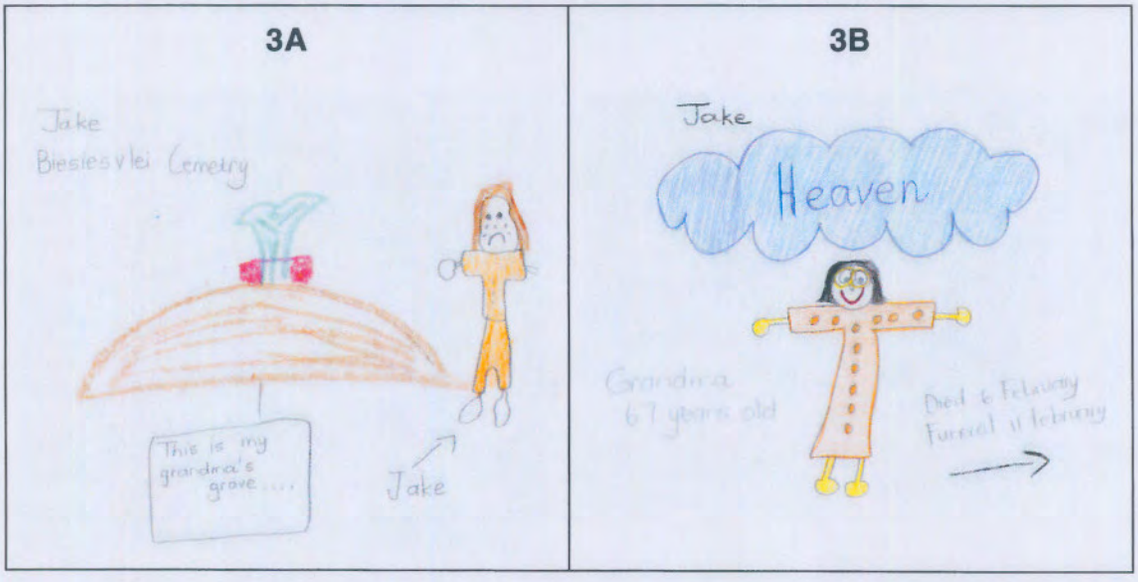
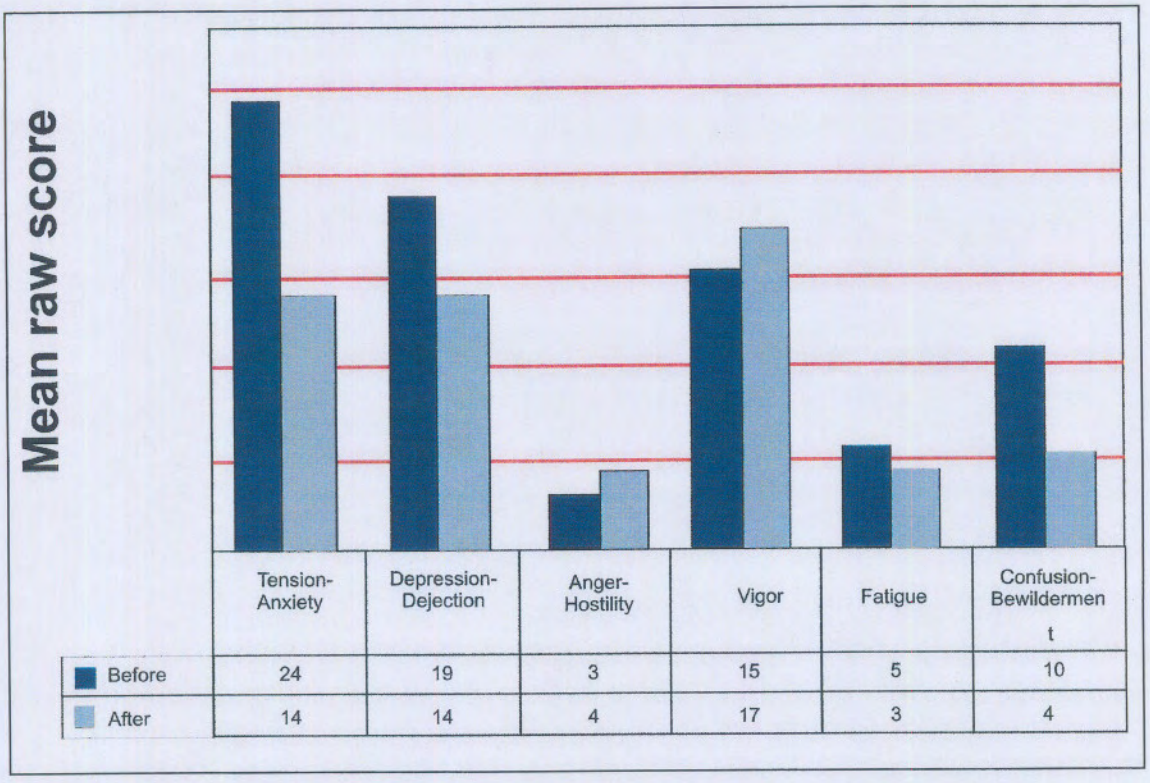


FIGURE 3 : ***Jake's interpretation of his grandmother's death before and after the TP***

Note *Outline enhanced for clarity of reproduction*



	Tension-Anxiety	Depression-Dejection	Anger-Hostility	Vigor	Fatigue	Confusion-Bewilderment
Before	24	19	3	15	5	10
After	14	14	4	17	3	4

Graph 1 : Pre-post-programme mean raw scores of the Profile of Mood States (POMS)