Tackling Mental Health Discrimination
Through The Media:
A campaign derived from formal psychological
theory proves more effective than
a public education campaign

A portfolio of study, practice and research
by
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Submitted in fulfilment of the requirement for the Doctor
of Psychology (PsychD) in Clinical Psychology
as part of the conversion programme.

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This portfolio is dedicated to my parents,
Sylvia and John Grainger, with love and gratitude.
ACKNOWLEDGMENTS

I would like to thank Dr. Glynis Laws for her helpful supervision and support. I would also like to thank Lorraine Nanke, Dr. Donald McKenzie, Jeremy Lodge, Anna Eliatamby, Colonel Outerbridge and all the members of the Bermuda Regiment for participating in the research project.

I would like to take this opportunity to formally to thank Phillip Jones for presenting the campaigns, proofreading the portfolio, enthusiastically engaging in hours of discussion about campaign design and most importantly for his enduring emotional support throughout the project.
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Personal Study Plan

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- Tackling Mental Health Discrimination Through The Media: A campaign derived from formal psychological theory proves more effective than a public education campaign
- An Investigation of Delayed Development of Theory of Mind in Adults with Autism
AIM
The overall aim is to produce a portfolio of study, practice and research that will demonstrate competence in each of these areas. The objective of this plan is to guide development of the portfolio.

Background Information
The writer’s current position is a combined speciality post working within the child and adult mental health services in Bermuda. The post is predominantly clinically based with substantial case loads in both services.

1. Academic Dossier

1.1 Objectives:
To enhance academic competence in two specialist areas.

1.2 Plan:
To complete two 4,500 word reviews on the following topics:

I. Title: The behavioural management of Gilles de la Tourette’s syndrome.
Rationale: Tourette’s syndrome is a disorder consisting of multiple motor and vocal tics. Research evidence suggests that behavioural interventions can be helpful in treating children and adults with Tourette’s syndrome. The purpose of this review is to evaluate the literature and compare the research findings with regard to the effectiveness of the principal behavioural treatment approaches, namely: massed negative practice; contingency management; relaxation training; self-monitoring; and habit reversal. Interest in this area arose from clinical practice. The results of the review will guide the choice of treatment to be used in the case study described in the professional dossier.
II. **Title:** The public’s acceptance of people with a mental illness: The influence of data collection procedures.

*Rationale:* Over the last two decades, studies investigating public attitudes towards people with mental health problems have shown conflicting results. The purpose of this review is to evaluate these studies and to consider whether a methodological explanation could partially explain the diverse findings.

2. **Professional Dossier:**

2.1 Objectives:

To present a dossier on clinical activity to demonstrate professional competence.

2.2 Plan:

To present a clinical dossier that will include:

I. A clinical case study on an eight-year-old boy who has been diagnosed with multiple tics. The report will include the child’s history, a clinical formulation of the presenting problems, a treatment plan and the outcome of treatment.

II. An account of professional practice since qualification in curriculum vitae form.

III. A description of professional training, teaching and research undertaken during the last three years.

3. **Research Dossier:**

3.1 Objectives:

To demonstrate competence in the planning, executing and reporting of clinically related research.

3.2 Plan:

To conduct a unique, clinically relevant research project that incorporates psychological theory and makes an original contribution to the chosen field.
Research Title: Tackling Mental Health Discrimination Through the Media: Is a campaign derived from formal psychological theory more effective than a public education campaign?

Research Supervisor: Dr. G. Laws, Surrey University, UK.

I. Background Information:
Research suggests that the 'stigma' associated with mental illness is a major factor hindering effective treatments for people with mental health problems (e.g., Sim, 1993). Attempting to change the attitudes of the general population towards people with mental health problems offers a challenging opportunity to psychologists, for whom the study of attitudes and attitude change has been a major research area for decades. The research will put forward a theoretical framework for media campaigns tackling mental health discrimination. It will be based on formal psychological theory and will challenge the common belief that the solution to changing negative attitudes lies in public education about mental illness.

II. Design and Methodology:
An audio campaign will be produced incorporating the qualities outlined in the theoretical framework. Its effectiveness will be compared with an educational campaign about mental illness and a control campaign that addresses the harmful effects of smoking. A shortened version of the Community Attitudes to the Mentally Ill inventory (Taylor and Dear, 1981) will be used to measure attitudes before, immediately after and six weeks following the campaigns.

III. Participants:
The effectiveness of the campaigns will be evaluated using conscripted soldiers from the Bermuda regiment. The participants will be randomly assigned to one of three groups and exposed to one of the campaigns.
The Portfolio will also include the research project conducted for the Diploma in Clinical Psychology awarded by the British Psychological Society in 1992.

4. Portfolio Outline

- To present two literature reviews.
- To present a clinical case report, a CV and a log of teaching and research undertaken during the last three years.
- To present the previous Diploma research and a new research project that addresses two different ways of trying to reduce mental health discrimination.
Academic Dossier


- The Public's Acceptance of People with Mental Illness: The Influence of Data Collection Procedures.
The Behavioural Management of Gille de la Tourette Syndrome: A Critical Review
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1. Introduction

Gilles de la Tourette syndrome has been recognised for more than 150 years (Robertson, 1994). Individuals with Tourette’s syndrome (TS) exhibit multiple tics that are repetitive and involuntary. A variety of behavioural techniques have been applied to the disorder and subsequently reported in the literature. The majority of these studies, however, have used single-case designs resulting in a confusing collection of equivocal findings without clear indications of differential treatment efficacy (Turpin, 1983). The purpose of this review is to provide a comprehensive assessment of those published studies employing behavioural interventions, and to evaluate their effectiveness.

Pharmacological treatments for TS are the current treatment of choice among many health care professionals (Peterson and Azrin, 1992). The use of behavioural approaches therefore needs to be evaluated within the context of pharmacological treatments. This review will present a brief account of the prevailing aetiological models and treatments of TS. By reviewing the efficacy of behavioural treatments within a broader clinical context, it is hoped that some decisions can be made regarding the use of behavioural treatment approaches for this disorder.

2. Classification

TS is characterised by both multiple motor and one or more vocal (phonic) tics, which occur many times a day. The frequency and complexity of the tics vary over time (American Psychiatric Association, 1994). The first clear medical description was made in France in 1882, when Adhered documented these abnormalities in the Marquise de Dampierre. Subsequently George Gilles de la Tourette (1885) described nine cases of the syndrome emphasising the triad of multiple tics, coprolalia and echolalia (Roberston, 1994).

3. Prevalence

The first population based epidemiological study which systematically screened for the presence of the syndrome reported a prevalence estimate of 4.28/10,000 (Apter, Pauls, Bleich, Zohar, Ratzoni, Dycian, Kotler, Weizman and Cohen, 1992). The prevalence is tenfold greater in children and adolescents than adults (Kerbseshian and Burd, 1992).
The syndrome is found in all cultures, social classes and racial groups with the majority of studies suggesting a male to female ratio of 4:1. (Comings, 1990; Robertson, 1989).

4. Clinical Characteristics
The age of symptom onset ranges from two to fifteen years, with a mean age of seven years (Golden, 1984). The most frequent initial symptoms involve the eyes (e.g., eye-blinking), but patients usually demonstrate a variety of other complicated movements including touching, licking, spitting, hitting, jumping, smelling, squatting and abnormalities of gait (Robertson, 1992). Coprolalia (the inappropriate and involuntary uttering of obscenities) occurs in one third of clinic populations (Bruun and Budman, 1992), but is rare in children (Erenberg, Cruse and Rothner, 1986).

Tics and vocalisations are increased by anxiety, boredom, fatigue and excitement, while sleep, alcohol, relaxation and concentration can lead to temporary disappearance of symptoms (Savicki and Carlin, 1972; Robertson, 1994). Stimulants such as caffeine, methylphenidate and amphetamines have been implicated in tic exacerbation (Bruun and Budman, 1992).

4.1 Associated Behaviours and Co-Morbid Conditions
Several studies have found that patients with the syndrome have higher rates of depression (Coming and Comings, 1987; Robertson, Channon, Baker and Flynn, 1993), anxiety (Coffey, Frazier and Chen, 1992) and attention deficit hyperactivity disorders (Robertson and Eapen, 1992). The strong relationship between obsessive compulsive behaviours and TS has been apparent for many years (Eapen, Pauls and Robertson 1993; Meige and Feindel, 1907). Also reported with this syndrome are self-mutilating and antisocial behaviours (Robertson, 1992).

4.2 Cognitive Deficits
Neuropsychological studies have been reviewed by Golden (1984) who noted that although IQ is in the average range there are large verbal and performance discrepancies (with performance being lower) and specific deficits in reading, writing and arithmetic (Roberston, 1994). A study by Baron-Cohen Cross, Crowson and
Robertson (1993) suggested that a cognitive mechanism, which they called the "Intention Editor" is dysfunctional in TS. The "Editor" is triggered whenever there are several intentions competing in parallel with each other. This mechanism appears to develop during the first five to six years of life (Llamas and Diamond, 1991). Baron-Cohen et al. (1993) proposed that an impairment in the development of this mechanism may account for the key symptoms in the behaviour of children with TS. This theory is discussed further in the Theoretical Models section.

5. Aetiology
The exact aetiology is not yet clearly understood. Electroencephalographic findings are unremarkable, with any abnormalities being minor, nonspecific and unrelated to tic occurrence (Robertson, 1989). Studies using computerised tomography and magnetic resonance imaging scans have not revealed any structural abnormalities that are of direct aetiological significance (Chase, Foster, Fedio, Brooks, Mansi, Kessler and Chiro, 1984; Demeter, 1992; Robertson and Trimble, 1991). However, the response of some symptoms to medication contributes evidence for the biological basis of the disorder (Shapiro, Shapiro, Young and Feinberge, 1988). Additional support for a biological origin has come from evidence of biochemical abnormalities in various parts of the brain, particularly in the basal ganglia (Anderson, Pollak, Chatterjee, Leckman, Riddle and Cohen, 1992; Jadrisec, 1992; Leckman, Knorr, Rasmussen and Cohen 1991). A biological basis to the disorder is further implicated by genetic studies, which suggest a single autosomal dominant gene with varying penetrance and a broad range of expression (Kidd, Prusoff and Cohen, 1980; Kurlan, Behr, Medved, Shoulson, Pauls, Kidd and Kidd, 1986; Pauls and Leckman, 1986; Robertson and Gourdie, 1990).

6. Natural History
TS has a lifelong course. It is estimated that in 30-40 percent of cases the tic symptom will remit completely by late adolescence, and an additional 30 percent will show significant improvement in symptoms, while the remaining third will continue to be symptomatic during adulthood (Brunn and Budman, 1992).
7. Management

With regard to the management of the condition, there are three main forms of interventions:

7.1 Psychosocial Intervention

Robertson (1994) stressed the importance of psychosocial interventions for the affected individual and support for his or her family. He suggested that explanation and reassurance are often sufficient for many patients with a mild disorder. Although psychotherapy and play therapy can be useful adjuncts, tics are not responsive to these forms of therapy and should therefore not be the target of treatment (Cohen and Leckman, 1993; Robertson, 1994).

7.2 Pharmacotherapy

At present, pharmacotherapy is the mainstay of treatment for the motor and vocal symptoms and associated behaviours (Robertson, 1994; Shapiro, Shapiro, Fulop, Hubbard, Mandeli, Nordie and Phillips, 1989). The medications most commonly used are dopamine antagonists such as haloperidol, pimozide and sulpiride (Brunn, 1984; Shapiro et al., 1988). These drugs do not affect the long term course of the disorder, but they are used in an attempt to suppress the symptoms (King, Leckman and Cohen, 1997).

Double-blind placebo-controlled studies of the efficacy of pharmacologic treatments for TS have found that tics are reduced by 50 percent, although unwanted side effects have been noted in about 80 percent of individuals (Ross and Moldofsky, 1978; Jagger, Prusoff, Cohen, Kidd, Carbonaire and John, 1982; Shapiro et al., 1989; Shapiro and Shapiro, 1984). Long-term follow-up of patients suggests that only 20-30 percent continue their medication for an extended period (Cohen, Leckman and Shaywitz, 1984).

7.3 Behaviour Therapy

Several behavioural interventions have been used for TS including massed negative practice, contingency management, relaxation training, self-monitoring and habit
reversal (Azrin and Peterson, 1988). There is disagreement regarding the efficacy of behavioural approaches for patients with TS. For example Peterson and Azrin (1993) reported ‘several behavioural treatment approaches to Tourette’s syndrome hold promise as alternatives to drug treatment’ (p.235). However, Robertson (1994) claimed ‘While originally it was thought that behaviour therapy was useful in the treatment of tics, it is now not felt to be a useful strategy’ (p.603). In view of the equivocal support in the literature regarding the efficacy of behavioural treatments for TS, deciding whether to embark on such interventions is a dilemma for clinicians.

Early reviews by Yates (1970) and Hersen and Eisler (1973) strongly advocated the adoption of a behavioural approach to the treatment of tic disorders. Both reviews argued that most studies were largely innovative and consequently, the application and evaluation of behavioural interventions was very much in its infancy. The next major review was conducted by Turpin (1983) who concluded that the efficacy of behavioural treatments for tic disorders was unproven. Turpin suggested that methodological inadequacies and the lack of a model of tic production contributed to the apparent ineffectiveness of behavioural treatments.

Research on pharmacological and behavioural treatments for TS were compared by Peterson and Azrin (1993). They concluded that both approaches were effective in reducing the multiple tics of TS. Although this finding was more optimistic than Turpin (1983), there was no clear indication of differential treatment efficacy of the various behavioural treatment approaches. When attempts are made to compare the different behavioural approaches, certain methodological problems become apparent as discussed below.

8. Methodological Problems

8.1 Lack of control groups and small number of participants

The occurrence of spontaneous remissions as well as the “waxing and waning” of symptoms, would suggest the necessity to employ no-treatment control groups and long-term follow-up studies (Turpin, 1983). Unfortunately, of the 40 published studies using behavioural therapy as the primary treatment for TS, only one group study
evaluated between-subject differences (Azrin and Peterson, 1990), and only five studies conducted follow-ups for longer than six months post treatment (Billings, 1978, Hutzell, Platzek, and Logue, 1974; Miller, 1970; Varni, Boyd and Cataldo, 1978; Walton, 1961)

There are only two published studies using behavioural techniques that include more than three participants (Azrin and Peterson, 1988; Azrin and Peterson, 1990) with most studies adopting single-case methodologies (e.g., Doleys and Kurtx, 1974; Zikis, 1983). This makes it difficult to accurately assess the universality of treatment efficacy. In contrast, the pharmacologic studies have involved large numbers of patients (e.g., a study by Shapiro and Shapiro in 1984 involved 80 TS patients).

8.2 Measurement of tics
The use of objective measures of tic frequency is an important factor in determining treatment efficacy (Azrin and Peterson, 1993). The most objective measure is the use of direct frequency counts of tics. Direct observation is the most frequently used outcome measure. Some studies have used video-recording or a second observer to obtain estimates of reliability (Billings, 1978; Finney, Rapoff, Hall and Christopherson, 1983). Some of the early published studies on TS provided no information on how treatment outcomes were measured (e.g., Clark, 1966; Miller, 1970; Watson, 1961).

Recent research by Chappell, McSwiggan-Hardin, Scahill, Rubenstein, Walker, Cohen, and Leckman (1994) reported that five minutes is the smallest amount of time capable of being used as a reliable tic frequency data point. That is, time intervals of less than five minutes do not correlate highly with the subject’s overall tic frequency. Several researchers have, in fact, used data points smaller than five minutes to measure tic frequency (e.g., Peterson and Azrin, 1992; Wagaman, Miltenberger and Williams 1995). This topic is discussed further in the conclusion.

8.3 Independent Variable Integrity
Most behavioural interventions depend on participants correctly implementing the procedures. Carr, Bailey, Carr, and Coggin (1996) recommended that data on the
independent variable integrity should be collected along with, and just as rigorously as
the dependent variable. They also suggested that any attempt at declaring a treatment
unsuccessful without independent variable integrity data can be impeached on the
grounds that the internal validity of the experiment is unknown. The importance of
independent variable integrity in behaviour therapy is not a new concern (Alkhateeb,
1988; Peterson, Homer and Wonderlich, 1982). However, to date, there have only
been two published studies in this area that have collected data on whether participants
implemented the treatments as they were instructed (Carr and Bailey, 1996; Carr,
Bailey, Carr, and Coggin 1996). This area will also be further discussed in the
conclusion.

9. Behavioural Treatments
The remainder of this review will be devoted to outlining and critically evaluating the
literature on the five major behavioural treatment approaches for patients with TS. As
mentioned earlier TS can involve other symptoms such as compulsive behaviours,
however, this review will focus on the primary symptoms of the syndrome: motor and
vocal tics. A pre-treatment-to-post-treatment percentage of change score was
calculated for those studies in which such a calculation was not already completed.

9.1 Massed Practice
Massed negative practice is the most frequently used behavioural treatment approach
for TS. This approach relies on the patient deliberately reproducing one or several tic
behaviours as accurately as they can. Theoretically, the patient becomes “tired” of
performing the movement and develops reactive inhibition, which acts as a negative
reinforcer, leading to a decrease in tics (Yates, 1970).

Nineteen case studies have been published using massed negative practice as the main
component. Ten of the studies reported a reduction in tics as a result of the treatment
(Browning and Stover, 1971; Clark, 1966; Miller, 1970; Nicassio, Liberman,
Patterson, Ramirez and Saunder 1972; Savicki and Carlin, 1972; Storms, 1985;
Topoff, 1973; Walton, 1961, 1964; Yates, 1958). However, only five of the ten studies
provided sufficient quantitative data to determine the degree of effectiveness
(Browning and Stover, 1971; Clark, 1966; Nicassio et al., 1972; Savicki and Carlin, 1972; Storms, 1985). These studies taken together found an average of 58 percent reduction in tics. Although these five studies provided outcome data, none of them measured tic frequency in the home environment, and one study did not specify how the tics were measured (Clark, 1966). Of the two studies that conducted follow-ups for longer than six months (Miller, 1970; Walton, 1961), neither specified the actual amount of tic reduction nor how they measured the tics. Consequently, neither study allowed for the clear discernment of the long-term benefits of massed practice.

A total of nine studies documented treatment failures which resulted in no therapeutic change (Barr, Lovibond and Katsaros 1972; Canavan and Powell, 1981; Feldman and Werry, 1966; Lahey, McNees and McNees, 1973; Sand and Carlson, 1973) or, an actual increase in tic rate (Feldman and Werry, 1966; Hollandsworth and Bausinger, 1978; Teoh, 1974; Turpin and Powell, 1984).

In summary, massed negative practice produced disappointing results for the reduction of TS tics. Not only has it been found ineffective in a number of cases, in some studies an increase in ticquing was documented.

9.2 Contingency Management
The next most frequently employed behavioural treatment approach for TS has been contingency management. This approach is based on operant learning theory and consists of the differential use of reinforcement made contingent on periods of ticquing and tic free behaviours (Turpin, 1983).

Seventeen studies have been published which have used this technique. All of the studies have used children. Ten of the studies have employed positive reinforcement (Barr, Lovibond and Katsaros 1972; Browning and Stover, 1971; Doleys and Kurtz, 1974; Hollandsworth and Bausinger, 1978; Miller, 1970; Rosen and Wesner, 1973; Sand and Carlson, 1973; Schulman, 1974; Tophoff, 1973; Vami, Boyd and Cataldo, 1978). Seven of the ten studies documented decreases in tic rate. None of the studies used positive contingency management as the only behavioural component. The
percentage of reduction in tics attributable to this approach cannot therefore be determined.

Partial control of tics was reported by Rosen and Wesner (1973) and Schulman (1974). However, the improvement was not maintained after the removal of the contingency. Treatment failures which resulted in no therapeutic change were documented in two studies (Barr, Lovibond and Katsaros, 1972; Sand and Carlson, 1973) and one study reported an increase in tic rate (Hollandsworth and Bausinger, 1978).

Punishment has been used as a behavioural approach in seven studies (Barr, Lovibond and Katsaros, 1972; Browning and Stover, 1971; Canavan and Powell, 1981; Clark, 1966; Doleys and Kurtz, 1974; Lahey, McNees and McNees, 1973; Varni, Boyd and Cataldo, 1978). The punishments employed included time out, white noise and electric shocks. With the exception of Browning and Stover (1971) all of the studies documented decreases in tic rates. However, only two of the four studies that conducted follow-ups indicated that the improvement was maintained (Doleys and Kurtz, 1974; Varni et al., 1978). Of these two studies, the former conducted the follow-up only five weeks after the end of treatment and the latter did not use objective follow-up measures, but relied on anecdotal reports from parents.

In summary, there is very little evidence to demonstrate the long-term effectiveness of both positive reinforcement and punishment in reducing the tic rate in TS. There is therefore no clear evidence to suggest that positive reinforcement is sufficient to reduce the production of tics in TS. Based on the available research data and the ethical issues raised by the use of punishment, an aversive treatment approach cannot be recommended.

9.3 Self-monitoring
Self-monitoring involves asking participants to record the frequency of tics. Turpin (1984) reported that the theoretical basis for this procedure is unclear. Peterson and Azrin (1993) suggested that reductions in tics with self-monitoring may be a result of
reactivity and the increased awareness of tics. Six studies have been conducted in which self-monitoring was the major intervention (Billings, 1978; Carr, Bailey, Carr, and Coggin, 1996; Hutzell, Platek and Logue 1974; Peterson and Azrin, 1992; Savicki and Carlin, 1972; Thomas, Abrams and Johnson, 1971). Only one study included more than a single participant (Peterson and Azrin, 1992).

Two studies reported an improvement at long-term follow up (six month follow up by Billings in 1978 and 18 month follow up by Hutzell, Plazaek, and Logue in 1974). These two studies taken together found an average of 85 percent reduction in tics. However, Billings did not use an objective measure of tic frequency he relied on the patient’s self reported improvement. Three studies (Savicki and Carlin, 1972; Thomas, Abrams and Johnson, 1971; Peterson and Azrin, 1992) were only able to demonstrate a temporary decrease in tic rate and one study (Carr, Bailey, Carr, and Coggin, 1996) found no significant reduction in tic rate. It would appear that self-monitoring techniques generally only result in a temporary improvement.

9.4 Relaxation Training
Stress and emotional arousal has been shown to exacerbate tics (King, Leckman and Cohen, 1997). Relaxation training has been used in thirteen studies of TS (Azrin and Peterson, 1988, 1990; Canavan and Powell, 1981; Franco, 1981; Friedman, 1980; Michulinka, Blanchard and Robenblum, 1989; Peterson and Azrin, 1992; Rosen and Wesner, 1973; Savicki and Carlin, 1972; Surwillo, Shaffi and Barrett 1978; Thomas et al., 1971; Tophoff, 1973; Turpin and Powell, 1984). Although the majority of studies have reported a reduction in tics at the end of treatment, the reductions were often only temporary (e.g., Tophoff, 1973; Turpin and Powell, 1984), with tics returning after a few hours. Canavan and Powell (1981) reported that the technique failed to generalise outside the training period. Surwillo et al. (1978) described the use of relaxation training for a twelve-year-old boy with TS as “futile” (p.815). The only study that involved more than two participants (Peterson and Azrin, 1992) documented that tics were reduced by an average of 32 percent for six participants. However, a post-treatment follow-up was not conducted.
In summary, relaxation training appears generally to result in only a temporary reduction in tic rate. The technique is further limited by its apparent failure to generalise outside the treatment setting.

9.5 Habit Reversal

The rationale for the habit reversal procedure, as stated by Azrin and Nunn (1973) is that a habit (or tic) may originally start in early childhood or as a reaction to trauma or stress. Normally, the habit would decrease with maturity because of the negative social reaction. The movement may, however, have escaped personal awareness and adverse social reaction and blended into other movements as a part of a response chain that then assumes a compulsive quality. The habit reversal procedure is a multi-component behaviour programme with the essential feature being the employment of a competing response that is opposite to, or incompatible, with the tic. The competing response for motor tics is typically an isometric tensing of a muscle which prevents the occurrence of the tic movement. The other components of the package include relaxation techniques, awareness training and reinforcement contingencies.

Using this procedure, Azrin and Nunn (1973) reported a dramatic reduction in nervous habits and muscle tics for 12 participants in just one or two treatment sessions. Subsequent studies replicated the effects of the habit reversal procedure with a range of nervous habits including nail biting (Delparto, Aleh, Bambusch and Barclay 1977; Ladouceur, 1979) hair pulling (Azrin, Nunn and Franz 1980a; Rosenbaum and Ayllon, 1981) and thumb sucking (Azrin, Nunn, and Franz-Renshaw 1980b).

The effectiveness of the habit reversal procedure with the multiple tics of TS was not studied until 1981, when Franco reported a reduction in tic frequency by more than 90 percent in two participants. In this study no data was provided on the effects outside the clinic, or the long-term effects. In 1983, two case studies were published using this procedure to treat TS individuals (Finney, Rapoff, Hall, and Christopherson, 1983; Zikis, 1983). Both studies reported dramatic reductions in tics. However, one of the studies did not use an objective measure of tic frequency (Zikis, 1983), and neither study conducted post-treatment follow-up.
In an effort to simplify this multi-component procedure, researchers have attempted to identify the active components of the habit reversal package. Miltenberger and Fuqua (1985) demonstrated that a two-component procedure consisting of awareness training plus competing response practice, was just as effective as the complete habit reversal programme. However, a simplified version of the procedure was not studied in TS for another decade.

In 1988, Azrin and Peterson made the first attempt to adequately determine the effectiveness of the complete habit reversal method in reducing the multiple tics of adults with TS. After six-to-eight months of treatment they reported a reduction in tic frequency by 93-95 percent in the clinic setting and by 64-99 percent in the home setting. This study used a number of methodological refinements over prior research, such as objective measures of tics from videotape or direct observations, data on effectiveness in both the clinic and home setting, and measures of observer reliability. The study was limited, however, in that it included only three participants in a within-subject experimental design and there was no post treatment follow up.

Young and Montano (1988) also documented the effectiveness of the habit reversal procedure for patients with TS. They used the procedure with three participants and reported a 98 percent reduction in tic frequency. Peterson and Azrin (1992) also effectively reduced tics in six TS participants using habit reversal.

The largest behavioural study of TS to date used habit reversal and was conducted by Azrin and Peterson (1990). They employed a waiting-list control group design to evaluate the effectiveness of the habit reversal procedure in eliminating the motor and vocal tics in 10 participants with TS. The mean percent reduction in tics for all participants was 93 percent at home and 93.5 percent in the clinic. Methodologically, the study differed from other behavioural studies in that it included more participants and allowed for between, as well as within group comparisons. The conclusions would have been more definitive by the completion of a post treatment follow-up.
To determine whether the topography of the competing response was important in suppressing tics, Carr and Baily (1996) evaluated the effects of a response that was topographically dissimilar to the muscle tic with a TS subject. They found that tic reduction was slightly better for the competing response than the dissimilar response. A strength of the study is that it demonstrated that a brief protocol (nine sessions) can be successful in this area. The study also showed that a simplified version of the habit reversal package, consisting of awareness training plus competing response practice, was just as effective as the complete habit reversal program for TS participants. However, weaknesses included its single case design and the lack of assessment of the subject in multiple environments to ensure generalisation.

Finally, Carr et al. (1996) compared the effects of dissimilar response practice, and competing response practice on the tics of two males with TS. The data indicated that neither of the participants' tics changed with either treatment. When they examined the independent variable integrity data, it was clear that the participants were not carrying out the treatments as instructed. They attributed the poor results to the low level of treatment compliance. However, the mean independent variable integrity score for the two participants in the competing response condition ($M = 12.5$ percent) was not significantly lower than that obtained in the previous study (Carr and Baily, 1996) that reported a tic reduction of 70 percent ($M = 14$ percent). It would seem that treatment compliance alone is not sufficient to explain their poor results. This area is discussed further in the conclusion.

Overall, nine studies have been published using either the full or simplified habit reversal procedure with TS individuals. In the eight studies where significant decreases in tics were found, the average reduction in the clinic setting was 85.5 percent. The data suggest that the reduction occurred for children as well as adults, and for those participants receiving TS medication as well as those not using medication. The four largest behavioural studies published to date have used habit reversal (Azrin and Peterson, 1988, 1990; Peterson and Azrin, 1992; Young and Montano, 1988). However, none of these studies conducted post-treatment follow up.
9.6 Comparison of Behavioural Treatments
Peterson and Azrin (1992) attempted to compare the effectiveness of self-monitoring, relaxation and competing response practice in the treatment of six TS participants. A counterbalanced design was employed using ten minute treatment trials. Tics were reduced by an average of 55 percent with competing response practice, 44 percent with self-monitoring, and 32 percent with relaxation training. Broad generalisations about treatment outcome cannot be made from this study because of the small sample size, the use of ten minute treatment trials and the limitation of results to the clinic setting. Peterson and Azrin (1993) acknowledge that a controlled treatment-outcome study comparing behavioural treatments has yet to be conducted.

10. Theoretical models
Several theories have been advanced to explain tic production. One explanation suggests that inhibitory control of tics is acquired through learning, but fails to develop due to inappropriate environmental contingencies (Azrin and Nunn, 1973; Yates, 1970). Turpin (1983) claimed that this is unlikely to be the sole contributing factor in view of the neurological and biochemical abnormalities documented in TS patients. Another explanation involves a failure to develop inhibition due to a central nervous system dysfunction (Corbett, 1977; Moldofsky, 1971). However, clinical reports of patients' ability to voluntarily suppress ticquing, is inconsistent with a solely reflexive view of tic production (Turpin, 1983).

Aforementioned research by Baron-Cohen et al. (1993) suggested that an impairment in the development of a cognitive mechanism which they term the Intention Editor may account for the production of tics. Evidence for this theory is based on the results of experiments showing that children with TS have difficulties completing tasks involving simultaneously competing intentions. However, as Baron-Cohen et al. (1993) acknowledge, it is difficult to explain why normal children whose Intention Editor is not yet fully mature, nevertheless do not show TS symptoms. Perhaps what they have identified is a symptom of TS, rather than a theory of tic production.
11. Conclusion

The aetiological models that have been described are clearly inadequate and are limited by the scarcity of knowledge concerning the central feature of tic production. Turpin (1983) and King Leckman and Cohen (1997) have suggested that our ignorance about the underlying etiology of tics limits the development of successful treatments. Further research in this area is essential if more satisfactory treatments are to be developed.

The primary aim of this review has been to evaluate the efficacy of behavioural treatments. Overall, the majority of studies reviewed were poorly conducted. The major limitations were the lack of long-term follow-up after the completion of treatments and that to date, only two group studies have been conducted. The most discouraging results were obtained from studies using massed negative practice. Contingency management, relaxation training and self-monitoring techniques generally resulted in only temporary improvements that often failed to generalise outside the treatment setting. The most promising intervention is the simplified version of the habit reversal package, consisting of awareness training plus competing response practice. Unfortunately evaluation of the long-term effectiveness of this procedure is not possible because of the lack of follow-up data.

The results of this review support Turpin’s (1983) conclusion that ‘behavioural interventions are generally unproven as regards the treatment of tics’ (p. 238). Large-scale studies using behavioural approaches are needed and longitudinal studies evaluating the long-term gains after treatment. Future research would be facilitated by the adoption of a standardised time interval for measuring tic frequency. Similarly, to ensure that the behavioural procedures are being implemented as instructed, data on the independent variable integrity should always be collected and documented in published studies (Carr et al., 1996). As Carr et al., suggested an important task for future studies in this area is to examine the level of treatment compliance needed for tic reduction.

In view of the limited success of behavioural treatments in reducing tics, it raises the question as to whether clinicians should use this approach in the management of
patients with TS. Due to the success of individual cases, clinical application seems justified. In addition, the well-documented noncompliance with medication due to unwanted side effects suggests that behavioural interventions have a role to play as alternatives or adjuncts to drug treatments. The results of this review suggest that massed practice, contingency management, self-monitoring and relaxation training are the least effective techniques when used as the sole behavioural interventions for TS patients. The simplified version of the habit reversal package, consisting of awareness training plus competing response practice appears to be the most useful of the behavioural treatment modalities for TS at this time.
12. References


The Public’s Acceptance of People with a Mental Illness: The Influence of Data Collection Procedures
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1. Introduction and Aims of the Review

With the continued move towards community psychiatry, the attitudes of the public towards people with mental health problems have received a great deal of attention. Over the last twenty years studies investigating this topic have shown a notable divergence of results. Some studies (e.g., Angermeyer and Matschinger, 1997; Reda, 1996) have found negative and rejecting attitudes, while others (e.g., Barry, 1994; Brockington, Hall, Levings, and Murphy, 1993; Rossler, Salize and Voges, 1994) have found positive and accepting attitudes. The purpose of the review is to assess whether the divergence of results obtained over the last two decades could be partly attributed to methodological factors.

Studies that have investigated the public’s attitudes towards mental illness over the last twenty years will be evaluated to answer the following questions:

1. Which attitude measures are used most frequently and do researchers demonstrate the reliability and validity of the measures used?
2. Does the style of administration (i.e., interview or self-response questionnaire) influence the results?
3. Do the results of studies conducted solely by social scientists differ significantly from the results of studies involving medical personnel?
4. Is there a preference on the part of each discipline for different data collection techniques (i.e. interviews versus self-response questionnaires).
5. Does the population sampled (i.e., rural or urban) influence the results.

In 1979 Brockman, D’Arcy and Edmonds reviewed 22 studies that had used the Bogardus Social Distance Scale to measure attitudes towards people with a mental illness. The Social Distance Scale consists of seven items ranging from accepting a person with a mental illness as a neighbour to accepting them into one’s own family through marriage. Brockman et al., found that when the scales were administered in a self-response format the results were negative. With regard to the interview format they found that when closed questions were used (i.e., questions which have a range of fixed answers) the results were more positive than when open-ended questions were
used (i.e., questions which the respondents may answer as fully as they wish). They also noted that studies conducted solely by social scientists tended to be negative, whereas when medical personnel were involved, the results tended to be positive. They found that this pattern of results reflected the tendency of social scientists to use self-response questionnaires and open-ended interviews, and for medical personnel typically to use closed-ended interviews.

McPherson and Cocks (1983) also investigated the effects of methodological factors on the results of studies employing Bogardus Social Distance Scales to measure attitudes towards mental illness. They used a split-half sampling method in which they administered a self-response questionnaire to one half of the sample and interviewed the other half, using open-ended and closed-ended questions under both conditions. Contrary to the findings by Brockman et al. (1979), McPherson and Cocks found that the presence of an interviewer led to more positive results when open-ended questions were used, and they found no significant differences in responses between the interview and self-response conditions when closed questions were used. Their results suggest that the decision to use either an interview or a self-administered questionnaire should not significantly impact on the results of a study when closed-ended questions are used. McPherson and Cocks suggest that the presence of an interviewer may have less effect on closed-ended questions than open-ended questions because the interviewer provides all the possible closed-ended responses. Consequently, negative responses may be seen as being 'sanctioned' by the interviewer, and therefore seen as being acceptable responses.

To date, no study has examined whether the findings from the Brockman et al. (1979) study that analysed the Bogardus Social Distance Scales can be generalised to other studies in this area that have used other survey tools. As a result of the wide variety of survey tools employed to measure the public's attitudes towards people with a mental illness over the last 20 years, objective analysis of the outcome of the studies is not possible. However, researchers frequently provide an interpretation of their overall findings in terms of whether they were positive or negative. This review will analyse
these studies to assess whether the researcher’s interpretation of their results are influenced by the methodological factors identified by Brockman et al. (1979).

2. Method
An attempt was made to locate all experimental studies on the public’s attitudes towards people with a mental illness published in English-language journals between January, 1980 to June, 1999. Studies were excluded if the researchers had attempted to change the public’s attitudes (e.g., Fonnebo and Sogaard, 1995; Wolff, Pathare, Craig and Leff, 1996) or if questionnaire data was not used (e.g., Page, 1980 employed Milgram’s ‘lost letter’ technique to measure attitudes). Studies were also excluded if they concentrated mainly on issues such as attitudes about causes or treatments of mental illness rather than attitudes towards people with mental illness (e.g., Boral, Bagghi and Nandi, 1980; Erinosha and Ayonrinde, 1981). Studies that did not specify whether the results were positive or negative were also excluded (e.g., Sellick and Goodear, 1985). Finally, the review does not include studies that have investigated children’s attitudes towards people with a mental illness (e.g., Weiss, 1986, 1994).

Searches of Psychological Abstracts, Medline, Sociological Abstracts and reviews of the literature revealed 23 studies that met the inclusion criteria. Although these studies represent a large sample of the population of public attitude towards mental illness studies, it is possible that some studies were overlooked.

Each study was coded according to the following criteria:
1. The measure used and whether the researcher(s) demonstrate the reliability and validity of the measure(s).
2. The data collection method (i.e., interview or self-response format with closed or open questions).
3. The discipline of the researcher(s).
4. The population sampled (i.e., urban or rural).
5. The researcher(s) interpretation of the findings as either negative or positive.
2.1 Data Interpretation

A description of the objectives, data collection methods and the findings of all the studies included in the review are listed in Appendix One. The interpretations of the findings were based on the researchers' evaluation of the results. The results were categorised as "negative" if the researcher(s) stated that the results showed an unacceptable level of intolerance for the mentally ill. For example, Angermeyer and Matschinger (1997) reported 'even today, mentally ill people are met with a great deal of rejection by the German public' (p.131). Reda (1996) reported 'the semi-structured, door-to-door interviews revealed extremely negative attitudes towards persons with mental illness' (p.1253). Trute, Tefft and Segall documented 'the public response tends to be one of rejection of the mentally ill' (p.75). The studies were categorised as "positive" if they referred to an acceptable level of tolerance or favourable attitudes towards people with a mental illness. For example, Aubry, Teff and Currie (1995) reported 'the study extends previous research by suggesting high levels of receptiveness on the part of the community to having tenants with mental health problems as neighbours' (p.39). Brockington, Hall, LeVings and Murphy (1993) reported 'the community has a predominantly tolerant attitude to the mentally ill' (p.98). As previously mentioned quantitative comparisons of the data were not possible because the studies reviewed employed several different measures. Analysis of differences between categorical variables (e.g., study result and researchers discipline; study result and data collection method) were carried out using Fisher's Exact tests.

To determine the validity of interpretation of the quantitative social distance data Brockman et al. (1979) considered each item in the scale independently and each study was ranked according to the percentage of participants responding positively to each item. The result was an average ranking over all items responded to within each study. They found that there was a significant quantitative difference between the means of the studies categorised as negative and those categorised as positive. The findings of Brockman et al. agreed with each group of researchers’ interpretation of their data. In the current review, an attempt was made to use this procedure to determine the validity of interpretation of the results for each study that used Social Distance Scales.
However, only two of the nine studies employing Social Distance Scales provided sufficient information on the percentage of participants responding to each item to allow for this type of analysis to be performed. The comparison between the findings from these nine studies with the Brockman et al. data therefore had to rely solely on the researchers' interpretation of their data.

3. Results

A total of 23 studies were assessed. The studies were almost divided equally between positive and negative finding; positive results were documented in 11 studies (48%) and negative findings were reported in 12 studies (52%).

3.1 Methodological Factors

3.1.1 Survey Tools and Data Collection Methods

Sixteen different survey tools were used. Some studies used more than one tool to measures attitudes. Thirty-nine percent (n=9) of studies used Social Distance Scales. Two studies used the Community Attitudes to the Mentally Ill Inventory (Taylor and Dean, 1980). The Opinions about Mental Illness Scale (Cohen and Struening, 1962) was also used twice. Other measures included Conceptualisation of Mental Illness (Moran 1977), Social Role Questionnaire (Lamy, 1966) the Mental Health Attitude Questionnaire (Chung, Mak and Chan 1990) and the Attitudes To Mental Illness Questionnaire (Zohar, Flora and Modan, 1978). Nine studies constructed their own survey tools. The only study that used more than one measure and found different study results was conducted by Sonya, Martin and Romans (1995). They reported that although the results from Social Distance Scales and the Community Attitudes to the Mentally Ill Inventory (Taylor and Dear, 1981) were generally positive, the results from the Social Distance Scales revealed more intolerant attitudes in comparison with the results from the Community Attitudes to the Mentally Ill Inventory.

Vignettes were used in ten studies. The vignettes approach was pioneered by Star (1955). They described behaviours depicting a variety of different mental illnesses such as paranoia, schizophrenia depression and anxiety. Brockman et al. (1979) suggested
that vignettes have the advantage of allowing respondents to react to concrete behaviour patterns. Of the studies that used vignettes, most (70%) used them with Social Distance Scales.

Fourteen out of the 23 studies (61%) interviewed the participants, the remaining nine (39%) used self-response questionnaires. With regard to the response format only three studies (13%) employed open-ended questions (Barry, 1994; Brockington, Hall, Leving and Murphy, 1993; Reda, 1996) and one study used both open and closed ended interviews (Barry, 1994). The preferred method of data collection was closed-ended interviews (52%), followed by closed-ended self-response questionnaires (39%). None of the studies used an open-ended self-response format.

3.1.2 Reliability and Validity of the Measures

Seventeen percent (n=4) of studies did not report evidence regarding the reliability and validity of the measures they used (Aritzi, Richardson, Lyketsos and Lyketsos, 1987; Hall, Brockington, Leving and Murphy, 1993; Reda, 1996; Skinner, Berry, Griffith and Byers, 1994). One study (Scott, Balch and Flynn, 1983) demonstrated reliability, but not validity. Of the remaining 78 percent (n=18), 67 percent (n=12) demonstrated the reliability and validity of their measures for their populations (via factor analysis and alpha coefficients) and 33 percent (n=6) used measures that have been shown in previous studies to be reliable and valid measures. The researchers in the latter studies did not provide reliability and validity data on the measures for their populations (Elizur, Neumann and Bawer, 1984; Ingamells and Goodwin and John, 1996; Malla and Shaw, 1987; Murphy, Black, Duffy, Kieran and Mallon, 1993; Rossler, Salize and Voges, 1994; Socall and Holtgraves, 1992).

Of the four studies that did not report evidence of reliability and validity of the measures they used, two involved medical personnel and two involved non-medical personnel. Two of the four studies reported negative findings (Hall, Brockington, Leving and Murphy, 1993; Skinner, Berry, Griffith and Byers, 1994) and two reported positive findings (Aritzi, Richardson, Lyketsos, and Lyketsos, 1987; Reda, 1996). Analysis of the studies can be found in Tables 1 and 2.
### Table One
Survey Results and Characteristics

<table>
<thead>
<tr>
<th>Study</th>
<th>Data collection method</th>
<th>Instruments</th>
<th>Discipline</th>
<th>Sample</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>POSITIVE FINDINGS</strong></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Questionnaire developed for the study and vignettes*</td>
<td>Medicine</td>
<td>Urban UK</td>
<td>1987</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aubry, Teff &amp; Currie (1995)</td>
<td>Closed-ended self-response postal survey</td>
<td>Questionnaire developed for the study and vignettes</td>
<td>Psychology</td>
<td>Urban Canada</td>
<td>345</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sonya, Martin &amp; Romans (1995)</td>
<td>Closed-ended self-response postal survey</td>
<td>CAMI♦ and Social Distance Scales</td>
<td>Medicine</td>
<td>Urban New Zealand</td>
<td>164</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Murphy, Black, Duffy, Kieran &amp; Mallondata</td>
<td>Closed-ended interviews</td>
<td>Conceptualisation of Mental Illness (Moran 1977)</td>
<td>Medicine</td>
<td>Rural Ireland</td>
<td>155</td>
</tr>
<tr>
<td>(1993)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Rossler, Salize &amp; Voges (1994)</td>
<td>Closed-ended telephone interviews</td>
<td>Social Distance Scales and a questionnaire developed for the study</td>
<td>Medicine</td>
<td>Rural &amp; Urban Germany</td>
<td>704</td>
</tr>
<tr>
<td>Study</td>
<td>Data collection method</td>
<td>Instruments</td>
<td>Discipline</td>
<td>Sample</td>
<td>N</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>---------------------------------</td>
<td>--------------------------------------------------</td>
<td>------------</td>
<td>-----------------</td>
<td>-----</td>
</tr>
<tr>
<td>Barry (1994)</td>
<td>Open and closed ended interviews</td>
<td>OMI scales and vignettes</td>
<td>Psychology</td>
<td>Rural Ireland</td>
<td>197</td>
</tr>
<tr>
<td>Malla &amp; Shaw (1987)</td>
<td>Closed-ended self-response</td>
<td>Social Distance Scales and vignettes</td>
<td>Medicine</td>
<td>Urban Canada</td>
<td>71</td>
</tr>
<tr>
<td>Scott, Balch &amp; Flynn (1983)</td>
<td>Closed-ended interviews</td>
<td>Questionnaire developed for the study</td>
<td>Psychology</td>
<td>Urban U.S.A.</td>
<td>403</td>
</tr>
</tbody>
</table>

**NEGATIVE FINDINGS**

<table>
<thead>
<tr>
<th>Study</th>
<th>Data collection method</th>
<th>Instruments</th>
<th>Discipline</th>
<th>Sample</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chou, Mak, Chung &amp; Ho (1996)</td>
<td>Closed-ended telephone interviews</td>
<td>Mental Health Attitude Questionnaire (Chung, Mak and Chan 1990)</td>
<td>Social Science</td>
<td>Urban Hong Kong</td>
<td>1043</td>
</tr>
<tr>
<td>Angermeyer &amp; Matschinger (1997)</td>
<td>Closed-ended interviews</td>
<td>Social Distance Scales, vignettes and a questionnaire developed for the study</td>
<td>Medicine</td>
<td>Rural &amp; Urban Germany</td>
<td>2045</td>
</tr>
<tr>
<td>Kirmayer, Fletcher &amp; Boothroyd (1997)</td>
<td>Closed-ended interviews</td>
<td>Social Distance Scales and vignettes</td>
<td>Medicine</td>
<td>Rural Canada</td>
<td>137</td>
</tr>
<tr>
<td>Reda (1996)</td>
<td>Open-ended interviews</td>
<td>Questionnaire developed for the study*</td>
<td>Lecturer in mental health (nonmedical)</td>
<td>Urban UK</td>
<td>200</td>
</tr>
<tr>
<td>Study</td>
<td>Data collection method</td>
<td>Instruments</td>
<td>Discipline</td>
<td>Sample</td>
<td>N</td>
</tr>
<tr>
<td>-----------------------------</td>
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<td>------------</td>
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<td>----</td>
</tr>
<tr>
<td>Farina, Fischer, Boudreau &amp; Belt (1996)</td>
<td>Closed-ended self-response questionnaire</td>
<td>Questionnaire developed for the study</td>
<td>Psychology</td>
<td>Urban U.S.A.</td>
<td>293</td>
</tr>
<tr>
<td>Aritzi, Richardson, Lyketsos &amp; Lyketsos (1987)</td>
<td>Closed-ended interviews</td>
<td>Questionnaire developed for the study*</td>
<td>Medicine</td>
<td>Rural Greece</td>
<td>197</td>
</tr>
<tr>
<td>Trute, Teff &amp; Segall (1989)</td>
<td>Closed-ended interviews</td>
<td>Questionnaire developed for the study.</td>
<td>Social Science</td>
<td>Urban Canada</td>
<td>548</td>
</tr>
</tbody>
</table>

♦ Community attitudes to the mentally ill (Taylor and Dean, 1981)
◊ Opinions about mental illness scale (Cohen and Struening, 1962)
* Did not include reliability and validity data.
3.1.3 Relationship Between Data Collection Methods and Study Results

The results reported in Table 2 indicate that although closed-ended interviews were associated with negative results and self-response questionnaires were associated with more positive results, there was no statistically significant difference in the study results. The data is graphically displayed in Figure 1. The Brockman et al. (1979) study reported that closed-ended interviews led to positive results and closed-ended self-response questionnaires led to negative findings. The results of this review do not support their findings. The number of studies using an open-ended format in this review is too small to permit any meaningful interpretation. The use of vignettes did not influence the results; of the ten studies using vignettes, 50 percent reported positive findings and 50 percent reported negative findings.

Table 2
Study Results by Data Collection Method

<table>
<thead>
<tr>
<th>Method</th>
<th>Positive</th>
<th>Negative</th>
<th>Fisher's Exact Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closed-ended interviews</td>
<td>36% (4)</td>
<td>64% (7)</td>
<td>Fisher's Exact Test</td>
</tr>
<tr>
<td>Closed-ended self-response</td>
<td>55% (5)</td>
<td>44% (4)</td>
<td>P = 0.34 Not significant</td>
</tr>
<tr>
<td>Open-ended interviews</td>
<td>50% (1)</td>
<td>50% (1)</td>
<td></td>
</tr>
</tbody>
</table>

Note: Barry (1994) study was not included because it used open and closed questions.
3.1.4 Study Population

Twenty-two percent (n=5) of the studies used samples from rural areas and 70% (n=16) used samples from urban areas. Two studies used samples from both rural and urban areas. There was no significant association between study results and whether the samples were rural or urban. This finding is consistent with the Brockman et al. (1979) study.

Fifty-two percent (n=12) of the studies involved medical personnel. Five out of the seven studies with samples over 500 included researchers with a medical background. The mean sample size for studies involving medical staff was 774 compared with 337 for studies involving non-medical personnel. This finding is consistent with the Brockman et al. (1979) study.

3.1.5 The Relationship Between Study Outcomes and the Researchers Discipline

Table 3 indicates the relationship between the outcome of studies and the researchers’ discipline. This data is graphically presented in Figure 2. Although 58 percent of studies involving medical personnel reported positive findings compared with only 36 percent of studies by non-medical personnel, the results were not statistically significant. Table 4 and Figure 3 show the preference of the different disciplines for different data-collecting techniques. The results were not significantly different. Medical personnel did not show a significant preference for closed-ended interviews and non-medical personnel did not show a significant preference for self-response questionnaires.

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Negative</th>
<th>Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicine</td>
<td>42% (5)</td>
<td>58% (7)</td>
</tr>
<tr>
<td>Social Science</td>
<td>64% (7)</td>
<td>36% (4)</td>
</tr>
<tr>
<td>Totals</td>
<td>52% (12)</td>
<td>48% (11)</td>
</tr>
</tbody>
</table>

Fisher’s exact test = 0.26 (not significant).
Figure Two
Results by researcher's discipline

Table 4
Data collection methods by researcher’s discipline

<table>
<thead>
<tr>
<th>Method</th>
<th>Medical</th>
<th>Social Science</th>
<th>Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open-ended interview</td>
<td>8% (1) 92% (11)</td>
<td>10% (1) 90% (9)</td>
<td>Fisher’s Exact Test</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td>(not significant)</td>
</tr>
<tr>
<td>Closed-ended interview</td>
<td>58% (7) 42% (5)</td>
<td>50% (5) 50% (5)</td>
<td>Fisher’s Exact Test: p. = .51</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td>(not significant)</td>
</tr>
<tr>
<td>Self-response</td>
<td>33% (4) 67% (8)</td>
<td>50% (5) 50% (5)</td>
<td>Fisher’s Exact Test: P = 0.36</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td>(not significant)</td>
</tr>
</tbody>
</table>

*Barry (1994) study was not included because it used both open and closed questions.
3.1.6 A Comparison of Results with Brockman et al. Findings

The findings from the nine studies in the current review that employed Social Distance Scales were compared with the findings from the Brockman et al. study (1979). The results are reported in Table 5. The pattern of results did not support the Brockman et al. (1979) study.

Table Five
A comparison of the results of the current review by data collection method with Brockman et al. findings

<table>
<thead>
<tr>
<th>Current Review</th>
<th>Brockman et al. study (1979)</th>
</tr>
</thead>
<tbody>
<tr>
<td>One of the three (33%) studies with closed-ended interviews format indicated positive results.</td>
<td>Eight of twelve (67%) studies with closed-ended interviews format indicated positive results.</td>
</tr>
<tr>
<td>Five of the seven (70%) vignette studies used with Social Distance Scales were negative.</td>
<td>All five (100%) vignette studies used with Social Distance Scales were negative.</td>
</tr>
<tr>
<td>Three of the six (50%) self-response questionnaire studies reported negative findings.</td>
<td>All five (100%) self-response questionnaire studies reported negative findings.</td>
</tr>
</tbody>
</table>

4. Discussion

The results do not indicate that close-ended interviews elicit significantly more positive attitudes than closed-ended self-response questionnaires. This result is consistent with the McPherson and Cocks (1983) study that found that the presence of an interviewer in closed-ended interviews did not significantly inhibit the elicitation of negative responses from subjects.

Brockman et al. (1979) found significant associations between the study results and the data collection method. The results of the current review do not replicate their findings. They emphasised the importance of the decision to use an interview rather than a self-response questionnaire and they cautioned researchers about the possible
influence of the interviewer vis-a-vis the respondent. They reported that a major concern was the degree to which respondents wish to “please” an interviewer and that respondents had a tendency to pick up and respond to subtle unintentional clues. The current review found that for studies with a closed-ended format there was no significant association between the style of administration (i.e., interview or self-response) and the study result. This results suggests that the presence of an interviewer does not effect the close-ended response format.

The results of the McPherson and Cocks (1983) study and this review suggests that the decision to use either an interview or a self-administered questionnaire should not significantly impact on the results of a study when closed-ended questions are used. Brockman et al. (1979) emphasised that there are drawbacks to closed-ended questions. First, they prevent “open” responses that could give insight into the individuals perceptions of mental illness. Second, they prevent attitudinal probing that can be helpful in gathering additional information. Brockman et al. suggest that a way round this dilemma was to used both open and closed-ended questions. Only one study in the current review (Barry, 1994) used a combined method. Barry supported the arguments put forward by Brockman et al. She maintained that the open-ended responses gave insight into how respondents sought to understand the nature of mental illness. Structuring the responses into categories, she claimed, served to oversimplify the structure of the beliefs elicited.

In the current review 39 percent of studies used closed-ended self-response questionnaires. A clear advantage of the self-response questionnaire is that data can be obtained quickly. When this type of questionnaire is used with mail surveys, data can be collected with minimum expense and time. Five of the studies in this review adopted self-response postal-surveys. A major weakness of this approach is that the attitudes of those who do not respond are not measured, and it is therefore difficult to assess for any possible bias in the data. For example, individuals who are interested in the topic are more likely to return the questionnaire, with a resultant risk of topic-related self-selection (Schwarz, 1996). One possible way to circumvent this problem would be to
interview a sample of the non-responders and compare their results with the responders. In the current review, the five postal surveys received response-rates ranging from 34.5 percent to 58.5 percent but none of the studies assessed for the risk of topic-related self-selection in their samples.

The results of the nine studies in the current review that used Social Distance Scales were reviewed to assess whether the data collection method influenced the findings. These results were compared with the 22 studies using the same scale in the Brockman et al. (1979) study. The results did not support the Brockman et al., finding that closed-ended interviews lead to positive results and close-ended self-response questionnaires lead to negative results.

In this review no relationship was found between rural and urban samples and the study result. It has been suggested in the literature that rural attitudes are likely to be more negative and rejecting than urban attitudes (e.g., Keatinge, 1983; 1985; Moran, 1977). The results of this review found no significant difference of this kind.

Studies involving medical personnel were not significantly more likely to report positive findings compared with those studies conducted by non-medical researcher. However, the finding was in the same direction as the findings from the Brockman et al. (1979) study that found studies involving medical personnel were significantly more likely to report positive results. There was no significant relationship between medical and non-medical researchers’ preference for different data collecting techniques.

Brockman et al. (1979) reported that an possible explanation for medical personnel reporting more positive findings may rest in the ultimate purpose of the research effort. The medical profession provides services to community and policy decisions affecting those services may, in part, hinge on data and research findings. Using the same line of reasoning they suggest that the medical profession would be more be biased toward larger samples from general populations, (e.g., the communities they serve). Analysis did reveal that smaller sample sizes were related to studies involving non-medical personnel.
Brockman et al. (1979) highlighted the dilemma researchers collecting attitudinal data can encounter; the social desirability factor suggests they should avoid interviews, the appropriateness of attitudinal probing on the other hand suggests that interviews should be used. To reduce social desirability factors, ideally the respondents should not be able to detect the attitudes of the interviewer; they should see the interviewer as neutral. McPherson and Cocks (1983) suggests that when interviewers give all possible responses to each question, this may have the effect of "sanctioning" both negative and positive responses. Therefore, by the end of a series of closed-ended questions, respondents should perceived the interviewers as neutral. If open-ended questions are to be used with closed-ended questions, the obvious place to introduce them would be at the end of the interview.

5. Summary and Conclusion
Caution is needed when interpreting these findings because of the small number of studies involved. The results of this review do not support the Brockman et al. (1979) findings that closed-ended interviews are significantly more likely to produce positive attitudes and closed-ended self-response questionnaires are more likely to produce negative attitudes. No significant difference was found between the interview and the non-interview conditions for those studies involving closed-ended questions. This result is consistent with McPherson and Cocks (1983) findings. This review did find that those studies involving medical personnel were more likely to report positive attitudes compared with studies involving non-medical personnel. However, this finding was not statistically significant. There was no significant difference between the choice of data collection techniques for medical and non-medical personnel.

Brockman et al. (1979) warned against lumping studies together and/or selecting indiscriminately for purposes of comparing, evaluating or generalising. They highlighted the dangers of researchers construing an increase or decrease in positive attitudes that may actually be the discovery of different group norms and attitudes which have always existed. To control for this, they suggest that in order to measure change in the public’s attitudes, it is essential to resurvey populations. Only one study
in the current review (Trute, Teff & Segall, 1989) resurveyed a population.

As mentioned in the introduction, a difficulty in conducting this type of review is that objective comparisons between studies can not be made because of the myriad of different measures used. A full awareness of the consequences of various data-collecting processes will only be obtainable through extensive research using split-half sampling.
6. References


Cheung, P., Mak, K.Y. & Chan, D. (1994). Mental health attitude questionnaire. Unpublished manuscript (manuscript available from authors; Research Department, Duke of Windor Social Services Building, 15, Hennessy Road, Hong Kong).


Appendix One
A description of the objectives, data collection methods and the findings of all the studies included in the review

1) Negative Findings

Chou, Mak, Chung and Ho (1996). *Closed-ended telephone interviews*

The main aim of this survey was to understand how the people of Hong Kong perceive people with mental illness and mental health facilities. A random sample was selected from the telephone directory. They did not include telephone non-subscribers and subscribers with unlisted numbers in this study. The Mental Health Attitude Questionnaire (Chung, Mak and Chan, 1994) was used to measure the attitudes of 1043 respondents. Data was presented regarding the scale reliability and construct validity of the measure. The reliability was above 0.7 (Cronbach’s Alpha) and a principal component analysis resulted in seven eigenvalues. The seven factors accounted for 55% of the total variance.

They recruited the interviewers from a Children and Youth Center and they gave them three training sessions in the skills of interviewing. The interviewers had the responsibility of assessing the degree of cooperation of respondents. Those respondents that were viewed as uncooperative were counted as unsuccessful interviews and they discarded their data. The researchers gave no data on the number of interviews that they discarded. They reported that their findings suggested that attitudes towards people with a mental illness were negative and the “Not in my Backyard” phenomenon is “quite prevalent” in Hong Kong (p.217).

Angermeyer and Matschinger (1997). *Closed-ended interviews*

The objective of the study was to assess the public’s attitude towards people with a mental illness two decades after the first step towards reform in psychiatric care in the Federal Republic of Germany. The reforms called for the better integration of mentally ill persons into society. It was not clear from reading the paper what reforms had been put in place. They surveyed a representative sample of 2045 members of the public in
eleven regions using vignettes, social distance scales and a questionnaire developed for the study. The latter consisted of 12 items and asked respondents to describe their emotional reaction to the mentally ill person depicted in the vignette. Responses were recorded on a five-point Likert scale. They conducted a principal component analysis on both measures. The researchers reported that their findings indicated that people with a mental illness were faced a great deal of rejection by the German public.

Kirmayer, Fletcher and Boothroyd (1997). *Closed-ended interviews*

The researchers investigated attitudes toward deviant behaviour that might indicate a psychiatric disorder among 137 Inuit adults of Northern Quebec. Attitudes were measured by social distance scales with vignettes. Data on construct validity was presented. They concluded that the Inuit would keep a high level of social distance from persons whose behaviour might be indicative of mental illness.

Reda (1996) *Open-ended interviews*

The aim of the study was to determine whether casual contact with former psychiatric patients changed public attitudes towards people with a mental illness. One hundred residents of North London were interviewed before and six months after a residential facility for former patients was opened. Their responses were compared with a control group who had no contact with the facility or any similar mental health facility. The interview schedule was designed for the study. No data was given on the reliability or validity of the questionnaire. The researcher concluded that the public had an extremely negative attitudes towards people with a mental illness. No difference was found between the study and the control groups.

Socall and Holtgraves (1992). *Closed-ended self-response*

The aim of this study was to investigate the effect of a mental illness label. Respondents were asked to indicate their willingness to interact with a person with a mental disorder. Attitudes were measured using Social Distance Scales and vignettes. The data was collected via a postal survey. The response rate was 34.5 percent. When they compared the data with the demographic characteristics of the population, they
found that their sample had significantly higher levels of income and education. Their results indicated that respondents rejected the mentally ill significantly more often than identically behaving physically ill persons. They reported that their findings supported a fundamental labeling theory; namely, that a mental illness label, regardless of a person’s behaviour, can result in public rejection.

**Ingamells, Goodwin and John (1996).** *Closed-ended self response*

The aim of the study was to assess the attitudes towards descriptions of mental illness behaviour. The study also assessed the impact of informing the public that the mentally ill person lived in a community home or in a psychiatric hospital. They invited a random sample of 488 people listed on the Local Register of Electors from two urban communities in the UK to take part in the study. Attitudes were measured using vignettes and social distance scales. A sentence was added to the beginning of each vignette providing either a psychiatric hospital or a community residence label. A total of 208 subjects returned completed questionnaires (a response rate of 43%). They described attitudes as more rejecting than accepting of the mentally ill. The researchers reported that the results demonstrated that people whose behaviour is disturbed are likely to be rejected by others in society.

**Farina, Fischer, Boudreau and Belt (1996).** *Closed-ended self-response*

The aim of the study was to present mentally ill people at varying levels of abstraction ranging from giving subjects a written description to having them meet a confederate labeled as mentally ill. A total of 293 female undergraduates responded to either a mentally ill person or a control person presented at five levels of abstraction. Subjects rated the social acceptability and the expected degree of accomplishment of the target person. The measure “Evaluating other people in various settings” was designed for the study. It consisted of 12 questions divided into three categories. For each question, there were seven choices along a continuum from poor to excellent. Factor analysis was conducted on the measure. The subjects consistently described people labeled as mentally ill as less socially acceptable at each level of abstraction. However, a psychiatric label did not affect expectations of how much they would accomplish. The
researchers concluded from their research that people with a mental illness remain stigmatised.

**Link, Cullen, Frank and Wozniak (1987).** *Closed-ended self-response*

The aim of this study was to further explore labeling theory. The study challenged previous research that has shown that the crucial factor that determines the rejection of former mental patients was their behaviour rather than their "stigmatised" status. The study was based on a vignette experiment with Social distance scales. They sampled a random selection of 240 Ohio residents from the telephone directory. The data was collected via a postal survey. A total of 152 individuals responded. When they compared the sociodemographic characteristics of the respondents with census data they found that the responders were more educated than the general population. Similar to previous research, they found that labeling had little effect on a social distance. However, when a measure of perceived dangerousness of mental patients was introduced, strong labeling effects emerged. They suggest that their results indicate that labels play an important role in how former mental patients are perceived and that a label can lead to attitudinal rejection among the public.

**Shurka (1983).** *Closed-ended interviews*

The aim of the study was to investigate the attitudes of Israeli Arabs towards former mental patients. They also explored the effects of religion and education on attitudes. They used the Attitude to Mental Illness Questionnaire (Zohar, Flora and Modan, 1978) to measure attitudes. The questionnaire consists of 21 items that was divided into five categories: Acceptance of former mental patients into the community, potential dangers, occupational potential, views on psychiatric institutions and the image of the psychiatrist. They reported that the results of a factor analysis indicated that the questionnaire 'measured up to the criterion of internal validity' (p.102). With regard to their results they reported 'the results indicated the predominance of negative attitudes towards intimate relationships with such patients and towards their work potential' (p.101). Educational level and religion (Moslem or Christian) were found to
affect attitudes significantly, with the more highly educated and/or Christian respondents expressing less negative attitudes.

Madianos, Madianou, Viachonikol and Stefanis (1987). *Closed-ended interviews*

The aim of the study was to measure attitudes towards people with a mental illness in two boroughs in Athens before the development of community mental health services. The instrument used to measure attitudes was Cohen and Struening’s (1962) Opinion about Mental Illness scale. Factor analysis identified five factors which accounted for 66.4% of the total variance in their data. This scale had also been demonstrated in previous studies to be reliable and valid. They surveyed the attitudes of 1574 people. They found “suspicion and considerable fear” (p.164) and suggested that their results indicated the necessity for community educational programmes.

Aritzi, Richardson, Lyketsos and Lyketsos (1987). *Closed-ended interviews*

The aim of the study was to measure the attitudes of residents in a remote rural area of Greece towards people with a mental illness. The surveyed 197 residents using a questionnaire that was developed for the study. The questionnaire consisted of four questions with yes-no or agree-disagree responses. No data was presented on the reliability or validity of the questionnaire. They reported that the respondents were more likely to favour the traditional isolated closed hospital and to regard mental illness as a ‘punishment for sinful acts’ (p.19).

Trute, Teff and Segall (1989) *Closed-ended interviews*

The aim of the research was to replicate a community wide survey in the same city, employing similar measures, after a ten year period. This study provided the opportunity of ascertaining whether public attitudes had increased or diminished. A random sample of 548 residents in Winnipeg Canada were surveyed. The questionnaire which was developed for the study included all the items originally employed in the questionnaire ten years prior to the study. A factor analysis based on principal components analysis was conducted. The results identified two principal factors: rejection in social relations which contained items such as “Can you imagine yourself
falling in love with someone who had been a patient in a psychiatric hospital,” and rejection in social responsibility which contained items such as “If you were a manager and were responsible for hiring people to work for you, would you be willing to hire a discharged hospital psychiatric patient.” Responses were measured on a nine item Likert scale. They reported that their results suggest that the ‘public response tends to be one of rejection of the mentally ill’ (p.74). They found no significant differences in levels of public rejection of the mentally ill over the comparison ten years.

2) Positive Findings

Brockington, Hall, Levings and Murphy (1993). *Closed-ended interviews*

Their main hypothesis was that tolerant attitudes would develop in areas served by community psychiatry because the public would become accustomed to people with a mental illness. They compared a population served by community psychiatry with a population served by a traditional mental hospital. Attitudes were measured by the Community Attitudes to Mental Illness Inventory (Taylor and Dean, 1983). They reported that the community had a predominantly tolerant attitude to people with a mental illness. They rejected their main hypothesis because no appreciable difference between the two areas was found.

Hall, Brockington, Levings and Murphy (1993). *Open-ended interviews*

Vignettes and a three-item questionnaire developed for the study was presented to nearly two thousand residents in the UK. Overall the researchers reported that the results were positive. However, the overall identification of vignette subjects as mentally ill was reported to be low. They also reported that few people were aware of local community-based mental health facilities. They gave no data on the reliability or validity of the questionnaire designed for the study.


The objective of the study was to determine the overall favorableness of community residents towards having people with a mental illness as neighbours. The study also investigated the effects of labeling associated with place of residence (living in a
community mental health residence vs. a normal residence) and behavioural presentation (mild vs. severe disability). A mail survey was conducted using vignettes. Behavioural intentions regarding neighbouring were measured by a 12-item measure developed for the study. Internal reliability was considered (Cronbach’s alpha .80) and a factor analysis was conducted on the questionnaire. The response rate of this study was 58.5 percent. The sample was judged to represent the population when compared with census data. However they did not attempt to interview the non-respondents to assess whether the responders attitudes’ were similar to the non-responders. The results showed behavioural presentation superseding labeling. They reported high levels of receptiveness by the community to having tenants from mental health residences as neighbours.

**Sonya, Martin and Romans (1995).** *Closed-ended self-response.*
The objective of the study was to assess the community attitudes towards mental illness in the city of Dunedin in New Zealand. A postal survey examined the attitudes of 300 randomly selected Dunedin residents. The sample was selected from the 1992 Dunedin Electoral Rolls. The study did not present data comparing the sample with census data, or data comparing the characteristics of the responders with the non-responders. A shortened version of the Taylor and Dean (1981) Community Attitudes towards Mental Illness Inventory (CAMI) was used to measure attitudes and a Social Distance Scale. The researchers suggested that their findings indicated that the community had a positive outlook towards people with mental illness. They reported that the results of the CAMI were more positive that the results obtained from the Social Distance Scales.

**Murphy, Black, Duffy, Kieran and Mallon (1993).** *Closed-ended interviews*
The objective of the survey was to assess the attitudes of the public towards people with a mental illness. They interviewed a random selection of 155 adults. The socio-demographics of the sample were reported to closely resemble the general population. Attitudes were measured by a scale developed by Moran (1977) called the Conceptualisation of Mental Illness and Attitude Towards the Mentally Ill and Ex-
patients. Responses were recorded on Likert-type scales. Although no data was presented on the reliability and validity of the attitude scale, the researchers reported that the scale satisfies criteria for validity and reliability. They reported that the findings were encouraging for the future development of community psychiatric services.

Skinner, Berry, Griffith and Byers (1992). *Closed-ended self-response*

This study was designed to assess if there had been any significant improvement in attitudes toward individuals labeled as mentally ill. One hundred and eighty-two psychology undergraduates completed the forced-choice items measuring attitudes towards people with a mental ill vis-à-vis ex-convicts or ex-drug addicts. They gave no data regarding the reliability and validity of this measures. The data was compared with the results of a similar study by Lamy in 1966. They reported that their findings suggested that attitudes toward the mentally ill have evolved in a positive direction. The researchers suggested that the community mental health movement and the efforts of mental health advocacy groups may have facilitated the factors underlying the more positive attitudes towards people with a mental illness.

Rossler, Salize and Voges (1994). *Closed-ended-interviews*

The aim of the study was to investigate the attitudes and feelings towards people with a mental illness among the residents of two Central European regions which are at different stages of development in moving towards community-based care. They compared Luxembourg, which has mainly custodial care, with Manneheim in Germany that has well-developed community services. By using the telephone survey method a cross-section of the population from both regions were interviewed using two attitude scales. The first scale measured social distance and the second scale focused on the interviewee’s feelings towards the mentally ill and consisted of a list of nine closed-ended questions designed specially for the study. Factor analysis was conducted on the questionnaire. They described the results of the Social Distance Scales for both regions as being within the acceptable range. For the questionnaire, feelings of “liking” and an “impulse to help” received the strongest affirmation in both regions. The researchers
concluded that community psychiatry had not significantly affected the public's attitudes towards people with a mental illness.

**Barry (1994). Open and closed-ended interviews**

This study set out to explore community attitudes towards people with a mental illness in Ireland. The data collection incorporated both qualitative and quantitative methods. Two hundred respondents were selected by means of a randomised quota sampling procedure. Interviews were conducted in the respondents' own homes. The Opinions about Mental Illness Scale (Cohen and Struening, 1962) was administered with vignettes. Attitudes were measured using both closed and open-ended questions. A split-half sampling technique was used to compare the effects of closed and open response formats. Barry reported that the findings suggested that respondents' attitudes were generally positive and compared favourably with findings from other countries. Open-ended questions were reported to reveal a more elaborate and complex range of beliefs than the closed-ended questions. The research did not address the question about whether open-ended questions lead to more or less positive responses than closed-ended questions.

**Malla and Shaw (1987). Closed-ended self-response**

The aim of the study was to assess attitudes towards the mentally ill in two groups of students attending a nursing training program. One group had just began their training and the second group had completed two years of training. Data was collected using vignettes and Social Distance Scales. The researchers found no differences between the groups. They both were reported to share an overall optimistic and positive attitude towards people with a mental illness.


The study aimed to evaluate the attitudes of medical students towards patients with a mental illness. They employed Distance Scales and vignettes to measure attitudes. They found that attitudes towards patients with psychotic or neurotic behaviours was not negative, but attitudes towards conduct disordered patients were characterised by
more rejecting attitudes. Interpreting the overall findings of this study was difficult. It was decided to classify the results as positive because the research reported that in overall terms ‘mental illness labeling does not imply a lack of empathy and understanding towards patients’ (p.37).

Scott, Balch and Flynn (1983). Closed-ended interviews
The study aimed to assess community attitudes towards community mental health services and the recipients of the service. A questionnaire was developed for the study which included 23 questions. The researchers demonstrated reliability (Cronbach’s alpha .86), but no data was presented regarding the validity of the questionnaire. They surveyed 436 community residents. Data was collected by 40 undergraduates who interviewed the participants. The researchers reported ‘the present results suggest that these community residents would have few reservations about accepting an ex-patient into their midst’ (p.747).
Professional Dossier

- Curriculum Vitae
- An Account of Post Qualification Training
- Tables Outlining Clinical Research, Teaching and Continued Professional Development
- Clinical Case Report
Diane Grainger
St. Brendan’s Hospital, Devonshire, DL 02
Bermuda
(441) 236-3770

Objective
To describe post qualification training and practice.

Employment
DERWEN NHS TRUST
Basic Grade Clinical Psychologist (1992 - 95)
Adult and child split speciality post

BERMUDA HOSPITAL'S BOARD
Senior Grade Clinical Psychologist (1995 - to date)
Adult and child split speciality post

Education
SOUTH WALES CLINICAL PSYCHOLOGY TRAINING COURSE
Diploma in Clinical Psychology (1989-92)

NORTH EAST LONDON UNIVERSITY
B.Sc. Honors Psychology Degree (1984-87)

Current Responsibilities
• To provide individual and group therapy.

• To conduct weekly supervision groups for psychiatric residents on placement from UK training courses1.

• To provide regular teaching sessions on clinically relevant topics to all staff involved in patient care, and three monthly presentations to a hospital-based journal club (see table two).

• To chair the Mental Health Steering Committee.

• To coordinate and conduct small scale clinical research projects (see table one).

• To keep up-to-date with clinical psychology research and new developments (see table three).

1Bermuda's Mental Health Programme was granted Royal College of Psychiatry Training Status in 1997.
An Account of Post Qualification Clinical Work

After qualifying I wanted to further develop my therapeutic skills in both the Adult and the Child & Adolescent specialties. My first post was therefore divided between the Adult and Child services in West Wales and involved weekly supervision from the heads of specialty in each area. I carried a caseload of approximately 45 patients and spent eight sessions a week in direct patient contact. My time was initially divided equally between the Child & Adolescent services and the Adult Mental Health services.

Within the Adult Mental Health service I worked in an Acute Community Team and an Acute Inpatient Team. I held outpatient clinics in a GP surgery and a psychiatric day hospital. The majority of my outpatient work involved treating individual patients with depression and anxiety disorders within a predominantly cognitive-behavioural framework. The types of patients seen on the inpatient admission ward tended to have more enduring and severe mental health problems such as schizophrenia and other psychotic disorders.

Within the Child & Adolescent services my orientation involved a combination of behavioural and systemic approaches. I saw children on an individual basis and with their families. The clinical problems involved a wide range of difficulties including depression, anxiety, post traumatic stress, eating disorders, obsessional compulsive disorders, conduct disorders, enuresis and encopresis. After working for a year between the two specialties, I chose to concentrate more on the Child and Adolescent speciality and I spent eight sessions a week in the Child service and two sessions a week in the Adult Mental Health services.

During the first two and a half years after qualifying the main focus of my career was on gaining experience and expertise in clinical work. The majority of my time was spent assessing and treating patients and running therapeutic groups (e.g., an adolescent social skills group, a group for women who had been sexually abused in childhood and a eating disorders group). I had occasional management and teaching responsibilities, such as deputising for the head of specialty while he was on vacation.
and facilitating training sessions (e.g., enuresis training for health visitors and seminars for pediatric staff on the management of adolescents with eating disorders). I also attended regular training events organised by the South Wales Clinical Psychology Training Course.

In 1995 (two and half years after qualifying) I moved to Bermuda to work in a combined specialty post between Child & Adolescent and Acute Adult Mental Health services. I left the UK to gain overseas experience and to develop skills in working in a multi-cultural setting. Working in West Wales provided a solid grounding in clinical work, but the opportunity for multi-cultural experience was limited.

I have now been practicing in Bermuda for five years. During this time I have become aware of the challenges of cross-cultural therapy and sensitised to the complexities of working within a multi-cultural environment. My clinical orientation has remained cognitive-behavioural, but I have become more flexible in its implementation and more aware of its limitations. I now frequently rely on a combination of therapeutic techniques to help patients overcome their difficulties. Within the Child & Adolescent service my orientation has moved towards working, where possible, with entire families rather than concentrating on the individual child or adolescent.

My role in Bermuda has remained predominantly clinically based. I carry a caseload of approximately 35 patients and spend six sessions a week in direct patient contact. In addition to clinical work I have developed my managerial and supervisory skills (e.g., chairing the mental health steering group, developing practice guidelines and supervising psychiatric residents). The main limitation of my present post is the lack of capacity to specialise. The small size of the island’s population (58,000) prevents the possibility of developing expertise in any one area. My plan for the future is to return to the UK to take up a full-time position in a Child & Adolescent Service and to seek specialist training in family therapy.
Table One: Clinical Research Projects

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<th>Date</th>
<th>Title</th>
<th>Aims</th>
<th>Method</th>
<th>Results</th>
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<td>10/97</td>
<td>Community Knowledge and Attitudes to Mental Illness Before and After an Open House</td>
<td>To assess the effects of an “open house” on the community’s knowledge and attitudes towards mental illness.</td>
<td>The “Open house” was held at the island’s only psychiatric hospital. It included a guided tour of the hospital, a twelve-minute promotional video about Bermuda’s inpatient and outpatient services, a lecture about mental illness, an outdoor fair and several displays offering information about mental illness. The target population was all members of the public over the age of fifteen who attended the open house. The public was asked to complete a pre-visit questionnaire when they arrived and a post-visit questionnaire when they left. The questions dealt with: demographic data, knowledge of mental illness, attitudes to mental illness, the public’s perception of the quality of the service offered at the hospital and their willingness to seek psychiatric help. The six knowledge questions were taken from a study by Wolff et al., (1996). Attitudes towards mental illness were measured by a Self-report Inventory developed by Wolff et al.</td>
<td>One hundred and five people participated (88% of the target population). The results of the study suggested that holding an “Open house” in a psychiatric hospital is a useful public relations exercise and a successful medium for increasing the publics’ confidence in the quality of the mental health services. However, it did not significantly increase respondents’ knowledge or change their attitudes towards people with a mental illness. A criticism of an open house is that it inevitably attracts people who are interested in mental health. A problem with the study was the large variation in the presentation of the educational material.</td>
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<tr>
<td>6/98</td>
<td>Mental Health Consumer Satisfaction Survey</td>
<td>1. To evaluate the service from the patient’s perspective.</td>
<td>A 14-item questionnaire was developed covering areas such as waiting time, confidentiality, service setting etc.</td>
<td>A total of 175 patients participated (16% of the total patient population). The majority of patients were satisfied with their care. Four areas were identified as needing improvement:</td>
<td>Six months after the survey the two long-stay wards were renovated. An additional occupational therapist was employed to cover the acute ward. Following the survey patients were routinely given information sheets outlining the hospital’s policy on confidentiality. Priority was given to developing a public mental health campaign to reduce discrimination against people with mental illness (see the research dossier). Another survey will be conducted in two years to assess the impact of the improvements on patient satisfaction.</td>
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<td>2. To obtain information for service planning.</td>
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<td>1. The physical environment on the long-stay wards.</td>
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<td>3. To provide baseline data for subsequent surveys.</td>
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<td>2. The number of activities available for patients on the acute inpatient ward.</td>
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<td>3. Patients’ trust in the confidential nature of the service.</td>
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<td>4. The stigma associated with mental illness.</td>
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### Table One Continued: Clinical Research Projects

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<tr>
<th>Date</th>
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<th>Aims and Background</th>
<th>Method</th>
<th>Results</th>
<th>Outcome</th>
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<tr>
<td>02/99</td>
<td>Clinical Note Keeping Audit Report (A psychology assistant under my supervision conducted this research).</td>
<td>A comprehensive system of clinical note keeping facilitates communication between health professionals and provides legal documentation of clinical work. To assess the quality of clinical note keeping in the mental health programme, a clinical note audit was conducted. This is the first time an audit had been conducted so the data was used to generate a baseline measure for future comparisons.</td>
<td>An interdisciplinary task group developed a tool to measure the quality of note keeping. The tool covered areas such as number of entries not signed, the number of entries that did not include the professional's designation etc. To evaluate the utility of the tool it was piloted on sixteen files. The findings from the pilot study resulted in minor adjustments to the tool. All of the inpatient files were audited. In the community-based services every third file was assessed. To increase objectivity senior members of staff audited files from services that they were not involved.</td>
<td>A total of the 206 files were audited. The appearance and physical condition of the majority of files was satisfactory. However, less than 50% of files contained essential demographic information (e.g., the patient's address, telephone number etc.). Thirty-six percent of files contained documentation that was either not signed or dated. Most of the staff did not state their clinical designation (e.g., consultant psychiatrist, social worker). Four of the services did not have sign-out systems that allow for the adequate tracking of files when they left the units.</td>
<td>Case managers were given the responsibility of ensuring that all files had up-to-date patient demographics. To encourage professionals to state their position a stamp stating the professional designation was placed in the interview rooms. Team leaders with the assistance of the programme manager were given the responsibility of setting up a sign out system. The files are scheduled to be audited again February 2000.</td>
</tr>
</tbody>
</table>
## Professional Dossier: Clinical Practice

### Table Two: Teaching

<table>
<thead>
<tr>
<th>Title</th>
<th>Brief description of contents</th>
<th>Teaching methods</th>
<th>Audience</th>
<th>Date and time</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychology 101</td>
<td>A 15-week course held at the Bermuda college to provide students with a general background to the theoretical principles in psychology. Subjects included: learning &amp; conditioning, perception, emotion, psychological development etc.</td>
<td>Overheads, handouts and small group discussions.</td>
<td>86 students</td>
<td>Sept-Dec 1997</td>
<td>The student’s comments and ratings on the college’s formal evaluation forms were very positive. Written feedback from the course administrator was also positive.</td>
</tr>
<tr>
<td>Women and depression</td>
<td>Psychological and sociological explanations for the higher prevalence rates of depression in woman.</td>
<td>Overheads and the use of a flip chart to encourage group discussion.</td>
<td>Members of the public and families of people with a mental illness. Approximately 50 people attended.</td>
<td>Nov 1997 One hour presentation</td>
<td>Informal positive feedback from the audience and positive written feedback from the organiser.</td>
</tr>
</tbody>
</table>
## Table Two Continued: Teaching

<table>
<thead>
<tr>
<th>Title</th>
<th>Brief description of contents</th>
<th>Teaching methods</th>
<th>Audience</th>
<th>Date and Time</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication styles</td>
<td>The workshop was requested by the Bermuda Hospitals Board and was conducted jointly with the Chief of Psychiatry. Topics covered included individual, group and counterproductive communication styles and active listening skills.</td>
<td>Overheads, role plays, group exercises and handouts.</td>
<td>Forty team leaders and managers from the general and psychiatric hospital attended the workshop.</td>
<td>April 1998. A three-hour workshop conducted on two occasions.</td>
<td>Immediate and written feedback from the participants was positive. They suggested the workshop would have been improved by the use of more role plays.</td>
</tr>
<tr>
<td>Interviewing children</td>
<td>Information was presented on child cognitive development, the dangers of leading questions, rapport building and creating child friendly environments.</td>
<td>Handouts, overheads and small group discussions.</td>
<td>Police and social workers. Approximately 20 people attended.</td>
<td>June 1998 Three hour workshop.</td>
<td>Comments and ratings on a formal evaluation form suggested that the participants found the workshop relevant, interesting, and informative.</td>
</tr>
<tr>
<td>Results of the 1998 consumer satisfaction survey</td>
<td>Overview of the results of the consumer satisfaction survey and the planned improvements.</td>
<td>Overheads and discussion.</td>
<td>All staff from St. Brendan’s hospital were invited. Approximately 30 people attended.</td>
<td>June 1998 One hour presentation</td>
<td>Informal positive feedback from staff</td>
</tr>
</tbody>
</table>
### Table Two Continued: Teaching

<table>
<thead>
<tr>
<th>Title</th>
<th>Brief description of contents</th>
<th>Teaching methods</th>
<th>Audience</th>
<th>Date and Time</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Results of the “Open house” research project</td>
<td>An overview of the background to the project and the results.</td>
<td>Overheads and discussion.</td>
<td>All staff from St. Brendan's hospital were invited. Approximately 20 people attended.</td>
<td>Oct 1998 One hour presentation</td>
<td>Informal positive feedback from staff</td>
</tr>
<tr>
<td>Introduction to research methodology</td>
<td>Review of research design, hypotheses testing, questionnaire design and sampling methods.</td>
<td>Overheads and discussion.</td>
<td>The newly created Hospital Research Committee.</td>
<td>Jan 1999 One hour presentation</td>
<td>Informal positive feedback from staff</td>
</tr>
<tr>
<td>Case presentation (a 38-year-old man with Tourette's Syndrome)</td>
<td>A review of the syndrome and a case presentation including history, assessment, formulation and treatment.</td>
<td>Overheads and discussion.</td>
<td>Staff from the Acute Community Mental Health Team.</td>
<td>Aug 1999 One hour presentation</td>
<td>Informal positive feedback from staff</td>
</tr>
<tr>
<td>Cognitive behaviour therapy for psychiatric problems</td>
<td>A series of six lectures covering the following topics:</td>
<td>Overheads and the use of a flip-chart to encourage discussion and role play.</td>
<td>Staff involved in clinical care (i.e., psychiatrists, psychiatric residents, psychologists, social workers, mental welfare officers). Approximately 20 people attended.</td>
<td>Aug-Sept 1999 Six 90-minute weekly lectures presented after work hours</td>
<td>Comments and rating in the written evaluation forms indicated that staff found the lectures informative. They requested more role plays.</td>
</tr>
</tbody>
</table>
### Table Two Continued: Teaching

<table>
<thead>
<tr>
<th>Title</th>
<th>Brief description of contents</th>
<th>Teaching methods</th>
<th>Audience</th>
<th>Date and Time</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case presentation (a young boy with multiple tics and behavioural problems)</td>
<td>Theoretical background and a case presentation including history, assessment, formulation and treatment.</td>
<td>Overheads and discussion.</td>
<td>Staff from Child and Adolescent Services.</td>
<td>Sept 1999 One hour presentation</td>
<td>Informal positive feedback from staff.</td>
</tr>
<tr>
<td>Journal Club presentations</td>
<td>My presentations have included topics such as an introduction to chi-square statistics, behavioural management of Tourette’s disorder, persuasion variables, childhood depression and a variety of case presentations.</td>
<td>Overheads and group discussions.</td>
<td>The Journal Club has 12 members including clinical psychologists, psychiatrists, psychiatric residents and social workers.</td>
<td>Each member of the Journal Club makes a clinical presentation every three months.</td>
<td>Informal positive feedback from staff.</td>
</tr>
</tbody>
</table>
Table Three: Continued Professional Development

<table>
<thead>
<tr>
<th>Date</th>
<th>Title and Location</th>
<th>Brief Description</th>
<th>Outcome (value of)</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 1997</td>
<td>Leadership Workshop (King Edward Memorial Hospital, Bermuda)</td>
<td>Topics covered included:</td>
<td>Increased awareness of how to deal with issues arising in the work place.</td>
</tr>
<tr>
<td>(Five-day workshop)</td>
<td></td>
<td>• How to delegate</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• How to give constructive criticism</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Managing work stress</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Dealing with conflict</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Time management</td>
<td></td>
</tr>
<tr>
<td>Jan 1998</td>
<td>Multi cultural issues in therapy (Bermuda College)</td>
<td>Information on how cultural issues can effect therapy.</td>
<td>Increased awareness of multi-cultural issues related to clinical work with children and adults.</td>
</tr>
<tr>
<td>(Two-day workshop)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Feb 1998</td>
<td>Turning up the heat on adolescent suicide (international tele-conference)</td>
<td>Prevalence rates on teen suicide in North America and the importance of immediate intervention for teenagers who are expressing suicidal thoughts.</td>
<td>Increased knowledge in an area that is related to my clinical practice.</td>
</tr>
<tr>
<td>(Ninety-minute teleconference)</td>
<td></td>
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<tr>
<td>Jan 1999</td>
<td>Family moulding (Family Learning centre)</td>
<td>Exploring family dynamics within a clinical context.</td>
<td>Direct relevance to clinical work with families.</td>
</tr>
<tr>
<td>(One-day workshop)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feb 1999</td>
<td>Legal aspects of Child Protection (Department of Child and Family Services)</td>
<td>Legal rulings according to the Children’s Act.</td>
<td>Increased knowledge of laws related to the Children’s Act.</td>
</tr>
<tr>
<td>(One-day workshop)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sept 1998</td>
<td>Interagency Working (Elbow Beach Hotel, Bermuda)</td>
<td>The conference emphasised the importance of not duplicating services and the importance of sharing information.</td>
<td>A greater awareness and links with other services in Bermuda.</td>
</tr>
<tr>
<td>(Two-day conference)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Title and Location</td>
<td>Brief Description</td>
<td>Outcome (value of)</td>
</tr>
<tr>
<td>--------------------</td>
<td>---------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Oct 1998 (two-day</td>
<td>Children online in the new millennium (Bermuda College)</td>
<td>The advantages and disadvantages of the Internet for children.</td>
<td>Increased knowledge of how parents can protect their children from Internet abuse.</td>
</tr>
<tr>
<td>international</td>
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<tr>
<td>conference with</td>
<td></td>
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<tr>
<td>speakers from the</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>UK and USA)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ongoing</td>
<td>Journal Club meetings (St. Brendan’s Hospital)</td>
<td>The Journal Club meets weekly to review journal articles, listen to presentations and</td>
<td>The meetings provide an increased theoretical understanding of issues relating to</td>
</tr>
<tr>
<td></td>
<td></td>
<td>discuss clinical cases.</td>
<td>clinical practice and new developments.</td>
</tr>
</tbody>
</table>
Clinical Case Report
1. Introduction
The following is a case of a young boy referred to the Child and Adolescent Services for help with tics and behavioural problems. The case was chosen because it links the theory of behavioural management of tic disorders outlined in the previous section to clinical practice.

1.1 Reason for the Referral
David was referred by his parents, Mr. and Mrs. Smith, when he was eight years old. His parents made the referral following a recommendation from his head teacher who was concerned about his “attention seeking behaviours.”

1.2 Initial Presentation
David attended the session accompanied by his parents. He presented as an alert and compliant child. His mother was tearful when describing his difficulties.

1.3 Presenting Problems
The head teacher had told Mr. and Mrs. Smith that David was exhibiting a variety of “strange behaviours.” These behaviours included “making funny faces”, shaking his head, picking at his eyebrow, rapid eye blinking, waving his arms around, and making negative comments about himself (e.g., “I’m a dumb boy”). The teacher had apparently attributed these unusual mannerisms to “attention seeking behaviours.” He was also reported to have problems in group situations. For example, during school assemblies he would often shout out and make “strange faces.”

Unusual mannerisms such as head shaking, eyebrow picking and the use of obscene language had also been observed at home. These behaviours were reported to increase with the stress of new situations and with boredom. Mr. and Mrs. Smith typically dealt with these behaviors by ignoring them, however, they admitted that there had been occasions where they had shouted at him or sent him to his room.

1 For reasons of confidentiality, the patient will be referred to by the pseudonym David Smith.
David was described by his parents as a "defiant child" who would not follow household rules. This was particularly stressful for the family in the mornings, because David would often refuse to dress himself. Mrs. Smith reported that she was also concerned that David did not have any close friends and he was often reluctant to attend parties or go to other children's homes.

When Mrs. Smith was interviewed on her own, she reported feeling responsible for David's inappropriate behaviours at home and at school. She believed that these behaviours were the result of her inadequate parenting skills. When this area was explored with her, there was no evidence of poor parenting. David appeared to have an organised daily routine and a positive relationship with his parents. Mrs. Smith reported having a good relationship with her husband, but appeared somewhat resentful about having to take full responsibility for the parenting of their two children. She attributed her husband's lack of involvement with the family to the demanding nature of his job.

1.4 History of Presenting Problems
David started showing repetitive behaviours at age four. Around this age he also started sniffing and licking things. Mrs. Smith stated that he would "lick almost anything." These behaviours stopped after about 12 months, at which point he then started picking at his eyebrow. Approximately one year ago he began shaking his head from side to side. His parents were not aware of any family stressors or usual circumstances that may have contributed to his problems.

1.5 Previous Interventions (information obtained through discussion with the parents and reviewing previous clinical notes)
Prior to the current referral he had been seen by a Pediatrician who had diagnosed "Attention Deficit Disorder" and prescribed Ritalin. However, his parents were reluctant to accept this diagnosis and had chosen not to use the medication. He had also been seen by a school psychologist for an intellectual evaluation. The head teacher had requested the evaluation because she felt that it may shed some light on his poor
social functioning. The results of the Wechsler Intelligence Scale for Children (3rd edition) suggested that he was functioning within the “average” range of intellectual ability. No significant discrepancy was found between his Performance IQ (107) and his Verbal IQ (104). The results showed that David’s verbal understanding and expression were as well developed as his visual-perception skills. Based on behavioural observations during testing, the school psychologist suggested that he might have some mild attention problems that may be more pronounced within a classroom setting.

David had previously been seen at Child and Adolescent Services by a Child Psychiatrist when he was four years old. His parents had referred him to the service because they were having problems managing his aggressive behaviour. At that time his parents described him as an “active child” who used “bad words.” They reported that he would frequently hit and shout at his brother and his peers. He was seen for two sessions and a diagnosis of “Child-Parent Problems” was made. The Psychiatrist gave behavioural management advice on how to set limits on David’s behaviours (e.g., the removal of privileges). In the second session, the Psychiatrist recorded in the clinical notes that he had “some minor nervous habits such as sniffing and scratching at some parts of his body.”

2. Background Information
David had a younger brother who had no problems at school or at home. Mrs. Smith was born and raised in the UK. Her family of origin was in the UK. Mr. Smith was born in Bermuda. The family history is significant in that a close relative had facial tics. There was no reported family history of mental illness.

2.1 Developmental History
Mrs. Smith stated that the pregnancy was planned and uncomplicated. David reached his developmental milestones within normal limits. His mother described his play as imaginative, but on further questioning she reported that he would often line up his toys. She also described him as a “perfectionist.” If he made a mistake when drawing a
picture, he would get angry with himself and throw the picture away. Mrs. Smith described him as a loving and responsive toddler.

2.2 Educational History
Mr. and Mrs. Smith reported that he was doing well academically in most subjects. With the parents' permission contact was made with David’s head teacher. She described him as a “strange child” who made peculiar facial expressions and made noises like a monkey. He was frequently sent out of the classroom because of his unusual mannerisms. She described him as a child who was easily embarrassed and often made self-deprecating statements. Academically he was reported to be a bright child who could concentrate and was showing no signs of hyperactivity. She confirmed that he had problems in group situations and frequently played the role of the “class clown.” Although he did not have any friends and frequently withdrew from social situations, she did not think that he was bullied or teased at school. The other children were reported to find some of his strange behaviours amusing. Mrs. Smith stated that she was not aware of him making “monkey-type” noises at home, but she had noticed that he would occasionally make repetitive throat-clearing sounds.

2.3 Medical History
At the time of the referral David was not taking any medications and had an unremarkable medical history.

3. Assessment
David presented as a casually dressed boy of average stature and build. During the assessment he was alert and appropriate. However, when his mother became tearful, he started to laugh. He had five incidences of head shaking and three or four incidences of picking at his eyebrow. These incidences occurred mainly when he was being talked about. His speech was normal in rate and volume and his eye contact was good. In the presence of his parents and on his own he did not show any signs of over-activity and he presented as a compliant child.
When he was assessed on his own in the playroom, he did not use the play materials in an imaginative manner. He spent most of the session engaged in repetitive play (pulling a toy train back and forward). When asked about his head shaking and eye brow picking he initially stated that he had control over these behaviours and did them because he thought they were funny. Later in the session, when asked what he would do with three magical wishes, he told me that he wished his head would not shake. During a subsequent individual session he described feeling a release of tension when he shook his head. He told me that sometimes he could control the urge to shake his head and pick at his brow, but at other times “they just happen.”

3.1 Clinical Formulation

David has chronic multiple motor tics (semi-voluntary muscle movements) which increase with stress. His motor tics involved facial grimacing, head shaking and brow plucking. He had only limited control over his motor tics. His grunting and obscene utterances appeared to be situational and did not appear to occur in bouts or on a regular basis. Therefore, at this stage of the assessment it was unclear whether he was suffering from vocal tics. Before a diagnosis could be made, a neurological evaluation was necessary to rule out any other movement disorders.

David’s tics appeared to be impairing his self-esteem and social performance. Although there was no evidence that he was being teased, he seemed self-conscious about his tics and was showing a reluctance to involve himself in social situations. His self-consciousness and feelings of shame about his ticking were being reinforced by the school and his parents lack of knowledge about the nature of his disorder. His parents and the school believed that he could control his tics and that they were the result of him seeking attention. This misconception was lowering Mrs. Smith’s confidence in her parenting skills and affecting David’s self-esteem, as evidenced by his frequent self-deprecating comments.

In addition to a tic disorder David was also showing some oppositional behaviours at home that were causing distress to his family (e.g., refusing to get dressed in the
mornings). Finally, Mrs. Smith appeared to feel unsupported by her husband. Dealing with two children under the age of ten, being isolated from her own family of origin, and being told that her child was "strange" and "odd" were understandably causing her to feel overwhelmed and tearful at times. These factors appeared to be affecting the family's ability to deal effectively with a child with a tic disorder. Therefore, to produce change and positively impact on this family, all these factors would need to be addressed.

4. Tic Disorders

Tic disorders are stereotyped abnormalities of semi-involuntary motor movements or vocalisation (Dulcan and Popper, 1994). A pattern of waxing and waning of tic symptoms is common and stress often exacerbates all forms of tics (King, Leckman and Cohen, 1997).

At present no descriptive or threshold criteria can accurately distinguish tics that have greater comorbidity or more serious prognostic implications from tics that are more benign (King et al., 1997). The DSM-IV (American Psychiatric Association, 1994) subdivides tic disorders into transient tic disorder, chronic tic disorder, and Tourette's disorder. However, some researchers (e.g., King, et al., 1997; Cohen, Brunn, and Leckman, 1988) have suggested that the criteria for these subdivisions are arbitrary and that it is unclear to what extent these criteria of frequency and duration demarcate distinctive syndromes with differing etiologies, symptomatic concomitants or clinical course. DSM-IV criteria for tic disorders are reported in Table One.

Chronic motor or vocal tic disorders tend to start between age five and ten years (King et al., 1997). In two-thirds of patients, symptoms cease in adolescence, but for some they may persist in mild or severe forms for decades (Dulcan and Popper, 1994). Transient tics are common in prepubertal children. They are usually mild and by definition time limited (King et al., 1997).
<table>
<thead>
<tr>
<th>DSM-IV diagnostic criteria for Tourette’s disorder</th>
<th>DSM-IV diagnostic criteria for chronic motor or vocal tic disorder</th>
<th>DSM-IV diagnostic criteria for transient tic disorder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Both multiple motor and one or more vocal tics have been present at some time during the illness, although not necessarily concurrently.</td>
<td>Single or multiple motor or vocal tics (i.e., sudden, rapid, recurrent, nonrhythmic, stereotyped motor movement or vocalisations), but not both, have been present at some time during the illness.</td>
<td>Single or multiple motor and/or vocal tics (i.e., sudden, rapid, recurrent, nonrhythmic stereotyped motor movements or vocalisations).</td>
</tr>
<tr>
<td>The tics occur many times a day (usually in bouts) nearly every day or intermittently throughout a period of more than one year, and during this period there is never a tic-free period of more than three consecutive months.</td>
<td>The tics occur many times a day nearly every day or intermittently throughout a period of more than one year, and during this period there is never a tic-free period of more than three consecutive months.</td>
<td>The tics occur many times a day, nearly every day for at least four weeks, but for no longer than twelve consecutive months.</td>
</tr>
<tr>
<td>The disturbance causes marked distress or significant impairment in social, occupational, or other important areas of functioning.</td>
<td>The disturbance causes marked distress or significant impairment in social, occupational, or other important areas of functioning.</td>
<td>The disturbance causes marked distress or significant impairment in social, occupational, or other important areas of functioning.</td>
</tr>
<tr>
<td>The onset is before age 18 years.</td>
<td>The onset is before age 18 years.</td>
<td>The onset is before age 18 years.</td>
</tr>
<tr>
<td>The disturbance is not due to the direct physiological effects of a substance (e.g., stimulants) or a general medical condition (e.g., Huntington’s disease or postviral encephalitis).</td>
<td>The disturbance is not due to the direct physiological effects of a substance (e.g., stimulants) or a general medical condition (e.g., Huntington’s disease or postviral encephalitis).</td>
<td>The disturbance is not due to the direct physiological effects of a substance (e.g., stimulants) or a general medical condition (e.g., Huntington’s disease or postviral encephalitis).</td>
</tr>
<tr>
<td>Criteria have never been met for Tourette’s disorder.</td>
<td>Criteria have never been met for Tourette’s disorder or chronic motor or vocal tic disorder.</td>
<td>Criteria have never been met for Tourette’s disorder or chronic motor or vocal tic disorder.</td>
</tr>
</tbody>
</table>
Initially, the symptoms of Tourette’s disorder may resemble the transient or chronic motor tics of childhood. With time however, the tics become more persistent and increase in diversity and distribution (King, et al., 1997). Pauls, Towbin and Leckman (1986) found that by adulthood, as high as 55 to 90 percent of patients with Tourette’s disorder also meet the diagnostic criteria for obsessive-compulsive disorder.

Community surveys have found that as many as 13 percent of boys and 11 percent of girls are reported to have tics (Zahner, Clubb and Leckman, 1998). Studies investigating the prevalence of Tourette’s disorder have reported findings ranging from 2.87 per 10,000 (Caine, McBride and Chiverton, 1988) to 105 per 10,000 (Comings, Hines and Comings, 1990) for males and 13.2 per 10,000 for females (Comings, Hines and Comings, 1990). Tourette’s and other tic disorders show a male predominance of 3-10:1 (Dulcan and Popper, 1994). The variation in prevalence estimates have been attributed to different survey methods and the questions used (King, et al., 1997). Two-thirds of all relatives of Tourette’s disorder patients have transient and/or chronic tics (Dulcan and Popper, 1994). Tourette’s disorder may be governed by a single gene with autosomal dominant transmission (Pauls and Leckman, 1986), however the exact etiology is unclear (Dulcan and Popper, 1994).

For transient tics, Dulcan and Popper (1994) report that treatment is not normally required. They suggested that it is helpful to advise families to reduce attention to the symptom and avoid criticising the child. For chronic tic disorder, the experts advise behavioural, drug and psychosocial interventions (e.g., King et al., 1997; Lombroso, Seahill and King 1995).

5. Intervention

A pharmacological intervention was considered. Some studies have shown that neuroleptics such as haloperidol and risperidone (Shapiro, Shapiro and Young, 1988; Lombroso, et al., 1995) can be effective in reducing tics. However, because of the frequent side effects of neuroleptics (e.g., drowsiness, tardive dyskinesia) King et al., (1997) suggested that it is wise to limit their use to the more severe cases of Tourette’s
disorder. As David’s tic disorder was not severe enough to be significantly reducing the quality of his life or impairing his ability to learn, it was decided in consultation with his parents not to pursue the option of medication. The treatment therefore focused on supportive, educational and psychotherapeutic interventions.

The intervention had five objectives. First, a neurological assessment would be arranged to rule out any other possible movement disorders (e.g., Wilson’s disease, Sydenham’s Chorea, Juvenile Huntington’s Disease). Second, David’s teachers and his parents would be educated about the nature and course of a tic disorder to ameliorate the burden of blame on David because of his tics. Third, psychotherapy would be provided for David to promote self-esteem and social skills. Fourth, support and guidance would be provided to David’s parents on how to manage his oppositional behaviours and his tic disorder. Fifth, an attempt would be made to reduce the frequency of tics through a behavioural treatment package. An interdisciplinary approach was used to meet these objectives. Each interventions and the theoretical rational for their use are outlined below.

5.1 Neurological Assessment
Researchers in the field (e.g., Dulcan and Popper, 1994; King et al., 1997) suggest that all chronic tic disorders need a neurological evaluation to rule out other movements disorders. With his parent’s permission, David was referred to a Pediatrician who, in turn, referred him to the Neurological Clinic at Boston’s Children’s Hospital for a neurological assessment. The results of the CAT scan and the EEG were normal. He was diagnosed with a chronic tic disorder and mild attention problems. The clinic advised against Ritalin because it would exacerbate his tics and they did not think that he had difficulties with hyperactivity. They suggested that a behaviour modification programme might help with his oppositional behaviours.

5.2 Educational Interventions
Education of the patient, parents and teachers can reduce the social and psychological consequences of a chronic tic disorder (Dulcan and Popper, 1994). King et al. (1997)
proposed that the pattern of waxing and waning of tic symptoms can often result in parents and teachers believing that tics are voluntary and could be eliminated if only the child would exert more willpower. They suggested that helping parents and school personnel understand the child’s symptoms as manifestations of a neuropsychiatric disorder can help destigmatise symptoms previously regarded as willful or provocative. They also suggested that collaboration with the school can be helpful in gaining the teachers’ support in dealing with peer ostracism or teasing. Coming and Coming (1987) reported that parents often feel responsible for their child’s tic disorder. They advise the education of parents about the neuropsychiatric basis of the disorder in order to reduce parents’ concerns that they may have “caused” the disorder through inappropriate parenting.

David’s parents and school personnel had attributed his tic symptoms to “attention seeking behaviour.” Mrs. Smith had also disclosed that she believed that his tics were a manifestation of her inadequate mothering. An important part of the intervention was therefore focused on educating David, Mr. and Mrs. Smith and the school personnel about the nature and course of a chronic tic disorder.

With the parents’ permission, a meeting was arranged with David’s head teacher and his class teacher. The neuropsychiatric basis of his disorder was explained. It was also suggested that although his peers may find his behaviour amusing at present, as he matures he is at risk of peer ostracism or teasing. The teaching staff showed an impressive amount of interest in understanding David’s disorder and they agreed that they would no longer take a punitive approach to the management of his tics. Throughout David’s treatment there was ongoing collaboration with the school.

With regard to his “mild” attention problems, the teaching staff felt that he responded well to a structured environment. His present class teacher had only recently qualified and had an informal style of teaching. It was decided that in the new academic year David would be placed with a more experienced teacher who had a more structured approach to teaching.
It was explained to David’s parents that his tics were not the result of poor parenting. They were advised to reduce attention to the tics and avoid criticising him for ticquing. Time was also spent with David to help him understand the nature of his tic disorder.

5.3 Individual Psychotherapy and Social Skills Training

Bawden, Stokes, Camfield, Camfield and Salisbury (1999) suggested that for many children the social stigma associated with a tic disorder was potentially a greater source of social and functional impairment than are the tics themselves. It is now generally accepted that chronic tic disorders are not caused by psychological factors (Dulcan and Popper, 1994). However King et al. (1997) emphasised that symptoms are often exacerbated by stress or emotional arousal, and that tic disorders are themselves the source of considerable psycho-social difficulty. Thus, although psychotherapy cannot be expected to eliminate chronic tics, King et al. (1997) have suggested that it can play an ‘important role in reducing stress, addressing low self-esteem, and ameliorating internal conflicts that relate to tics’ (p.592).

To help promote David’s self-esteem and improve his interpersonal comfort he was referred to an Occupational Therapist (OT) at Child and Adolescent services who specialised in play therapy. He was seen by the OT for a total of 25 sessions. Initially he was reported to be “intensely shy” and showed little interest in exploring the playroom. The OT noted facial grimacing, rapid eye blinking, and head shaking. The muscle tics were reported to be more frequent when he interacting with the OT. She also noted that in some sessions he would repeat an obscene word for no reason.

The OT observed through his play that he had problems understanding other people’s feelings and identifying emotions. Their sessions focused on games and activities aimed at helping him develop these skills and increasing his self-confidence. At school he was reported frequently to behave impulsively and would shout and occasionally push other children. The OT taught him a simple impulse control strategy that involved him recognising when he was aroused and identifying those events which lead to anger outbursts. He was then taught to stop and prepare himself before doing anything. The
play therapy sessions were gradually reduced when the OT felt that he no longer needed her assistance.

In addition to individual therapy David was also referred to a social skills group facilitated by a psychologist and an OT from Child and Adolescent Services. The group which contained eight children ran for six sessions. It covered a number of social skills including verbal/non-verbal communication, empathy, turn-taking and how to deal with bullying. The facilitators reported that he remained uninvolved with the other group members. He was also reluctant to attend, and needed coaxing to join each session. The OT felt that it was difficult to judge the value of the social skills group for David.

5.4 Behavioural Management Advice and Supportive Interventions

King et al. (1997) reported that the challenges facing patients with tic disorders (and their families) vary with both the changing manifestations of the disorder and the vicissitudes of normal development. They suggested that because chronic tic disorders represent long-term conditions, the ongoing availability of a supportive clinician is ‘an invaluable asset for both patient and family in anticipating and dealing with difficulties’ (p.591). Mr. and Mrs. Smith were seen at least monthly and when the family was having more difficulties, they were seen weekly. The purpose of the sessions was to provide support and behavioural management advice to help them cope with David’s symptoms.

The behavioural advice suggested to Mr. and Mrs. Smith to help deal with David’s oppositional behaviours was based on an operant conditioning model (Skinner, 1938) and involved the manipulation of negative and positive reinforcers. This model views behaviours as a function of antecedents (e.g., prompts or cues) and consequences (e.g., reactions of others). Attempts to change a child’s behaviour focus on altering the antecedents and consequences of the problem behaviours (Kazdin, 1994). Wiener (1997) suggested that interventions focused on the modification of specific
oppositional behaviours were the most productive interventions to diminish oppositional behaviours in children.

For oppositional and disruptive behaviours, Mr. and Mrs. Smith were encouraged to manipulate the consequences of these behaviours by consistently using a “timeout system” that involved putting David into his room for ten minutes. It was agreed that a timeout would not be used for tic-related behaviours. The parents were also advised to use every opportunity to praise David, to positively reinforce all aspects of his behaviour that were socially appropriate.

In addition to the “timeout system”, a variety of behaviour modification programmes were successfully implemented. The first one aimed at reducing the tension in the house that occurred most mornings because of David’s lack of cooperation with the morning routine. During a family session at the clinic David designed a chart that recorded whether he was dressed and sitting at the breakfast table by 7.30 a.m.. He placed a football sticker on the chart each time he was successful. David and his family decided that each time he achieved five stickers, he would play football with his father on Saturday mornings. The family was able to successfully implement this programme for two months. By the end of that time David appeared to have internalised the behaviour and the chart was discontinued. However, he continued to play football with his father on Saturday mornings. Mrs. Smith stated that the atmosphere in the house in the mornings had considerably improved.

In addition to behaviour management advice, suggestions were also made that were aimed at altering the dynamics of the family by increasing Mr. Smith’s involvement with his wife and their children. For example, Mr. Smith agreed to take David to weekly karate lessons. It was also agreed that he would take over the responsibility of putting the children to bed. This arrangement allowed David and his brother to have some individual time with their parents. It was agreed that because David was the eldest child, he would go to bed thirty minutes after his younger brother. Mrs. Smith agreed to use this period to have some “quality time” with David (e.g., play games,
Mr. and Mrs. Smith also decided that once a month they would spend an evening together without the children (i.e., at the theater, in a restaurant).

Six months after the initial referral, following the widely publicised arrest and imprisonment of close relatives, the family reported extreme shame and distress and experienced some rejection by the local community. At this time David's parents and the OT noticed a marked increase in his tics, particularly his head shaking. As previously mentioned, it has been well documented that stress often exacerbates the frequency of tics (e.g., King et al., 1997; Dulcan and Popper, 1994).

Mr. and Mrs. Smith had told David that his relatives had left the Island for medical treatment. During an individual session with the OT, David told her that he thought his relatives might have died. In the next session with his parents, the importance of disclosing the truth to David and his brother was stressed. Arrangements were also made for David to visit his relatives in prison with his parents. Following his parent's disclosure about the true whereabouts of his relatives, his head shaking was reported by the OT and his parents to have significantly decreased. However, the subsequent criminal trial and resultant increase in media attention caused distress for the family and produced a significant increase in David's head shaking. Around this time he also started to complain about being teased at school. The school was alerted and agreed to monitor the situation. The situation was also discussed with the OT who agreed to help David role play how he could cope with comments made by the other children about his relatives.

During this stressful period the family were offered more frequent sessions and they were encouraged to contact the clinic between appointments if they felt in need of assistance. This option was only used once when Mrs. Smith requested an urgent appointment. She was extremely distressed because David had put the family's pet cat in the freezer. Mrs. Smith found the cat before it was harmed. She was feeling so angry and upset with David that she brought him to the clinic before she discussed the event with him. During the session he explained that he put the cat in the freezer because he
wanted to keep the cat in one place while he prepared her food. He said he had no intentions of hurting her. Information from this incident was given to the OT who agreed to incorporate the need for sensitivity towards animals into their sessions. Mrs. Smith’s difficulty in dealing with this situation appeared to be a reflection of the magnitude of stress she was experiencing due to the social stigma attached to the criminal prosecution of her relatives.

5.5 Management of Tics

In 1973, Azrin and Nunn developed a behavioural treatment package for the reduction of nervous habits and tics. This treatment package, termed habit reversal, consisted of the following components: awareness training, relaxation training and competing response practice. The primary reductive component of the habit reversal procedure is competing response practice, in which the client is instructed to ‘exert isometric pressure of the muscles that are opposed to the tic movement’ (Azrin, Nunn and Frantz, 1980, p. 173). This exercise is performed contingently by the patient immediately after the occurrence of each tic. In 1985, Miltenberger, Fuqua and McKingey did a component analysis of the habit reversal procedures and reported that tic reduction under the competing response practice conditions were as robust as those under habit reversal conditions. Since the publication of this study there have been reports of competing response practice effectively reducing tics without the ancillary habit reversal components (e.g., Miltenberger and Fuqua, 1985; Sharenow, Fuqua and Miltenberger, 1989).

Although there is no reliable scientific evidence supporting the efficacy of competing response practice for tic reduction (see the review on Behavioural Management of Tourette’s Disorder in this portfolio), the reported success of this approach in many individual cases of children with Tourette’s and chronic tic disorders (e.g., Carr and Baily, 1996; Miltenberger and Fuqua, 1985) justified the clinical application of this intervention.
It was decided at the beginning of therapy to treat the muscle tics with dissimilar competing response practice. To obtain more information on the frequency of his tics (e.g., head shaking, facial grimacing, rapid eye blinking, brow plucking) Mrs. Smith was asked to monitor David for one week. To prevent confusion, it was agreed that we would only monitor one behaviour at a time. Mrs. Smith agreed to monitor his head shaking because both she and David felt it was the most bothersome and frequent tic. However, Mrs. Smith did not collect the data because his tic had reduced to an almost indeterminable level. Following the arrest of his relatives, his head shaking had significantly increased, but then decreased within a week. However, the stress produced by the criminal trial and guilty verdict resulted in an increase in his head shaking that did not appear to be reducing with time. One month after the trial, at the request of David and his parents, it was agreed that a baseline measure would be taken in the clinic and at his home. David told me that his head shaking had become so severe that he was having problems falling asleep and difficulties concentrating. The school was not involved because the intervention took place during a school vacation.

His head shaking was operationally defined as a "jerking motion of his head from side to side or up and down." The data was collected in five minute intervals. It was agreed that the baseline data for home would be collected by Mrs. Smith. The head shaking was recorded for five-minutes every hour, for three hours each evening over one week. The five-minute interval was used because Chappell, McSwiggan-Hardin, Scahill, Rubenstein, Walker, Cohen and Leckman (1994) reported that five minutes was the smallest amount of time capable of being used as a reliable tic frequency data point. Intervals smaller than five-minutes do not correlate highly with the subject’s overall tic frequency. It was also felt that to ask David’s family to record his tics for a forty or fifty-minute period would be too time consuming and demanding in view of their stressful circumstances. To help with the recording Mrs. Smith was given a hand counter and told to click the button each time he shook his head. During the recording David engaged in normal home behaviours (e.g., watching television, engaging in conversations). In the clinic his head shaking was recorded during two individual sessions with the OT. The play room had a two-way mirror which allowed the
monitoring to be less obtrusive. The data was recorded in five-minute intervals for two 40-minute sessions.

Before implementing the competing response practice, David engaged in a brief awareness training where he said the word “tic” aloud after each tic occurrence. The ability to self-detect tics is an essential part of the intervention. He was compliant and after approximately fifteen minutes he successfully identified all the head shaking tics. For the competing response practice, he was instructed to contract the neck flexors so that the head tilts slightly downward and the neck appears shortened for one minute (from Azrin and Nunn 1973). During this session he practiced the competing response for approximately 20-minutes and with encouragement and prompting he achieved 100% compliance. Within two weeks of the practice session he was monitored twice during two 40-minute sessions with the OT through the two-way mirror. The purpose of the monitoring was to assess the effectiveness of the interventions and to verify the consistent administration of the competing response by David.

In addition to measuring tic frequency, the “independent variable integrity” was also measured. This involved comparing the frequency of contingent exercises with the frequency of tics observed. This data shows whether the participants implemented the treatment as they were instructed. Carr, Bailey, Carr and Coggin, (1996) suggested that the independent variable integrity data should be collected along with, and just as rigorously as the dependent variable.

An independent variable integrity percentage was calculated by dividing the number of competing responses by the number of tics and multiplying by 100. This calculation was made for each five-minute interval. David was always told when he was being monitored. At home during the treatment phase, his mother monitored both his tic frequency and the independent variable integrity for one week. Data was again collected for five minutes each hour, for three hours in the evenings for one week. For the treatment to be successful it was important that he could manage his tics while in a natural environment while engaging in normal behaviours.
The baseline data between home and the clinic were very similar. The mean frequency for baseline at home was 4.8 / five minutes (range 2-6, SD = 1.2) compared to 4.4 /five minutes (range 2-6, SD = 1.0) at the clinic. During the two week period that the baseline data was being collected the data was reasonable stable and showed no downward trend. David’s tic frequency in the clinic was immediately reduced following the implementation of the competing response. The mean baseline of 4.4/five minutes was reduced to 0.8 / five minutes (range 0-2, SD = 0.7). The results of a related t test show that this result was statically significant (t=13.8, p< 0.01, one-tailed). At home his tic frequency reduced from 4.8 / five minutes to 1.0 / five minutes (range 0-3, SD = 0.8). This reduction was also significant (t = 15.5, p < 0.01, one-tailed). The data is graphically displayed below and the raw data can be found in the appendices.

![Tic Frequency Graph](image)

David exhibited fairly weak independent variable integrity data during the treatment phase. That is he failed to consequate a large percentage of his tics. The independent variable integrity percentage at the clinic was 29% and at home 35%. He was monitored again one month later at the clinic. The mean tic frequency was 0.6 / five minutes (range 0 - 2, SD 0.7) and his independent variable integrity percentage had dropped to 20%. 
6. Discussion

The application of the competing response procedure engendered reductions in David's tics. Additionally, the behaviour change was maintained at a one-month follow-up. David and his family were pleased with the result. This result replicates the effectiveness of this approach in reducing muscle tics (e.g., Carr and Bailey, 1996; Miltenberger and Fuqua, 1985). David reported that he was no longer having problems falling asleep or concentrating.

The independent variable integrity data at home and in the clinic was discouraging. However, there was still a reduction in tics, even though he neglected to consequate the majority of his tics. This result is similar to the findings obtained by Carr and Bailey (1996). They suggested that the awareness components, rather than the contingent exercises might have been responsible for the behavioural change. They also suggested that for competing response practice to be successful, it may only take a few tics to be consequated in order to reduce the overall tic frequency. In view of the waxing and waning nature of David's tics, it is also possible that they may have reduced without the behavioural intervention.

The competing response programme was implemented in six weeks. This type of brief behavioural protocol is in keeping with the recent moves toward cost-effective and time-efficient therapies (Hoyt, 1995). However, although the competing response programme was important, it played a relatively small role in the overall intervention. In view of the multifaceted nature of David's difficulties, it would seem unlikely that the behavioural programme alone would have significantly reduced the distress for David and his family.

There is some confusion regarding David's diagnosis. He has shown some vocal tics such as repetitive throat clearing and grunting noises. As mentioned earlier, despite a spurious air of precision, it is unclear to what extent the frequency and duration of DSM-IV criteria demarcate distinctive syndromes (King et al., 1997). It is interesting to note that the onset of motor tics usually precedes that of vocal tics by two years. It
is therefore possible that if David's vocal tics become more persistent he may in the near future meet the criteria for Tourette's disorder. Whether David has a chronic tic disorder or whether his tics are the harbingers of Tourette's disorder is, therefore, unknown. However, as both disorders represent chronic conditions, the ongoing availability of a mental health clinician will be an important aspect of his treatment.

7. Criticisms of the Study
A major criticism of the management of this case was the limited use of formal outcome measures. The overall intervention focused on a variety of areas such as individual therapy to increase David's self-esteem and behavioural programmes to reduce his oppositional behaviours. However, the outcome measure used to evaluate the effectiveness of the intervention focused solely on the measurement of tics before and after the competing response programme. The use of a wide range of measures would have more effectively demonstrated the success of the various interventions. For example, the Culture-Free Self-Esteem Inventory (Battle, 1992) could have been administered before and after treatment to evaluate whether the therapy had increased his self-esteem.

The Parent Daily Report Scale (Patterson, 1982) is another measure that could have been employed to evaluate the effectiveness of the behaviour modification programmes at reducing his oppositional behaviours. This Scale has been shown to be effective in measuring change and response to treatments carried out in the home setting (Bradbury and Fincham, 1990). The Child Behaviour Checklist (CBCL) developed by Achenback and Edelbrock (1983) could also have been used to generate an overall measure of the severity of behavioural and psychiatric problems before and after the intervention. Bradbury and Fincham (1990) reported that this instrument was highly reliable and resistant to informant bias. Parallel versions of the CBCL could also have been given to David's teachers to measure his behaviour at school.

The frequency of David's tics were monitored before and after the programme to evaluate the effectiveness of the competing response programme. In retrospect, a more
thorough evaluation of the tic symptoms could have been conducted by utilising a standardised measure such as the Yale Global Tic Severity Scale (Leckman, Riddle, Hardin, 1989). The advantage of this Scale is that in addition to measuring tic frequency, it also measures the severity and level of social disruption caused by the tics. Bradbury and Fincham (1990) report that the Yale Global Tic Severity Scale has considerable utility in assessing the response of tic symptoms to medication and behaviour modification programmes.

Informal discussions with the family suggested that they were pleased with the outcome of the competing response programme. The use of a consumer satisfaction questionnaire would have provided a more objective measure. Miltenberger, Fuqua and McKinley (1985) developed a questionnaire to look specially at consumer satisfaction with competing response programmes.

In addition to behaviour management advice, the intervention also attempted to improve the overall family functioning by increasing Mr. Smith's involvement with the family. Administering a standardised self-report family evaluation scale at various intervals throughout the intervention could have provided a more objective measure of the effectiveness of this part of the intervention. Evaluation scales that could have been utilised for this purpose include the Family Assessment Device (Epstein and Bishop, 1981) or the Family Environment Scale (Moos and Moos, 1980). Both scales measure family roles, boundaries, discipline, rules, and family cohesion.

A disadvantage of objectively evaluating the effectiveness of treatments in the clinical arena is that it may lead to a more formal interaction with patients. The advantage of using objective evaluations is that it allows some of the principles of scientific method to be used in the selection and specificity of treatments. Costello (1997) suggested that the use of systematic measurements to evaluate patients in clinical practice may make it possible for individual clinicians to “contribute more to the advancement of knowledge and to recover the value of the now discounted individual case study” (p.126).
A second criticism of this study relates to the limitations of the clinical formulation. The formulation does not explain the onset of David’s tic disorder or why his tics increased. Clinical research has shown that the initial onset of tics most frequently occurs in prepuberty from ages five to ten years. Initially the tics are transient and involve the face and head. The onset of David’s tics conforms to the clinical findings (e.g., his tics started at age seven years and involved facial grimacing and head shaking). Given the lack of a satisfactory model of tic production and the dearth of scientific knowledge about the natural history and underlying etiology of tics, a reliable explanation regarding the onset of tics cannot be given at present. With regard to the increase in David’s tics, the clinical formulation did not specify that the increase appeared to be directly related to the stress on the family due to the criminal conviction of a family member. Research has shown that stress frequently exacerbates tics (King, Leckman and Cohen, 1997). The significance of family stress was an important factor in the management of this case. This area should therefore have been emphasised in the clinical formulation.

To summarise, the main criticisms of this study relate to the lack of objective measures to evaluate the effectiveness of the interventions and the limitations of the clinical formulation adequately to explain the onset and increase in tic symptoms.

8. Conclusion

At the time of writing this report David was exhibiting few tics and functioning well at school. If his tics increase, they will be treated with competing response programmes. David has recently started to show some signs of obsessional compulsive behaviours. He is refusing to walk on certain areas of his bedroom carpet. This area will be carefully monitored.

Unfortunately, it is difficult to assess David’s long term prognosis because there is no reliable descriptive or threshold criteria (in terms of frequency, severity or duration) that satisfactorily distinguishes tics that have a greater comorbidity from those that are more benign. However his difficulties will undoubtably be reduced by the supportive
nature of his immediate family and the commitment of teaching staff at his school. It is hoped that the ongoing availability of mental health professionals will also help to reduce some of the difficulties for both David and his family.
9. References


10. Appendices

Appendix 1  Tic frequency data
Appendix 2  Letter to Pediatrician
Appendix 3  Intellectual Evaluation Report
## Appendix One

**Raw data on tic frequency reported in five-minute intervals**

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INTELLECTUAL EVALUATION

CONFIDENTIAL

Name: [Redacted]  Date of Birth: [Redacted]
Parents: [Redacted]  Date of Exam: 1997
Address: [Redacted]  Age: 8 years
Bermuda  School:
Phone:

Reason for Referral
[Redacted] an eight-year-old boy, was referred for an intellectual evaluation by his mother at the suggestion of the head teacher. An intellectual evaluation was suggested as it was felt that the pattern of his cognitive functioning may shed light on his functioning in other areas.

Test Administered
Wechsler Intelligence Scale for Children-111 (WISC-111)

Behavioural Observations
[Redacted] is a good looking eight-year-old boy. [Redacted] language skills appeared to be within normal limits as was his attention in this one-on-one testing situation. He rarely needed items repeated and he showed good persistence and motivation throughout. He was, at times, somewhat reluctant to indicate that he did not know a response, particularly around questions of a social nature. [Redacted] had no problems remaining seated during this assessment and his response style was generally well modulated. When working with visual material, he often checked his work. Given the above, the following results can be considered a good reflection of [Redacted]'s abilities. It should be pointed out, however, that the WISC-111 was not standardized on a Bermudian population and thus some of the questions may be culturally biased.
RESULTS

On the WISC-111, a common test of intellectual functioning, he achieved a Verbal Subscale I.Q. of 100 and a Performance Subscale of 107. Combined, this gives a Full Scale I.Q. of 104. ’s performance on all three scales fell within the average range. These results indicate that ’s abilities of verbal understanding and expression are as well developed as those abilities that rely primarily on visual-perceptual skills.

Sometimes the subtests of the WISC-111 are grouped into Verbal Comprehension, Perceptual Organization, Freedom from Distractibility and 'Processing Speed' factors or 'Indexes'. When this is done, did less well on tasks related to the Freedom from Distractibility factor than he did on tasks that require quick rote-type learning of visual material (Processing Speed), Perceptual Organization and Verbal Comprehension. This suggests that does less on cognitive tasks that tap short-term auditory and 'working' verbal memory (see below) than he does on tasks that require verbal understanding, visual concentration or perceptual organization. However, it is of note that the distractibility factor falls well within the average range of functioning.

Verbal Skills

Within the verbal area, demonstrated a significant strength in his general fund of information (superior range) indicating that, other potential influences on his learning have not affected his ability to take in and retain much of the factual information to which he has been exposed by the world around him. ’s ability to define the meaning of words is less well developed although within the average range. Within the more 'reasoning' type areas of cognitive functioning, demonstrated an average ability to see the relationships between verbal concepts (a hallmark of abstract reasoning) as well as having age-appropriate skills in the area of social comprehension, that is, in his ability to take past social learning and apply it new situations. Additionally he has an age-appropriate ability to do math sums in his head, a task that requires the ability to reason with numbers and also the ability to hold numbers in one's head when working with them (working memory).

Where did less well in the verbal area was in his short-term auditory memory although his skills fell within the average range. As mentioned above, there was nothing in 's behaviour or performance during testing that indicates a significant problem in this area.

Perceptual Functioning

Within the visual/perceptual area of cognitive functioning, ’s skills are well developed. He has good spatial reasoning skills both where he must call upon his non-verbal abstract reasoning skills as well as when he had to put together puzzles, a task that requires a good ability to anticipate the whole from the parts. also did well in a card sequencing task where he had to sequence pictures so as to reflect a correct cause-and-effect relationship. When had the most difficulty (although still average level functioning) was in his ability to determine the missing parts of a picture. This task like the others requires a good attention to visual detail, but unlike the others discussed above, it has less of a context (linear or spatial) from which to figure out the answer.

's processing skills, that is, he ability to concentrate visually when doing rote-type tasks, was strong suggesting that he has the cognitive flexibility and attention to sustain attention when doing non-reasoning type visual tasks. He did do better when scanning visual symbols than when he had to write number-symbol
associations although performance on this latter task was firmly within the average range.

Summary

In summary, then, is a boy who intellectually is functioning squarely within the average level of functioning. Additionally, he is a child whose ability to understand and express himself with words is consistent with his functioning in the visual perceptual area. Although demonstrated a relative weakness in his expressive vocabulary and in his short-term memory these skills felt within the average range and are clearly not significant areas of weakness. On the other hand, his ability to reason on an abstract level with words was a significant area of strength for him. In the perceptual area, demonstrated that he has good spatial skills and generally that he is best able to work when problem-solving with material in context. Additionally, he has good processing when dealing with visual material.

Recommendations

1. There is little in ’s profile on this test that would suggest social reasoning difficulties or significant problems with understanding verbal communication. However, if there are problems in these areas, they should be addressed with confidence that has an average level intellectual capacity.

2. There was some minor evidence for a weakness on verbal tasks that are open to distraction. It is quite possible that within a classroom setting, these could be pronounced. Unless otherwise contradicted by those who presently work with , the techniques used for those with attention problems should be used both at home and within the classroom setting.

Psy.D. Psychologist
Weschler Intelligence Scale for Children Revised (WISC-111)

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Psy.D.
Licensed Psychologist
Texas License #111111
2nd March 1997

Our ref: DG/vrp

Dr.

Hamilton

Dear Dr.

Re: DOB Address

Thank you for seeing this 8-year old boy. As mentioned in our recent telephone conversation I am concerned about his facial grimacing, obscene utterances and his semi-voluntary muscle movements. His school teacher describes him as a “strange child” who has a variety of odd mannerisms such as repeatedly shaking his head, grunting, rapid eye blinking and walking around the classroom waving his arms. During sessions at the Clinic he has been overheard swearing. He also engages in repetitive and unimaginative play.

When he was 4-years old he was seen by Dr. , Consultant Psychiatrist for help with aggressive behaviour towards his parents and younger sibling. He has also been seen by Dr. , Pediatrician who had diagnosed Attention Deficit Disorder and prescribed Ritalin. However, the family chose not to use the medication. I understand that he has also been seen by Dr. , Educational Psychologist for a cognitive assessment.

He was born by normal delivery and all his milestones were reached within normal limits. He currently attends School and was described by his teacher as an academically bright child. He appears to have a stable home life and his parents present as caring and responsible. There is no reported mental illness within the family. A paternal uncle has facial tics.

I would be grateful for your opinion on this child and whether his symptoms meet the criteria for Tourette’s Syndrome. I have discussed the case with Dr. , and she supports this referral. If you require any further information please do not hesitate to contact me.

Kind Regards

Diane Grainger
Clinical Psychologist
Research Dossier

- Tackling Mental Health Discrimination Through the Media: A campaign derived from formal psychological theory proves more effective than a public education campaign.

- An Investigation of Delayed Development of Theory of Mind in Adults with Autism.
Tackling Mental Health Discrimination
Through the Media:
A campaign based on formal psychological
theory proves more effective
than a public education campaign
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1. ABSTRACT

A theoretical framework for media campaigns which tackle mental health discrimination is put forward. It is based on formal psychological theories and challenges the popular belief that the key to changing negative attitudes lies in public education about mental illness.

The theoretical framework states that increasing self-interest through self-relevant scenarios would produce a corresponding change in attitude importance. This, in turn, would increase an audience’s motivation to process and yield to the arguments of a campaign. The framework also states that a campaign needs to contain arguments based on what are postulated to be the main determinants of negative attitudes.

To test this framework, an audio campaign incorporating these qualities was produced and its effectiveness compared with an educational campaign about mental illness. A campaign addressing the harmful effects of smoking was used as a control. The three campaigns were evaluated using 184 conscripted soldiers from the Bermuda regiment. The participants were randomly assigned to one of three groups and exposed to one of the campaigns. A shortened version of the Community Attitudes to the Mentally Ill inventory (Taylor and Dear, 1981) was used to measure attitudes before, immediately after and six weeks following the campaigns.

The results indicate that the campaign based on the theoretical framework significantly increased positive attitudes while the educational and control campaigns had no significant effect. Following a single exposure to the theoretical campaign, a positive effect on attitudes continued to be present six weeks later.

These results suggest that campaigns based on formal psychological theory could reduce mental health discrimination, while campaigns which contain only educational information are unlikely to be effective in this regard. The findings are discussed in relation to attitude research and the mediators of attitude importance.
2. INTRODUCTION

Discriminatory and negative attitudes can lower the quality of life for people with mental health problems, increase the likelihood of a relapse leading to readmission to a hospital and reduce the chance of employment (Dear and Taylor, 1982). Despite the promotion of community mental health care during the past twenty-five years, the public’s attitude towards people with mental health difficulties remains negative (Rapper and Brooker, 1996). These negative expectations have been attributed to insufficient information about mental health issues and a lack of mutual understanding (Cheung, 1990).

Although the mass media should be well suited for the creation of more openness toward people with mental health problems, only a limited number of campaigns have been carried out and few have adequately assessed their impact. Getting the message across in today’s fast-paced multimedia society may depend less on what we say, and more on motivating people to listen. To date, no experimental studies have evaluated the impact of different campaign styles on attitudes towards mental illness.

Attempting to change the attitudes of the general population towards people with mental health problems offers a challenging opportunity to psychologists, for whom the study of attitudes and attitude change has been a major research area for decades. Fishbein (1997) argues that contemporary social psychology has largely ignored real-world problems and has placed little value on applied research concerned with important societal issues. It could equally be argued that clinicians and mental health advocates attempting to change attitudes towards people with mental health problems have largely ignored the vast amount of social psychology research literature on attitude formation and change.

Even a cursory look at research on the impact of persuasive communication shows us that bringing about change in peoples’ attitudes, both in and outside the laboratory is generally an uphill battle. Manstead (1997) argues that the closer one gets to real-life behaviours the more difficult it is to bring about a change in attitudes. However,
scientific principles derived from the social psychological theories of attitude and behaviour are rarely used in the planning of health campaigns. The vast majority of mental health campaigns have relied on the assumption that providing people with information will be enough to bring about the desired change in attitudes and behaviours.

This research will explore the likelihood of success of any present-day campaign aimed at reducing discrimination towards people with mental health problems that relies solely on the power of educating people about mental illness. To explore this question from a theoretical perspective the introduction is divided into four broad sections. First, the social psychology literature on theories of attitude and behaviour is reviewed. This is followed by a detailed analysis of the attitudinal impact of persuasive communication and the psychological processes which mediate this impact. The third section reviews the implications of psychological research for intervention campaigns. The last section focuses on discrimination against people with mental health problems and reviews previous campaigns in the area.

2.1 Attitude Research

2.1.1 A brief historical overview of attitude research

Throughout the 20th century the attitude construct has had an immense impact on social psychology. In 1935 Gordon Allport, an influential champion of the attitude concept, described it as ‘the keystone in the edifice of American social psychology’ (Allport, 1935, as cited in Kraus, 1995 p.58). A fundamental assumption contributing to the popularity of the concept is the notion that attitudes guide and predict behaviour. When this assumption was seriously questioned in the 1960s, many social psychologists concluded that the attitude concept had become obsolete as a scientific construct (e.g., Deutscher, 1966; Wicker, 1969). Several researchers (e.g., Kraus, 1995, Stahlberg and Frey, 1996), have suggested that the publication of an influential paper by Ajzen and Fishbein (1977) transformed the attitude field. In this paper Ajzen and Fishbein demonstrated that the application of careful methodological analysis
could largely resolve the troubling inconsistencies between peoples' attitudes and their behaviours.

More recently an increasing feeling of optimism can be found in the attitude literature (Kraus, 1995). This is marked by a renewed interest in attitude change, structure and function (e.g., Cialdini, Petty and Cacioppo 1981; Eagly and Chaiken, 1993; Pratkania, Breckler and Greenwald, 1989). In a recent essay Mansfield (1997) argued that it was essential for social psychologists to focus on peoples' attitudes because they play a key role in shaping human social cognition and behaviour.

This cursory historical overview gives some idea of the long history and centrality of the attitude concept to social psychology. In 1995 the computerised database Psychlit indexed more than 34,000 studies published since 1974 that addressed attitudes in some way (Kraus, 1995). Because of the substantial amount of research in this area, only the major theories and those directly relevant to the research project will be reviewed.

2.1.2 The attitude construct

In 1918 Thomas and Znaniecki introduced the expression 'social attitude' to account for the behavioural differences in everyday life between Polish farmers in Poland and in the USA. A review of the literature shows that since then, several definitions have been advanced for the attitude concept. Although no single, universally accepted definition exists, researchers in the field (e.g., Manstead, 1996; Stahlberg and Frey, 1996) have often distinguished between two different approaches to the definition of the attitude construct.

One approached stemmed from the idea that an attitude is an amalgamation of three components (Rosenberg and Hovland, 1960). The three components were affective (concerning emotions or feelings), cognitive (concerning beliefs), and behavioural (concerning behaviours or behavioural intentions). Eagly and Chaiken (1993) supported this three-component model of attitudes. They defined attitude as a
tendency 'to evaluate an entity with some degree of favour or disfavour, ordinarily expressed in cognitive, affective, and behavioural responses' (Eagly and Chaiken, 1993, p.155).

The lack of consistency between the affective, cognitive and behavioural reactions led some researchers to reject the idea of a multi component model of attitudes (e.g., Fishbein and Ajzen, 1975; Petty and Cacioppo, 1981). These researchers regarded the affective component of attitudes as the only relevant indicator. Thus Petty and Cacioppo (1981) suggested that the term attitude should be used to refer to 'a general, enduring positive or negative feeling about some person, object or issue' ( Petty and Cacioppo, 1981, p.7). This type of definition is called 'unidimensional' because it highlights one attitude component.

The empirical evidence for these two positions has yielded contradictory results. In an overview of these findings Chaiken and Stangor (1987) concluded that the current evidence is not sufficient to make a definitive judgement about the three-dimensional versus the one-dimensional question. Moreover, other researchers (e.g., Schlegel, 1975; Schlegel and DiTecco 1982) have shown that attitude dimensionality may vary with the kind of attitude object studied. They found that when beliefs about the attitude object were simple and non-contradictory they could be conveyed by a single affective response. However, if beliefs were numerous and complicated a simple evaluative response could not represent the whole attitude structure.

2.1.3 Functions of attitudes

The motivational roots of attitudes have been studied by Katz (1967), McGuire (1969) and Smith, Bruner and White (1956) in their functional attitude theories. The motivational functions formulated by Katz and others are referred to frequently in this project. A brief description of the four motivational functions of attitudes will therefore be outlined.
Katz (1967) assumed that one important function of attitudes is to help people to reach desired goals, or to avoid undesirable consequences. He called this the instrumental or utilitarian function. He assumed that individuals express favourable attitudes towards an attitude object that satisfies their personal needs and negative attitudes towards objects related to negative reinforcement or frustration. The instrumental function underpins the development of self-interest-based attitudes that are central to the research project and will be discussed in more detail in the next section.

Based on the psychoanalytical model, Katz (1967) suggested that another function of attitudes is to protect an individual from negative feelings towards oneself or towards one's own group by allowing these feelings to be projected towards other people, such as minority groups. He called this the ego-defensive functions. Katz also proposed that people have a need to express attitudes that confirm the validity of their own self-concept. For example, expressing your opposition to anti-abortion groups can be satisfying, if you believe strongly in women's rights to control their own reproduction. This type of attitude expression is focused more on expressing one's own central values than at impressing others. He called this the value-expressive self-realizing function.

Finally, Katz (1967) suggested that an important function of attitudes is to help people organised an otherwise chaotic world. He assumed that attitudes allowed people to categorise incoming information. This process helps people to simplify and understand the world. This economy or schematic function of attitudes will be analysed in more detail in the following section.

2.1.4 Attitudes and information processing
One theory on why attitudes guide information processing is based on the motivational principle of cognitive consistency. Dissonance theory (Festinger, 1957) is the best known theory of cognitive consistency for making predictions about selective exposure to attitude-relevant information. Festinger argued that humans are characterised by a need to maintain consistency between their cognitions. In Festinger's terms, a
cognition refers to any piece of knowledge one has about oneself or one’s environment. According to the theory, if an individual becomes aware of inconsistencies between cognitions, they experience ‘cognitive dissonance.’ This is an unpleasant state that the individual will be motivated to reduce or eliminate. The theory predicts that people are motivated to expose themselves to attitude-constant information and to avoid attitude-dissonant information. This selective exposure hypothesis has been empirically demonstrated (Frey, 1986; Frey and Stahlberg, 1986; Frey, Stahlberg and Fries, 1986).

In addition to consistency theories, other social-psychological theories exist which assume that attitudes will guide the evaluation of attitude-relevant information. For example, the assimilation-contrast theory (Sherif and Hovland, 1961; Sherif and Sherif, 1967), claimed that our own attitude is a judgement anchor with which we judge the attitudes of other people. The theory assumes that we will perceive attitudes that are similar to our own attitudes as resembling our attitudes more than they actually do, and will therefore evaluate them positively (assimilation). Similarly, we would reject as unjust and distorted any attitude that has little in common with our own position (contrast).

To summarise, attitudes can affect how likely we are to expose ourselves to attitude-consonant and attitude-dissonant information. Our attitudes affect not only our selection of attitude-relevant information, but also how we perceive and evaluate the information.

2.1.5 Attitudes and behaviour
A recent meta-analysis of 88 attitude-behaviour studies found that attitudes significantly and substantially predicted future behaviour (Kraus, 1995). The combined significance level from the meta-analysis (mean $r = .38$; combined $p < .000000000001$) leaves little doubt that attitudes significantly predict behaviour.
Besides exploring the predictive validity of attitudes, social psychologists also began developing larger theoretical frameworks to help understand the attitude-behaviour relationship. The best known of these theoretical frameworks is the theory of reasoned action.

2.1.6 Psychological theories of attitude and behaviour change

2.1.6.1 The theory of reasoned action

According to the theory of reasoned action (Ajzen and Fishbein, 1980; Fishbein and Ajzen, 1975), the immediate determinant of behaviour is behavioural intention (i.e., how the person intends to act). Behavioural intention, in turn, is determined by the individual's attitude towards performing the behaviour and by the individual's subjective norms concerning the behaviour. In broad terms, attitude to behaviour is decided by the individual's evaluation of whether the behaviour will lead to good or bad consequences. The subjective norm refers to the degree of perceived social pressure on the person to perform the behaviour. Therefore, the more people believe others (with whom they are motivated to comply) think they should perform the behaviour, the more likely they are to perform the behaviour. For accurate prediction the theory states that both the attitude and the subjective norm must correspond to the intention in terms of action, target, context and time.

Two meta-analytic studies have been conducted to assess the performance of the theory (Sheppard, Hartwick and Warshaw, 1988; Van den Putte, 1993). The results suggested that behavioural predictions can be made with reasonable accuracy if behavioural intentions are assessed, rather than attitudes, and that behavioural intentions can be predicted with reasonable accuracy if one assesses attitudes to behaviour and subjective norms.

From an applied perspective, the importance of the theory of reasoned action resides in its potential to enhance the design of intervention campaigns (Manstead, 1996). When designing an intervention it is important to focus on those factors that determine the behaviour one is trying to change. For example, by using the theory of reasoned action,
Manstead, Proffitt and Smart (1983) found that mothers who intended to breast-feed do not differ from mothers who intended to bottle-feed with respect to the belief that breast-feeding helps to create a bond between mother and child. This would indicate that an intervention arguing that breast-feeding is good because it strengthens the bond between mother and child would be ineffective in changing the intentions of mothers who plan to bottle-feed. The intervention should be directed at those beliefs, values and motives which differentiate the two groups of mothers (e.g., the belief that breast-feeding helps to protect a baby against infection). The theory is important because it can help researchers pinpoint the determinants of behaviours. Once the determinants of behaviour are known, they can then be used to design persuasive communication that attempts to influence those specific determinants, rather than influencing irrelevant factors (Mansfield, 1996).

The theory of reasoned action was developed to predict and understand behaviours that have a high degree of volitional control. Habitual, conditioned and addictive behaviours are not engaged in voluntarily, and are therefore outside the theory's predictive range (Stahlberg and Frey, 1996). Liska (1984) argued that the restriction of the model to volitional behaviours excludes not only habitual behaviours, but also any behaviours that required special skills, or the collaboration of other people. Moreover, Liska argued that only the simplest and most trivial of behaviours are entirely under volitional control. The restriction of the theory to behaviours that are under a high degree of volitional control was an important reason for the development of the successor to the theory known as the theory of planned behaviour (Ajzen, 1985).

2.1.6.2 The theory of planned behaviour

Ajzen (1985, 1988, 1991) extended the theory of reasoned action by adding a new construct, which he called 'perceived behavioural control.' This construct represents the individual's perception of how easy or difficult it is to perform a particular behaviour. A behaviour seen as easy to perform is one that is high in perceived behavioural control; a behaviour that is seen as difficult to perform is one that is low in perceived behavioural control.
The concept of perceived behavioural control overlaps to a large extent with Bandura’s (1977, 1982) concept of self-efficacy (Manstead, 1996). According to Bandura (1982), judgments of self-efficacy decide how much effort people will expend and how long they will persist in the face of obstacles. Self-efficacy is therefore a belief in one’s own abilities: if one believes that one can succeed in a task, one is more likely to attempt the task, and more likely to persist in one’s attempts despite early setbacks. Similarly, the theory of planned behaviour argues that if an individual has high perceived behavioural control with respect to a particular behaviour, he or she is more likely to form the intention to perform the behaviour, and is more likely to act on that intention in the face of obstacles, than if he or she is low in perceived behavioural control.

Ajzen (1985) claimed that the theory of planned behaviour can predict behaviour more accurately than the theory of reasoned action when the behaviour in question is low in actual control. When the behaviour is high in control, he argues that the theory will not add significantly to what can be predicted from the theory of reasoned action. The recent research findings of Bunce and Birdi (1998) are consistent with this line of argument. They found that in circumstances of low behavioural control the theory of planned behaviour had the greater predictive power, but as control increases, the theory of planned behaviour collapses to the theory of reasoned action. A review by Godin and Koh (1997) analysed the results of 54 empirical tests of the theory of planned behaviour and arrived at similar conclusions.

2.1.6.3 Criticism of the theories of reasoned action and planned behaviour
Several researchers have questioned the validity of the models of reasoned action and planned behaviour. For example Bentler and Speckart (1979) demonstrated that habits exert a direct influence on behaviour which is not mediated by social norms or attitudes. Other factors such as the relevance of the behaviour for self-identity (Gorsuch and Ortsberg, 1983) or the perceived moral obligation to show a certain behaviour (Granberg and Holmberg, 1990) have also been shown to influence behaviour.
Simon (1981) challenged the supposition of human rational decision-making which underlies the theory of reasoned action. He argued that people do not try to maximize outcomes through their decisions, but are happy with any outcome that is higher than their subjective aspiration. Frey, Stahlberg and Gollwitzer (1993) put forward a similar type of objection. They argued that people may be unwilling to invest the extensive amount of time or cognitive effort that would be needed to deliberate the pros and cons of alternative courses of action for every day, routine behaviours. Frey et al. (1993) concluded that the theory of reasoned action only covers a limited number of challenging behavioural decisions.

Manstead (1996) claimed that the types of objections raised by Frey et al. (1993) and Simon (1981) are to a large extent based on a misunderstanding of the theory. He emphasised that attitude to behaviour and subjective norm can be stored in long-term memory as summary evaluations of behaviours. Therefore, for each new behavioural decision, one does not need to build an evaluation from scratch. Thus, the intensive elaboration of alternative behavioural options does not have to accompany every decision about action. Further criticism of the theory comes from research that demonstrated a significant direct link between previous behaviour and current behaviour which is not fully mediated by the constructs of the theory of reasoned action (e.g., Bentler and Speckart, 1979; Ronis, Yates and Kirscht, 1989). Simon (1981) acknowledged that the past behaviour-present behaviour relationship is problematic for the theory of reasoned action and the theory of planned behaviour.

Eagly and Chaiken (1993) criticised the models for not specifying the exact relationship between intentions and behaviour. Finally, Fazio (1990) criticised the model of reasoned action for restricting itself to situations where people are motivated and able to think deliberately about the attitude or the behaviour. In his MODE model (motivation and opportunity as determinants of how attitudes influence behaviour) he assumed that when the opportunity or motivation for making decisions about attitude-relevant behaviour is missing, highly accessible attitudes will automatically influence behaviour.
Fazio (1990) argued that attitudes formed on the basis of direct behavioural experience with an object are more predictive of future behaviour towards that object than are attitudes based on indirect experience. The rationale is that attitudes based on direct experience are stronger and more accessible (i.e., more easily and quickly retrieved from memory). Fazio claimed that attitudes and behaviour will be strongly correlated when the attitude in question is highly accessible. He assumed that if an attitude is highly accessible it should take less time to respond to a question about that attitude. Empirical support exists for this assumption (see Fazio and Zanna, 1981 for a review).

2.1.6.4 The health belief model

Psychologists at the USA Public Health Service developed this model in the 1950s in an effort to understand why people do not use screening tests for the prevention of diseases (Janz and Becker, 1984). The model assumes that the following four health beliefs determine health behaviour:

1. Perceived susceptibility
2. Perceived severity
3. Perceived benefits (i.e., the degree to which preventive behaviours will reduce the perceived risk or susceptibility).
4. Perceived barriers (i.e., the negative aspects of the health behaviour such as cost, effort, side-effects of medication etc.).

The relation between these variables has never been formalised and the model does not include self-efficacy, perceived behavioural control or subjective norms (Stroebe and De Wit, 1996). A meta-analytic review by Harrison, Mullen and Green (1992) found that although the four dimensions of the model were significantly related to health behaviours, less than 10 percent of the variance in health behaviour could be accounted for by any of the dimensions. This indicated a weak relationship between health behaviours and the hypothesised determinants.
2.1.6.5 Protection Motivation Theory

In the original model (Rogers, 1975) the intention to engage in some type of health behaviour depended on the following three factors:

1. Perceived severity of the noxious event.
2. The perceived probability of the event’s occurrence or perceived susceptibility.
3. The efficacy of the recommended response.

The model assumed that the three factors combined multiplicatively to determine the intensity of protection motivation. The majority of empirical tests of the model did not support this assumption which Rogers later abandoned (Stroebe and De Wit, 1996). In 1983 he extended the model by including the self-efficacy variable (Bandura, 1986) and the concept of perceived barriers to health behaviour taken from the health belief model. He labeled the latter *response costs*. A related concept called *maladaptive responses* was also added to include the rewards associated with the enjoyment of continuing to drink or the time saved by not having medical checkups (Rogers, 1983).

Rogers (1983) divided the six factors into two classes which he named threat appraisal and coping appraisal. The threat appraisal is based on factor severity, susceptibility and the rewards of the maladaptive responses. The factors that influence the coping appraisal are the perceived self-efficacy and the cost of the recommended behaviour.

The model has been applied in a number of different areas including breast examination (Ripetoe and Rogers, 1987), smoking (Maddux and Rogers, 1983) and alcohol consumption (Kleinot and Rogers, 1982). The results supported the protection motivation model in as far as behavioural intentions were often positively related to dimensions of the model such as severity, susceptibility and perceived self-efficacy (Stroebe and De Wit, 1996).

Empirical comparisons of the theory with the health belief model generally favour the protection motivation theory (Seydel, Taal and Wiegman, 1990; Wurtele and Maddux, 1987). However, research was unable to clarify the way in which the different
components of the theory combined to influence proactive intentions (e.g., Maddux and Rogers, 1983; Mulilis and Lippa, 1990).

Stroebe and De Wit (1996) maintained that the health belief model and the protection motivation theory have substantially contributed to our understanding of the factors which determine health behaviour. However, with the development of general social psychology models of behaviours such as reasoned action, they are skeptical of the development of specific models of health behaviour. They suggested that these models would only be judicious if they afforded a better prediction than the models of reasoned action or planned behaviour. The research to date suggests that it is unlikely that these models will have more predictive power than general social psychology models of behaviour (Stroebe and De Wit, 1996).

2.1.6.6 Incentive-induced attitude change

Institutions and governments frequently try to influence behaviour through incentives or legal sanctions. For instance, in New York, safety belts were worn by 10 to 20 percent of the population before the introduction of a safety belt law. Introduction of this law increased the frequency of safety belt use to 70 percent (Robertson, 1986).

Stroebe and Jonas (1996) suggested three reasons why society cannot rely solely on laws and incentives to induce attitude change. First, most governments acknowledge that changing behaviour by persuading people rather than compelling them is more in line with present-day ideals of self-determination and democracy. The second reason is that changes induced by monetary incentives or legal sanctions have to be monitored. The main advantage of influencing behaviour through persuasion is that the behaviour remains under intrinsic control and therefore does not need monitoring.

Finally, Stroebe and Jonas (1996) emphasised that the effectiveness of legal sanctions depends in part on the acceptance of the law. For example the introduction of the safety-belt law may not have been as effective without the persuasion campaign that made it known that wearing a safety-belt considerably reduces the risk of injuries in
road traffic accidents. In addition, governments usually rely on mass-media campaigns to inform the populous of changes in law. The use of incentives and of persuasive appeals should therefore be considered as complementary rather than competing strategies of attitude and behaviour change (Stroebe and Jonas, 1996).

2.1.8 Summary of attitude research
Unless we know why people behave in particular ways, persuading them to change is difficult. Models of behaviour such as reasoned action or the theory of planned behaviour identify general classes of determinants of behaviour and they specify how these determinants interact to influence behaviour. To design adequate interventions to promote behaviour change it is necessary to understand the determinants of behaviours. Research suggests that those models and theories developed specifically to predict health behaviour (i.e., the health belief model and protection motivation theory) do not afford a better prediction than the model of planned behaviour.

Sometimes behaviour may be guided not by rationale and extensive information processing, but by the automatic activation of attitudes. The latter are more likely to occur if the person has had direct experience with the attitude object. Finally, to maximise the probability that the behaviour will be shown, the person needs not only to formulate behavioural intentions, but also needs to make concrete plans about where, when and how to realise the selected behavioural goals. In the last section it was noted that changing the incentive structure or using persuasive appeals should be seen as complementary rather than competing strategies of attitude and behaviour change.

2.2 Persuasive Communication
Early theories of persuasion attempted to understand the psychological processes which mediate the impact of persuasive communication by focussing on how the message recipients systematically processed the information contained in the message (Stroebe and Jonas, 1996). These types of theories include the information processing model of persuasion (McGuire, 1968) and the cognitive response model (Greenwald, 1968). These theories describe how attitudes change in response to verbal messages
which usually consist of an overall position that is advocated, and one or more arguments designed to support this position.

Theories of systematic processing assume that if individuals are not able or motivated to attend to the argument content, little attitude change will occur. In contrast, the more recent dual-process theories consider that under certain conditions (specified by these models), people will adopt attitudes for reasons other than their systematic processing of the arguments contained in the message. These dual-processing theories can be considered as extensions of the earlier theories of systematic processing (Stroebe and De Wit, 1996).

2.2.1 Theories of systematic processing

2.2.1.1 Information-processing model of persuasion

McGuire (1968, 1969, 1985) proposed that the persuasive impact of a message depends on the outcome of at least five steps: 1. attention, 2. comprehension, 3. yielding, 4. retention and 5. behaviour. According to this model, for a message to have an effect it has to get the recipients’ attention. They then have to understand and accept the arguments. Finally, they have to retain and act on the information. Since the recipient must go through each of these steps if the communication is to have a persuasive impact, and since it is unlikely that the probability of any given step will be maximal, McGuire’s model explains why it is often difficult to induce behaviour change through information campaigns (Stroebe and Jonas, 1996).

At its simplest form, this theory assumed that anything that would distract or disrupt comprehension and learning of the contents of a message would be harmful for persuasion, and anything that helped attention and comprehension would be good for persuasion (Petty, 1997). A review by Eagly and Chaiken (1993) found that only a small number of studies provided support for the assumption central to the McGuire’s model: that the reception of message arguments determined attitude change. They concluded that message retention was not significantly correlated with attitude change. One possibility for a reduction in the correlation between argument recall and attitude
is that if individuals form spontaneous impressions during exposure to the message, they might forget the information and not store it in memory (Mackie and Asuncion, 1990).

McGuire’s model provides a helpful framework to examine the components which affect attitude change in a persuasion setting. However, the model lacks any clear specific theoretical principles that would allow one to predict those factors that affect acceptance or to understand the processes which mediate the relationship between acceptance and attitude change (Stroebe and Jonas, 1996).

2.2.1.2 The cognitive-response model
The cognitive-response model of persuasion was developed by Greenwald (1968). Similar to McGuire’s model, it makes attitude change dependent on the systematic processing of information. However, unlike McGuire, Greenwald focuses on the role played by the recipients’ thoughts or cognitive responses as they listen to the messages. Greenwald assumed that listening to a communication is like a private discussion where the listener argues for or against the arguments presented in the communication. If these new self-generated thoughts agree with the position taken in the message, attitude change will result. If they refute the message or support a position that was not advocated, the communication will not result in persuasion and may even lead to an attitude change in the direction opposite to that advocated (Stroebe and De Wit, 1996).

Although many factors influence whether recipients of a message respond with predominantly favourable or predominantly unfavourable thoughts, the quality of the arguments contained in the message (e.g., well reasoned, absence of logical errors, consistent with available knowledge) has been proven to be a reliable determinant of the balance between the positive and negative message-relevant thoughts elicited in the recipient (Petty, 1997).
According to the cognitive response model, if the arguments contained in a message were of high quality and resulted in predominantly favourable thoughts, then the more the recipient would think about this message, the more favourable thoughts they should produce, and the more they should be persuaded. Similarly, the more the recipient thought about a low-quality argument, the more negative thoughts they should have, and the less they should be persuaded. Thus, the model predicts an interaction between the determinants of thought-valence and factors which influence processing motivation or ability (Stroebe and De Wit, 1996).

2.2.2 Dual processing models

The two models of persuasion discussed (information processing model and the cognitive response model) assumed that persuasion is a thoughtful process and that the variables that affect persuasion do so by influencing the amount of thought that takes place. From this perspective, little attitude change would be expected to occur in individuals who are unable or unmotivated to process the messages. The dual-process models adds a second means of persuasion which does not depend on the evaluation of the arguments contained in a message. These theories presume that as motivation and/or ability to process arguments is reduced, peripheral cues become more significant determinants of persuasion (Stroebe and Jonas, 1996).

The two dual processing models that will be discussed are the elaboration likelihood model of Petty, Cacioppo and colleagues (e.g., Petty and Cacioppo, 1986; Petty, Priester and Wegner, 1994) and the heuristic-systematic model of Chaiken and colleagues (e.g., Bohner, Moskowitz and Chaiken, 1995; Chaiken, Liberman and Eagly, 1989).

Stroebe and Jonas (1996) described how each model distinguishes between two modes of information processing. The heuristic-systematic model differentiates between systematic and heuristic processing; the elaboration likelihood model differentiates between the central and the peripheral route to persuasion. The theories of systematic processing and of the central route are the same. They both refer to message-relevant
thinking that formed the basis of the cognitive-response model. The concepts of the heuristic processing and peripheral route differ in significant ways. Heuristic processing hinges on rudimentary decision rules or ‘heuristics’ to evaluate the validity of an argument. For example by using the simple rule that ‘announcements made by experts can be more trusted than announcements made by non-experts’, a person may be more likely to agree with a message made by an expert without scrutinizing the context of a message. The concept of a peripheral route is wider than that of heuristic processing and consists of all forms of influences which do not depend on argument scrutiny.

2.2.3 Empirical evaluation of the models

The research findings on distraction and message repetition provided empirical support for the cognitive-response model (Greenwald, 1968) and the elaboration likelihood model of persuasion (Petty and Cacioppo, 1981, 1986). Research on distraction involved exposing individuals to a message when they are doing an irrelevant activity or by experiencing sensory stimulation irrelevant to the message (e.g., listening to a message transmitted by radio which is masked by static). Some researchers found that distraction resulted in a decrease in attitude change (e.g., Haaland and Venkatesan, 1968) and others found the opposite (e.g., Festinger and Maccoby, 1964).

The cognitive-response model and the elaboration likelihood model attempted to explain how distraction could both increase and decrease persuasion. According to these models, distraction reduces the individuals’ ability to produce cognitive responses to a message or elaborate on the arguments contained in the message. Therefore, the impact of distraction on attitude change depends on the favourability of the thoughts generated by the message. When the dominant thoughts are favourable, distraction should inhibit persuasion, however, when the thoughts are predominantly unfavourable, distraction should enhance persuasion. Petty, Wells and Brock (1976) tested these predictions by manipulating both argument quality and distraction. Consistent with predictions they found that increases in distraction reduced persuasion for the high-quality arguments, but enhanced persuasion for the low-quality arguments.
While the effect of distraction decreases processing ability, message repetition has the opposite effect. Repetition allows the individual time to think about the message and should therefore result in increased persuasion for messages containing high-quality arguments, but decrease persuasion for low-quality arguments. Although the research findings supported this hypothesis, (e.g., Cacioppo and Petty, 1979), there is also evidence that the positive impact of repetition of high-quality arguments is limited by a 'boredom effect' which results in the rejection of even high-quality arguments (Cacioppo and Petty, 1985).

Research exploring whether it is better to present the arguments in a message in a negative frame (e.g., *if you eat a fatty diet you will die sooner*) or a positive frame (e.g., *if you eat a healthy diet you will live a long life*), has found that negative framing enhances information processing (e.g., Ditto and Lopez, 1992). More recent research (Smith and Petty, 1996) has found that in forming their attitudes people considered the arguments more when the arguments were of a type that they did not expect (i.e., when the recipients were surprised). This violation of expectancies notion suggests that the element of surprise results in greater information processing. Petty (1997) suggested that the rationale behind this conclusion is that sometimes the motivation underlying message processing is to provide an understanding of an unexpected occurrence.

### 2.2.4 The persistence of attitude change

Dual-process theories predict that persuasion produced by systematic processing, or the central route are more persistent and resistant to change than persuasion induced by peripheral or heuristic processing (e.g., Haugtved and Petty, 1992; Petty and Cacioppo, 1986). The empirical data supported this hypothesis (e.g., Chaiken, 1980; Haugtvedt and Petty, 1992; Petty and Cacioppo, 1986). Thus, attitudes brought about by thinking are stronger and more consequential than changes brought about with little thinking. This has important implications for the applications of persuasion research.
2.2.5 Objective versus biased information processing

Evidence shows that how we think about a message may be biased rather than objective (e.g., Bohner, Moskowitz and Chaiken, 1995; Chaiken and Liberman and Eagly, 1989). Although Petty and his colleagues (Petty and Cacioppo, 1986; Petty, Priester and Wegener, 1994) have also discussed the notion of biased processing in relation to the elaboration likelihood model, this section will concentrate on the work of Chaiken and her colleagues.

Chaiken et al. (1989) integrated the idea of biased processing into their revised dual-process model by including two additional motives. They labeled one class of motives likely to bias information processing impression motivation. These motives are driven by the desire to express socially acceptable attitudes. They labeled the second class of motives likely to bias information processing defense motivation. A person can be motivated to defend their attitudinal position for a variety of reasons, such as attitudinal commitment, a need for consistency or self-interest. The defence-motivated person is assumed to use the same heuristics as somebody who is accuracy motivated, but to use them selectively to support a preferred attitude position. Similarly, the defence-motivated person is assumed to use systematic processing selectively, such as paying more attention to information that is attitude consistent. A third process of defence motivation not discussed by Chaiken and her colleagues (1989), but mentioned by Stroebe and De Wit (1996) is the reduction in the defence-motivated person's motivation to scrutinize the message. Thus a smoker exposed to research on the dangers of smoking may be unwilling to think about the message, especially if they have been unsuccessful in their attempts to stop smoking.

The notion of defence-motivated processing is similar to dissonance theory (Festinger, 1957, 1964). Thus although one might expect a smoker to be more motivated than a nonsmoker to process information about the health risks of smoking, dissonance theory and the early versions of dual-process theories would predict that smokers tend to avoid such information, because it would increase their dissonance. If avoiding the information is not possible, dissonance theory would predict that smokers would
engage in the type of defence-motivation processing suggested by the revised heuristic-systematic models (Stroebe and De Wit, 1996).

According to the revised dual-process theories, the major issue in designing persuasion campaigns is whether the audience can be motivated to engage in systematic processing. Stroebe and De Wit (1996) suggested that 'only if people can be assumed to have both the ability and the motivation to comprehend, scrutinize and evaluate the arguments contained in the communication, would it seem worthwhile to expend effort on developing a thoughtful, detailed argumentation' (Stroebe and De Wit, 1996, p.128). They also suggested that the development of the arguments contained in the campaign should be based on careful analysis of the motives underlying a particular health behaviour. If people are unmotivated to engage in systematic processing, one could rely on other peripheral mechanisms to influence the audience. However, the disadvantage of this is that the effects are less likely to last. For most health campaigns, long-term maintenance of attitude change is important.

2.2.6 Motivation and attitude change

2.2.6.1 Fear

Fear appeals have been used to increase the audience's motivation to process the arguments in a message. The use of fear in health education campaigns often involved information that establishes a personal health threat that is then followed by recommendations to reduce or avoid danger (e.g., showing smokers a film of a lung cancer operation).

The majority of studies on the impact of fear initially found that persuasion increases with the level of the threat imposed in the communication (Boster and Mongeau, 1984; Sutton, 1982). More recent research (e.g., Gleicher and Petty, 1992; Jepson and Chaiken, 1990) has found that with higher levels of fear, emotional tension disrupts people's capacity for systematic processing and people become more reliant on peripheral cues.
2.2.6.2 Self-interest

A well-researched determinant of a person’s motivation to think about the arguments contained in a message is perceived self-interest. Barry (1965) argued that self-interest comes into play whenever one’s wealth, power or prestige is involved. Perceived self-interest is likely to be high among people who feel the issue may personally affect them (Popkin, Gorman, Phillips and Smith, 1976). For example, people who have something to lose if a new law (such as restrictions on hand guns) was implemented should be more opposed to it than people who have nothing to lose. McGuire (1989) noted that the critical aspect is that the individuals perceive the topic of the message to be important to them.

The motivation to think about the arguments contained in a message has been studied by manipulating self-interest. In the context of health communication self-interest can be influenced by factors such as personal vulnerability (Stroebe and De Wit, 1996). For example, one would expect individuals with high cholesterol to be more interested in information about heart disease than those who have low cholesterol.

In a classic study to assess the impact of self-interest on message processing Petty, Cacioppo and Goldman (1981) found that when a message was of high self-interest recipients were motivated to assess the arguments contained in the message critically. However, when the message was of low self-interest, the recipients relied on peripheral cues (e.g., source credibility) to evaluate the validity of the message.

In addition to motivating people to process the arguments contained in a message, self-interest has been viewed by some researchers as an antecedent to attitude importance. That is researchers have suggested that an attitude may become important to an individual as a result of self-interest (e.g., Key, 1961; Modigliani and Gamson, 1979; Petty, Cacioppo and Haugtvedt, 1991). Attitude importance is defined as an individual’s subjective sense of the concern, caring and significance he or she attaches to an attitude (Krosnick, 1988). A large body of evidence indicates that the attitudes people consider personally important exert strong influence on social perception and
behaviour (Boninger, Berent and Krosnick, 1995). Important attitudes are resistant to change (Gorn, 1975) and stable over time (Krosnick, 1988; Schuman and Presser, 1981). Attaching personal importance to an attitude represents a substantial commitment (Abelson, 1988). Consequently, people are not likely to make such a commitment lightly (Boninger, et al., 1995).

Several researchers (e.g., Key, 1961; Petty, Cacioppo and Haugtvedt, 1991) have suggested that an attitude may become important to an individual as the result of three factors: self-interest, social identification and values. Self-interest-based importance develops when a person perceives an attitude to be instrumental to one's tangible rights or lifestyle. Social identification occurs when a person identifies with a reference group. Thus identification with a social group may lead an attitude to become important to a person if the group's rights are perceived to be at stake (Modigliani and Gamson, 1979). Thirdly, an attitude may become personally important to an individual if he or she comes to view the subject as relevant to his or her basic social and personal values (Johnson and Eagly, 1989; Rokeach, 1977).

A recent study by Boninger et al. (1995) examined the relations between attitude importance and three of it's hypothesised determinants: self-interest, social identification and value relevance. They found that people's theories of the causes of attitude importance pointed to all three hypothesised predictors. However, self-interest statements were more prevalent than were social identification and value relevance.

In another experiment on the origins of attitude importance, Boninger et al. (1995) made use of a growing body of research that shows that imagining an event occurring increases people's estimate of the likelihood that the event will actually occur in the future (research on the effects of imagination on expectation is reviewed in the next section). Boninger et al., manipulated self-interest by inducing participants to imagine themselves being injured in a traffic accident. They hypothesised that participants would believe that they were more likely to experience that event. They further anticipated that participants would then perceive their self-interests to be more closely
tied to the issue of traffic safety. They expected that this in turn, would increase the personal importance individuals attached to their attitudes on that issue. The results of their experiment confirmed their hypothesis. Thus, the manipulation of self-interest resulted in a corresponding change in importance.

Boninger et al. (1995) findings stand in contrast to many previous findings that have show that in the political domain people rarely pursue their own material interests (e.g., Citrin and Green, 1990; Sears and Funk, 1991). For example research on voting behaviour shows that people often choose candidates who they feel will do what is best for the nation’s economy as a whole (Kinder and Kiewiet, 1979, 1981, Sears, Lau, Tyler and Allen, 1980). Boninger et al., argued that although self-interest may not dictate to people which candidate to vote for, it may tell people where to focus their attentions and passions. They acknowledged that other factors such as solidarity with others and adherence to broad principles of life may also have an influence on where people focus their attentions, however, they claimed that their results show that self-interest played a significant role in shaping attitude importance. Based on these findings they suggested that rather than trying to persuade people to change their attitudes, advertisers and health professionals might be better off focusing on making attitudes strong by making them important. They claimed that their findings suggest that this can be achieved by leading people to link their self-interest to the attitudes involved. This argument is consistent with Petty and Cacioppo (1990) assumption that ‘...as the personal importance of the topic increases, recipients become more motivated to allocate their limited cognitive resources to processing the message’ (Petty and Cacioppo, 1990, p.368)

2.2.7 Implications for the planning of interventions

Fisher and Fisher (1992) demonstrated in their extensive review of studies of interventions aimed at reducing health-impairing behaviours, that only a small number of interventions have been stringently derived from social psychological theories of attitude and behaviour change. Instead, the vast majority of interventions have been based on an ‘informal blend of logic and practical experience’ (Fisher and Fisher, 1992,
They also noted that those interventions that are based on formal theoretical conceptions were more successful.

With regard to campaigns aimed at reducing the incidence of acquired immune deficiency syndrome (AIDS) Fisher and Fisher (1992) argued that although providing participants with information about risk behaviours and motivating them to avoid risky behaviours are necessary conditions to promote behaviour change, this is not sufficient for a reduction in risk of HIV infection. They showed that health education interventions that also addressed the behavioural skills were superior in terms of post-treatment attitudes and behaviour change.

Fisher and Fisher (1992) argued that certain behaviour skills, such as the ability to communicate with and be assertive with a sexual partner, are necessary for practising protective sexual behaviours. Several effective programmes have been developed and tested which included relevant behavioural and social skills training. Studies have shown that interventions which included behavioural skills training were more effective than information-only programmes (e.g., Callahan, Kingsley and Rinaldo, 1989; Kelly, St Lawrence, Hood and Brasfield, 1989; Valdiserri, Lyter, Leviton,).

2.2.8 Summary of persuasion research

The first part of this of this section concentrated on psychological theories of persuasion. Early theories focused on persuasion resulting from systematic processing of argument content. They assumed that if individuals are not motivated or able to process the information content, little attitude change will occur. In contrast, the more recent dual-process models assume that if people are unable or unmotivated to process the arguments, peripheral cues become important determinants of persuasion. According to the dual-process theory, a major issue in designing a persuasion campaign is whether the audience can be motivated to engage in systematic processing. A well-researched determinant of a person's motivation to think about the arguments contained in a message is perceived self-interest. Research on self-interest and attitude importance suggests that self-interest may influence where people focus their
attentions and passions. Therefore an effective way to convince people to care about
an attitude is to convince them that their self-interests are at stake. In health
communication, self-interest is influenced by factors such as personal vulnerability.

2.3 Imagination and Expectation
In 1973 Tversky and Kahneman proposed that the ‘availability heuristic’ was a source
of bias in decision making. Availability is defined as the ease with which relevant
instances come to mind. The researchers suggested that when asked to make
judgements concerning events that are too rare for many relevant instances to have
occurred, individuals will construct scenarios. According to this heuristic principle, one
basis for the judgment of the likelihood of an uncertain outcome is cognitive
availability, that is, the ease with which this outcome can be pictured or constructed.
The more available an outcome is, the more likely it is perceived to be. Tversky and
Kahneman (1973) assumed that the ease of constructing the scenarios influences
subsequent decision making. Findings from numerous studies have supported the
premise that when a hypothetical outcome is imagined, it becomes subjectively more
likely to occur (e.g., Anderson, 1993; Anderson, Lepper and Ross, 1980; Carroll,
1978; Gregory, Cialdini and Carpenter, 1982; Ross, Lepper, Stack and Steinmetz,
1977; Sherman, Zehner, Johnson and Hirt, 1983).

Gregory et al. (1982) suggested two possible means by which imagination procedures
might lead to an increase in perceived likelihood and behavioural changes. First, they
suggested that a participant who has imagined an event has already constructed a
mental image of that event. They claimed that because the participant has already
formed this image, any subsequent consideration will result in this same image being
constructed more easily. The second explanation assumes that once a representation of
an event has been created through an imagination procedure, it creates a cognitive set
that impairs the ability to picture the event in alternative ways. They supported this
theory with evidence from previous research by Bruner and Potter (1964) who showed
how the generation of a scenario limits future thinking and makes the generation of
other scenarios more difficult.
Anderson’s (1983) research was the first to explore the cognitive effects of creating behavioural scenarios with oneself as the main character. He asked participants to imagine either themselves, a friend, or a disliked acquaintance performing a series of target behaviours. He found that changes in behavioural intentions for all activities were greater when the main character of the script was oneself.

Sherman, Cialdini, Schwartman and Reynolds (1985) were the first to investigate the effects of generating difficult-to-imagine scenarios on subsequent judgments. They asked their participants to imagine contracting a disease that had either easy-to-imagine symptoms or difficult-to-imagine symptoms. In the easy-to-imagine condition, symptoms were concrete and the participant had probably experienced them (e.g., low energy level, frequent headaches). In the hard-to-imagine condition, the symptoms were less concrete (e.g., a vague sense of disorientation, an inflamed liver). After reading about the disease, they asked the control participants to judge how likely it was that they would contract the disease in the future. In addition to reading about the disease they also asked that the experimental condition participants imagine a three-week period during which they contracted the disease. To help with the task they asked participants to write a description of what they imagined their feelings would be during the three-weeks.

Sherman et al. (1985) findings lent support to past research showing that imagining future events renders those events subjectively more likely. The study showed that those participants in the easy-to-imagine condition judged themselves as more likely to contract the disease than did the other groups of participants. However, what is more important, is the finding that when a participant imagines a difficult-to-imagine event, the subjective likelihood of that event is more likely to decrease rather than increase. This experiment was the first to show these opposite effects of ease or difficulty of imagination on likelihood estimates.

The results of Sherman et al. (1985) study supported the notion that the effect of imagining events on judgments of likelihood is mediated by the ease or difficulty of
initially making the image available. Sherman et al. (1985) assumed that participants use their assessments of the ease of constructing the scenario as a direct cue to the probability of such an event. To rule out the possibility that participants may have based their disease likelihood judgements solely on the plausibility of experiencing the symptoms, the researchers included the control conditions in which participants were exposed to both types of symptoms, but were not asked to imagine experiencing them. It was only when the participants imagined the symptoms that the effects appeared. The study by Gregory et al. (1982) also showed that the presentation of mere information does not account for the effects of self-relevant scenarios.

Sherman et al. (1985) results suggested that if the symptoms of an illness or a disease are difficult to imagine, people may erroneously assume that the likelihood of contracting the illness is extremely low. It is therefore possible that some mental illnesses (e.g., schizophrenia, obsessive compulsive disorder) may be difficult for the public to imagine and they may therefore judge the likelihood of suffering from these illnesses as extremely low.

2.3.1 Expectancies and attitudes

Gregory, Cialdini and Carpenter (1982) conducted the first study to measure the effect of imagined scenarios on attitude change. They found that participants who had imagined subscribing to cable television had more favourable attitudes towards cable television and were subsequently more likely to subscribe to the service.

In 1985 Gregory Burroughs and Ainsilie explored the possibility that scenarios could influence attitudes that are not directly related to the behaviour depicted in the scenario. They believed that participants might have more favourable attitudes towards some activities that would prevent the occurrence of negative events whose likelihood has been enhanced through the scenario process. They based the idea for this hypothesis on Roger's (1983) protection motivation model. As discussed earlier, this model predicts that the probability of occurrence of a problem is one mediator of a participant's protection motivation. This in turn mediates the intent to adopt a
recommended response. Gregory et al. (1985) argued that if a participant were to imagine a scenario describing the occurrence of a negative event, and as a result had heightened expectancies for the occurrence of such an event, the participant should experience heightened protection motivation. If an opportunity to express an attitude that could serve to fulfill this protection arose, they hypothesised that the participants would do so.

To test this hypothesis, Gregory et al. (1985) designed an experiment where participants listen via audiotape to an experimental scenario that described them having an automobile accident or a control scenario that described them going to the library. They found that participants who imagined having an automobile accident believed that they were more likely to have an automobile accident than controlled participants and they also had more favourable attitudes toward items dealing with road automobile safety than control participants. They claim that the implication of their research is that ‘persuasive communication may be masked as self-related stories that persons are requested by a communicator to imagine or picture in their minds’ (Gregory et al., 1985, p.441).

Gregory et al. (1985) emphasised that the distinction between their research and previous studies (e.g., Gregory et al., 1983; Holloway Tucker and Hornstein, 1977; Hornstein, Lakind, Frankel and Manne, 1975) was that attitudes towards traffic safety legislation, a topic that was not the target event of the experimental scenarios, differed as a result of having imagined an automobile accident. Their results also supported Roger’s (1983) protection motivation model. The study outlined earlier by Boninger et al. (1995) that investigated the origins of ‘attitude importance’ was based on the design used by Gregory et al. (1985) and supported their findings.

2.3.2 Duration of effects
Anderson (1983) found expectancy effects three days after participants imagined a variety of activities. Gregory et al. (1982) found altered expectancies 96-minutes after the scenario procedure and differences in buying behaviour two to three months after a scenario procedure.
2.3.3 Summary and implication for campaign design

The findings of many studies have shown that imagining hypothetical future events render those events subjectively more likely. The explanation for the process underlying this effect has been based on the operation of one of the cognitive heuristics known as the availability heuristic. According to this heuristic, the basis for a judgment of the likelihood of an uncertain outcome is cognitive availability, that is, the ease with which a person can picture the relevant instances or outcome.

Researchers examining the influences of self-relevant scenarios on participants’ likelihood estimates have found that the effect is significantly increased when the main character of the script is oneself, and when the topic of the scenario is easy-to-imagine. Besides likelihood estimates, researchers have shown that self-relevant scenarios can affect attitudes that are directly relevant to the imagined scenarios, as well as attitudes that have not been directly targeted in the scenarios. It is therefore possible that persuasive communication could be masked as self-related stories that people are requested to imagine or picture in their minds. It has been argued based on Roger’s (1983) protection motivation model that if a participant were to imagine a scenario describing the occurrence of a negative event, the participant may experience heightened protection motivation which in turn could affect the participant’s attitude position on a particular topic. Finally, to help with the planning of a persuasive intervention campaign the following five principles can be concluded from the current research findings on attitude formation and change:

1. To design a campaign to change behaviour it is necessary to study the factors which determine this behaviour.

2. It is important to select a strategy to increase people’s motivation so they will think about and elaborate on the arguments contained in the message. Research suggests that an effective strategy to increase motivation is to make the issue important to the audience. To help make an issue important one can lead the audience to link their self-interest to the attitude involved. In health
communication, increasing personal vulnerability can induce self-interest (i.e., increasing people’s belief that they run the risk of getting the illness or disease).

3. Research suggests that an effective method to increase personal vulnerability to illness is to encourage people to imagine a hypothetical situation where they are the main character and they contract an illness or a problem with easy-to-imagine symptoms.

4. The use of educational campaigns may not be sufficient to promote behaviour change. Interventions based on formal psychological principles are more successful than those based on informal logic or practical experience.

2.4 Discrimination and Mental Health
The first part of this section will review research on discrimination and mental health. The second part will explore the use of mass media in mental health and review previous campaigns.

A large body of research exists on discrimination and mental illness. The following is not intended to be a comprehensive review of the literature. Instead, it has three main purposes. First, to summarise the main findings. Second, to review and critique methodology in the area. Finally, it is hoped that implications can be drawn from the literature to help with the design of a campaign to reduce discrimination against people with mental health problems.

2.4.1 Definitions
The review is not restricted to any one diagnostic category, such as schizophrenia or depression. A decision was made not to make a distinction between what researchers frequently refer to in the literature as ‘serious mental illness,’ and other categories of mental health problems. It is assumed that discrimination, or the fear of discrimination can affect anyone who seeks assistance from mental health services. This includes people who receive help for an anxiety disorder or those who receive help for a
psychotic disorder. Clearly, it is recognised that the level of disability, distress and discrimination will vary depending on the diagnostic category. However, for the purposes of this research, terms such as ‘people with mental health problems’ or ‘users of mental health services’ or ‘former patients’ are used to describe anyone who has sought help from mental health services.

The term ‘discrimination’ is used throughout this section and refers to the negative effects of a label placed on those people who have been diagnosed as suffering from a mental health problem. The term ‘stigma’ is frequently used in the literature to describe the unfavourable treatment of people with mental health problems. More recently, researchers have argued that the term ‘stigma’ may not be the most useful concept. For example, Oliver (1992) argued that the legacy of Goffman’s work on stigma (Goffmann, 1963) has focused on individual self-perception, and micro-level interpersonal interactions, rather than on the pattern of exclusion from economic and social life. Similarly, Chamberlin (1997) has argued that the concept of ‘stigma’ is itself stigmatizing because it infers that there is something wrong with the person, whilst ‘discrimination’ puts the onus on the individual or groups that are practicing discriminatory behaviour (Sayce, 1998).

2.4.2 Public attitudes towards people with mental health problems

A recent review by Hayward and Bright (1998) concluded that studies conducted in the 1950s and sixties generally found that the public feared and disliked people with mental health problems. For example in 1961, Nunnally concluded that the lay public was not so much misinformed about mental illness, but the average person considers ‘... the mentally ill as dirty, unintelligent, insincere and worthless’ (Nunnally, 1961, p.233). More recently public attitude surveys have shown some evidence of more positive attitudes towards people with mental health problems (e.g., Brockington, Hall, Levings and Murphy, 1993; Flaskerud and Kviz, 1983; Wolff, Pathare, Craig and Leff, 1996). However, a significant number of respondents continue to give negative responses. For example Wolff et al. (1996) found that more than 40 percent of respondents said that they would treat a former psychiatric patient in a negative way. A
literature review on attitudes to mental health facilities found that despite some evidence of growing tolerance, public fears about mentally ill people living nearby have actually slightly increased (Rapper and Brooker, 1996).

A study in 1992 investigating attitudes towards depression among groups of clinicians including general practitioners, psychiatrists, social workers, pharmacists and health visitors found that there was agreement among these groups that there is still a ‘stigma’ attached to the condition (Research Quorum, 1992). In 1993 Sim reported that the ‘stigma’ of depression is a major factor hindering effective treatment. He claimed that because of the ‘stigma’ there are many cases of untreated depression, high long term morbidity and even mortality from depression.

Several researchers (e.g., Philo, 1997; Sayce, 1998) have assumed that media portrayals of people with mental health problems is discriminatory, and is in part responsible for the public’s fear and negative attitudes. The Glasgow Media Group published the first major study in the United Kingdom on media coverage of mental health (Philo, 1996). The results indicated that ill-informed beliefs about mental illness (e.g., the association of schizophrenia with violence) can be traced directly to media accounts.

2.4.3 Relationship between attitudes and sociodemographic variables
Researchers have found that similar sociodemographic factors such as age, social class and education affect attitudes. More tolerant attitudes towards people with mental health problems have consistently been associated with younger age groups (e.g., Rabkin, 1974; Sellick and Goodyear, 1985; Sonya, Martin, and Romans 1995), higher socio-economic status (e.g., Brockington, et al., 1993; Maclean, 1969; Wolff et al., 1996) and higher education (e.g., Brockington et al., 1993; Murphy, Black, Duffy, Kieran and Mallon, 1993).

Knowing somebody with a mental illness has been associated with more tolerance (Brockington et al., 1993; Taylor and Dean, 1981). Wolff et al. (1996) found that
having children in the household and ethnic origin (with Asians, Caribbeans and Africans showing more negative attitudes) was associated with intolerance. With regard to sex the research results are mixed. Some studies have shown that more tolerant attitudes towards people with mental health problems have been associated with females (e.g., Angermeyer, Matschinger and Holzinger, 1998; Sonya, Martin, and Romans 1995; Taylor and Dean, 1980) other studies have shown that the sex had no influence (Angermeyer and Matschinger, 1997; Barry, 1994; Brockington et al., 1993; Murphy, Black, Duffy, Kieran and Mallon, 1993).

2.4.4 Psychiatric discrimination in the military
Within the military, it is a fact that under certain circumstances service members may be discharged, or temporarily removed from duty as a result of a mental health evaluation. Although this is a relatively infrequent outcome, Taylor and Johnson (1994) suggested that it is possible that these events reinforce an image of the mental health patient as ‘incapacitated.’ Rosen and Corcoran (1979) compared attitudes between USAF officers and mental health providers. They found that although officers had a more negative view of psychiatric patients than mental health providers, the officers’ opinions ‘approximated those of college educated civilians’ (Rosen and Corcoran, 1978, p.73). Taylor and Johnson (1994) extended these earlier findings by surveying attitudes among 138 commanding and executive officers of the USAF. Attitudes were measured by a forced-choice questionnaire constructed by the researchers for the study. They provided no data on the reliability and validity of the research instrument. Overall, the findings were reported to be neutral and there were few negative evaluations. A survey of attitudes towards people with mental illness among members of the military service in Bermuda has not been conducted.

2.4.5 The views of people with mental health problems about discrimination
There is evidence that people with mental health problems feel discriminated against. Link (1985) asked patients in New York about their perceptions of how most people would treat a former mental patient. Most of these patients thought that the public would devalue ex-patients. A recent British study by Read and Baker (1996) found
that discrimination is widespread. They reported that 47 percent of users reported having been verbally or physically harassed in public because of their mental problems. Evidence also exists to suggest that patients will forego insurance benefits to maintain privacy concerning their treatment for a mental health problem. Sharfstein, a psychiatrist for the National Institute of Mental Health in the USA, published a report in 1981 indicating that as many as 15 percent of those with insurance relinquish their benefits to avoid mental health treatment becoming part of their medical records (as cited in Link, Cullen, Frank and Wozniak, 1987).

In Bermuda, the views of 175 service users were examined as part of a consumer satisfaction survey (Grainger, 1998). The findings show that 46 percent of service users reported that they were either uncertain, or that they would be ashamed to admit to most people that they had a mental health problem.

2.4.6 The effect of the mental illness label

A core aspect of Scheff’s (1966, 1974) labeling theory is that former patients will face discrimination and rejection, that they will be ‘punished when they return to conventional roles’ (Scheff, 1966, p.87). Support for this proposition also came from Phillip’s (1963) experimental study which showed that rejection varied as a function of treatment source. An individual was more likely to be rejected if a help source involved psychiatric contact as opposed to contact with a physician or clergyman etc. Shortly after these findings were published, however, a growing body of research showed that the crucial factor determining the rejection of former mental patients was not the stereotypes associated with the label, but the patients’ aberrant behaviour (e.g., Farina and Hagelauer, 1975; Kirk, 1974). Consistent with this position, Cockerhams (1981) text on the sociology of mental disorders states: ‘If former mental patients can act relatively normal, they probably can shed their label and live a normal life’ (as cited by Link, Cullen, Frank and Wozniak, 1987 p.1470).

As noted earlier, many patients felt some shame and believed that others would respond negatively to the fact that they have been hospitalised or treated by a
psychiatrist. It is difficult to reconcile the patients’ data with research claiming that a label per se matters little. A study by Link, Cullen, Frank and Woziak (1987) showed that when a measure of the perceived dangerousness of psychiatric patients was introduced into an experiment, strong labeling effects emerge for those participants who believed psychiatric patients were dangerous. They assumed that previous investigators had missed these effects because they averaged excessively lenient responses with excessively rejecting ones.

Link et al. (1987) reported that their study showed that labels play an important role in how people with mental health problems are perceived and that labeling theory should not be dismissed. They have demonstrated that the mental health label can induce a broad range of emotions among members of the public. The difficulties for people with mental health problems is how to predict these responses. Inability to predict social responses can lead to protective withdrawal and defensiveness (Farina, Gliha, Boudreau, Allen and Sherman, 1971). In any event, as Link et al. (1987) have shown a mental health label holds the continuing potential to diminish the quality of social interaction. Sommer, Burstein and Holman (1988) suggested that it is important to stop pitting the behaviour paradigm against the label paradigm, and assume that both contribute to some degree to the rejection of people with mental health problems.

2.4.7 Measuring attitudes towards people with mental illness
Research on attitudes towards people with mental health problems generally employ one of five methodologies (Hayward and Bright, 1998):

1. Attitude scales: These scales often involve ratings of agreement and/or disagreement about people with mental health problems. An early example of this type of scale is the Opinions about Mental Illness Questionnaire created by Cohen and Struening (1962). Other examples of attitude scales are Baker and Schulberg’s Community Mental Health Ideology Scale (1967) and Taylor and Dean’s Community Attitudes to Mental Illness Inventory (1981).
2. Semantic differential studies: Osgood, Suci and Tannenbaum (1957) developed the semantic differential. Participants are asked to rate concepts, on different bipolar rating scales such as "friendly/unfriendly." Nunnally (1961) was the first person to use these scales to explore attitudes to mental illness. Participants were asked to rate people with mental health problems on a variety of qualities compared to those of the 'normal' person.

3. Social Distance Scales: These questionnaires look at the degree of social proximity participants would be willing to have with someone who has a mental health problem. The questions include different situations such as having the person as a neighbour or a colleague or a romantic partner and the respondent is asked if they would be willing to do each of these things (e.g., Bogardus, 1933; Whately, 1959).

4. Vignette studies: These are used to measure which types of behaviour the public views as examples of 'mental illness'. The vignettes frequently describe conditions such as paranoid schizophrenia or depression. Studies tend to find that people avoid labeling all but extreme forms of behaviour as examples of 'mental illness' (e.g., Hall, Brockington, Leving and Murphy, 1993; Kirk, 1974; Phillips, 1966).

5. Behavioural studies: These types of studies are usually carried out in 'real life' using a collaborator who is presented to the participant as either having or not having mental health problems. For example, Farina and Felner (1973) demonstrated that the label of mental illness made job-seeking more difficult, and Page (1977) demonstrated a similar effect in looking for accommodation.

A problem for all self-report measures is that people can misrepresent their attitudes to give a socially desirable answer (Mansfield, 1996). However, the influence of socially desirability is limited to potentially threatening questions and is typically modest in size (Schwarz, 1996). Another potential problem with these types of measures is the reactivity of the attitude-measurement procedure. On some issues people may not have a clearly formulated attitude. However, an attitude questionnaire asks them to express
a position. This process may force them to develop an attitude rapidly which they would otherwise not have formulated. These spontaneous attitudes may be unstable and therefore poor predictors of behaviour (Mansfield, 1996).

Behavioural observations are less likely to be consciously distorted (Selltiz, Wrightsman and Cook, 1976). However, as researchers have highlighted (e.g., Kidder and Campbell, 1970) these methods are of questionable validity because of the tremendous ambiguities involved in interpreting the results. Collecting data through these means can also be time consuming (Schwarz, 1996).

The major value of attitude scales is that data can be collected and scored and factor analysed with relative ease (Hayward and Bright, 1998). Recent researchers exploring attitudes towards people with a mental illness (e.g., Brockington, Hall, Levings and Murphy, 1993; Wolff, Pathare, Craig and Leff, 1996) have used modified versions of the Community Attitudes to Mental Illness Inventory (Taylor and Dean, 1981). The advantage of this scale is that it includes specific dimensions such as authoritarianism, benevolence, social restrictiveness and community mental health ideology.

2.4.8 Determinants of discrimination
Research exploring this area has not been based on models of behavior such as the theory of planned behaviour. However, based on their review of the literature, Hayward and Bright (1998) offer four possible determinants of discrimination: attribution of responsibility, poor prognosis, disruption of social interaction and dangerousness.

2.4.8.1 Attribution of responsibility
This idea was developed by Weiner, Perry, and Magnusson (1988). They elicited judgements from students to a number of stigmatised groups such as AIDS patients, the obese and war veterans suffering from mental health problems. They found that people suffering with mental health problems were seen as more responsible for their conditions (i.e., the belief that people with mental health problems ‘choose’ to behave
as they do). This belief was associated with anger rather than pity and less likely to induce charitable behaviour. Hayward and Bright (1998) suggested that another possible explanation for the findings of Weiner et al., could be based on Lerner’s idea of a ‘just world’ (Lerner and Miller, 1978). That is, people prefer to believe that those who are unfortunate are responsible for their misfortunes, thus allowing the ‘fortunate’ to feel that they deserve to be fortunate and that they will not fall prey to similar misfortunes.

2.4.8.2 Poor prognosis
Goldin (1990) suggested that more discrimination exists for those conditions that are perceived as being chronic and difficult to treat. Norman and Malla (1983) found that greater social rejection was correlated with the belief that mental health problems had a poor prognosis. Socall and Holtgraves (1992) also reported similar findings in a study using vignettes. Stanley (1989) conducted an interesting experiment into the social consequences of the perceived nature of mental disorders. He found that participants suspended their normal pattern of social behaviour with people portrayed as ‘ex-mental’ patients when the disorder was represented as a conventional disease, but behaved normally when the mental disorder was ascribed to childhood history. This finding is interesting and challenges the popular belief that comparing mental health problems with physical diseases such as diabetes will reduce discrimination.

2.4.8.3 Disruption of social interaction
Another possible cause for discrimination is the belief that people with mental health problems do not fit into normal patterns of social interaction, and people do not feel comfortable in situations in which normal rules of social interaction do not work (Scambler, 1984). The social role disruption model of stigma is described in detail in Goffman’s classic text ‘Stigma’ (1968).

2.4.8.4 Dangerousness
A major factor underlying the discrimination against people with mental health problems is the belief that they are prone to violence. The relationship between mental
disorder and violent behaviour is empirically complex and politically controversial. Beliefs about a link between people with mental health problems and violent behaviour are important because they drive mental health legislation such as Community treatment orders which were designed, in part to reassure the public that they will be protected from violent mental patients (Hayward and Bright, 1998). Secondly, and perhaps more importantly, belief in the violent potential of psychiatric patients affects how the public responds and interacts with individuals who they perceive as having mental health problems (Monahan, 1992).

The dangerousness concept appears to be one of the root causes of the unfavourable view of people with mental health problems. A study mentioned earlier by Link et al. (1987) provides strong empirical evidence for this viewpoint. These researchers were investigating the extent to which a person’s status as a former psychiatric patient affected social distance on the part of others. Consistent with prior research (e.g., Gove, 1980; Kirk, 1974; Link and Cullen, 1983), they found that the label did not have a main effect. However, when they separated participants by means of a perceived dangerous scale into those subjects who believed that mental health problems were linked to violence and those who did not, strong labeling effects emerged. Participants who believed that there was no connection between mental health problems and violence were more willing to have as a co-worker or neighbour someone who had been hospitalised. Participants who believed that people with psychiatric problems are more prone to violence, understandably wanted to distance themselves from the former patients.

Throughout history and in all known societies people have believed that people with mental health problems and violence are somehow related. In 1968, the historian Rosen noted the Roman philosopher Philo Judaeus divided people with mental health problems into two groups. The larger one was made up of the ‘easy-going gentle style’ and the other, smaller group, consisted of those ‘whose madness was...of fierce and savage kind, which is dangerous both to the madmen themselves and those who approach them’ (cited by Monahan, 1992, p.512). Evidence for the belief that mental
Health problems are conducive to violence has been found in several countries and ethnic groups (Murphy, 1976; Westermeyer and Kroll, 1978). Modern day survey researchers confirm that this belief still exists. For example one poll conducted by the Field Institute for the California Department of Mental Health (1989) asked 1,500 representative adults whether they agree with the statement, "A person who is diagnosed as schizophrenic is more likely to commit a violent crime than a normal person." Almost two thirds of the sample (61%) agreed with the statement.

Anthropologists, historians and the general public are committed to the view that there is a connection between violence and people with mental health problems. It would appear that the only two identifiable groups who do not believe that mental disorder and violence are associated at a greater than chance level are advocates for people with mental health problems and social science researchers (Monahan, 1992). Information contained in many mental health association's pamphlets states that mental health clients are no more prone to violence than the general population. Monahan acknowledged that by making such statements, patient advocates are commendably motivated by the desire to dispel the popular media view of homicidal psychiatric patients. However, on the basis of recent psychological research he suggested that it is no longer credible to preface these statements with "research shows" (Monahan, 1992, p.519).

With regard to psychological research Monahan and Steadman (1983) reviewed over 200 studies on the association between crime and mental disorder for the National Institute of Justice in the USA. They concluded, 'when appropriate statistical controls are applied for factors such as age, gender, race, social class, and previous institutionalization, whatever relations between crime and mental disorder are reported tend to disappear' (Monahan and Steadman, 1983, p.152). However, in 1992, Monahan reported that he now considers this conclusion to be wrong for two reasons. First, he reported that to statistically control for factors, such as social class and previous institutionalisation, is problematic because it may mask the relationship between mental disorder and violence. For example mental health problems can cause
people to decline in social class and if people with mental health problems are violent this may cause them to be repeatedly institutionalised.

The second reason why Monahan (1992) considered his conclusion to be wrong was that new research, which he believed to be superior to what was in the literature a few years ago, has cast doubt on the no-relationship position. The results of his 1991 review found a consistent, albeit modest, relationship between mental health problems and violent behaviour. He suggested that ‘denying that mental disorder and violence may be associated in any way is disingenuous and ultimately counterproductive’ (Monahan, 1992, p.511). A review by Swanson and Holzer (1991) also found that violence was more likely to occur among those with a diagnosis of a mental disorder.

Link, Cullen and Andrews (1992) conducted an important study that controlled for current symptomatology. They did this by using the False Beliefs and Perceptions Scale (FBPS). They found that almost all of the differences in rates of violence between patients and non-patients could be accounted for by the level of active psychotic symptoms that the patients were experiencing. They concluded that when patients were actively experiencing psychotic symptoms like delusions and hallucinations, their risk of violence significantly elevates, compared with non-patients, and when patients are not actively experiencing psychotic symptoms, their risk of violence was not appreciably higher than demographically similar members of their community who had never been treated for a mental disorder. Link et al. (1992) also found that the (FBPS) predicted violent behaviour among the never-treated community. The implications of this research for the development of a mental health campaign will be reviewed later.

To summarise, the literature shows that despite some evidence of growing tolerance, the public still discriminates against people with mental health problems. This discrimination is recognised by clinicians, and it is felt by many service users. The determinants of discrimination have been attributed to the following factors: attribution of responsibility, poor prognosis, disruption of social interaction and the perceived dangerousness of people with mental disorders.
2.4.9 The use of mass media in mental health

In 1992, the Royal College of Psychiatrists and the Royal College of General Practitioners underlined the importance of mass media and proposed an increased utilisation to reduce the ‘stigma’ associated with mental illness and to educate the population on all aspects of mental health. In such a context, it becomes imperative to evaluate the potential role of the mass media in mental health.

Within general health, most media campaigns (e.g., Maccoby, Fasquhar, Wood 1977) deal with primary prevention. However, as the predisposing factors to mental illness have not been as clearly identified as, for instance, predisposing factors to cardiovascular diseases, Lamontagne (1990) argued that experimental studies should be conducted on the effects of the mass media on secondary and tertiary prevention. Education in secondary prevention is aimed at helping people detect the signs and symptoms of a mental disorder and thus seek early treatment. With regards to tertiary prevention Lamontagne suggested that psychiatrists and specialists in mass media should organise and test educational campaigns to decrease current taboos about mental illness.

Some authors have cautioned against the overestimation of the power of mass media. Mendelsohn (1973) assumed that the relative incapacity of mass media to achieve attitude and behaviour change was due to the resistance of many groups towards health matters. He suggested that the communicators’ main task was to ‘recognise, understand and overcome the public apathy’ (Mendelsohn 1973 p.50). Lamontagne and Verreault (1986) suggested that to improve the efficacy of the media in changing attitudes and behaviours, personalised interventions must be added, and the person communicating should be ‘perceived as one who can be trusted, who is an expert or who hold prestige in the public’s eye’ (Lamontagne and Verreault, 1986, p.17). Schanie and Sundel (1978) argued that media innovators should be prepared to evaluate their programmes for negative effects, as well as positive and null effects.
2.4.10 Experimental studies on mass media and mental health
Despite its obvious capacity to reach millions of people and its potential for demystifying and creating more openness about mental health problems, only a limited number of campaigns have been carried out (Lamontagne, 1990) and even fewer have adequately evaluated and published their impact (Schanie and Sundel, 1978; Sogaard and Fonnebo, 1995).

Early research deals mostly with children. For example, in 1969 the Ohio Department of Mental Health produced a series of one-minute television spots on stressful situations in childhood (i.e., the arrival of a new sibling, a death in the family). After they had shown the series for six months, they interviewed 193 children and their parents. Unfortunately, no measures were used to evaluate the effectiveness of the series in preventing the development of mental health problems. However, most of those interviewed were favourable to this kind of information. Edwards, Penick and Suway (1973) conducted a similar type of study, but again they only measured viewers' satisfaction.

Another study in the USA found that participants developed more knowledge about mental illnesses through the distribution of leaflets rather than through publishing articles in a daily newspaper (Lamontagne, Elie and Gaydos, 1986). In the UK, Barker, Pistrang, Shapiro, Davies and Shaw (1993) published an evaluation on an innovative BBC television series on preventive mental health called “You in Mind.” This series of seven 10-minute programmes aimed to help individuals acquire a greater repertoire of coping responses. The average audience was 6.7 million, which represented 13 percent of the UK population. The evaluation indicated that the series was positively appraised by the audience, but no specific pre-post changes in coping or help-seeking were found.

In 1992 The Defeat Depression Campaign was launched by the Royal College of Psychiatrists. The campaign aimed to reduce the stigma associated with depression and to increase general practitioners, other health professionals and the public’s awareness
of the extent and treatability of depression (as cited by Vize and Priest, 1993 p.573).
An evaluation by Macaskill and Nico (1997) showed that the campaign failed to reach its goals with respect to the GPs. To date there have been no published studies that have evaluated the effectiveness of the campaign at reducing the ‘stigma’ associated with depression.

2.4.11 Educational campaigns
Sayce (1998) reported that public education ‘intuitively’ seemed to be the key to reducing discrimination, but she called into question the effectiveness of this approach. This position was supported by recent research that has shown that people who know more about mental illness can be just as discriminatory as those who know very little (Wolff, Pathare, Craig and Leff, 1996). In 1999, a worldwide programme to fight stigma and discrimination was launched during the XIth World Congress of Psychiatry. The programme aims to increase awareness and knowledge of mental illness to improve public attitudes. They intend to ‘develop educational campaigns to interrupt this cycle of discrimination’ (Cavanagh, 1999, p.484). Hayward and Bright (1998) reported that ‘presumably some form of public education would be most useful’ (Hayward and Bright, 1998, p.352).

Little is known about the malleability of public attitudes towards people with mental health problems. To date only four published studies that have evaluated public education campaigns designed to reduce discrimination against people with mental health problems (Cumming and Cumming, 1957; Gatherer and Reid, 1963; Fonnebo and Sogaard 1995; Wolff et al., 1996). Each of these studies will now be reviewed.

A classic study looking at attitude change with respect to people with mental health problems was conducted in 1957 by Cumming and Cumming. Samples of the population from two Canadian towns completed a questionnaire measuring attitudes towards people with mental health problems. One town received an intensive education campaign about the nature of mental illness, the other town did not receive an intervention. The campaign involved films and discussions. The researchers
emphasised three propositions:

i. the range of normal behaviour is wider than it is often considered.

ii. deviant behaviour is not random, but has a cause and the behaviour can be understood and modified.

iii. normal and abnormal behaviours are on a single continuum and qualitatively not distinct.

Attitudes did not become more favourable after exposure to the educational programme. In fact the third proposition was rejected completely, along with the whole educational programme. The community was said to have 'closed ranks,' not only against people with mental health problems, but against the mental-health experts as well. Susser and Watson (1962) assumed that the third proposition was rejected because it was too threatening as it suggested that anyone in the community could become 'mentally ill'.

In 1963 Gatherer and Reid in Northamptonshire showed that the public's attitudes towards people with mental health problems remained generally negative, despite an extensive educational campaign. More recently in 1992, the Norwegian Broadcasting Corporation collaborated with a mental health charity in a nationwide mental health educational campaign. The campaign was extensively advertised beforehand, and culminated in a six-hour TV-show. The Queen of Norway was the High Patroness of the Mental Health Campaign which was endorsed by the government and the King of Norway. The campaign organisers clearly heeded the advice of researchers such as Lamontage and Verreault (1986) who suggested that to improve the efficacy of the media, communicators should hold prestige in the public's eye. The goal of the campaign was to collect money to support psychiatric research and to inform the public about mental health problems in order to contribute to the breakdown of taboos and create a more open climate about mental health issues. The impact of the campaign was measured and published by Sogaard and Fonnebo (1995). They compared interview data from a random sample of the population before and after the campaign. The survey tool included twelve questions on knowledge about and attitudes to
psychiatric disorders. The researchers did not give any data on the reliability or validity of their survey tool.

The proportion of the population aware of the fact that suicide takes more lives than traffic accidents significantly increased after the campaign. There was also a significant increase in the number of people who reported that they would communicate with neighbours and friends about someone close who had been hospitalised because of a mental disorder. The threshold for consulting a psychologist or a psychiatrist was also lowered after the campaign. Sogaard and Fonnebo (1995) reported that they incorporated several elements from social psychological theories into the campaign. It was not clear from reading their account of the campaign how these theories were incorporated in the design.

Three years after the campaign Sogaard and Fonnebo (1998) evaluated the long-term impact of the campaign (personal communication). They found that the proportion of the population who knew that suicides took more lives than road traffic accidents and the number of people who would recommend that friends with minor mental health problems seek help from their GP remained significantly higher than the pre-campaign figures. However, personal openness concerning a family member in a psychiatric hospital, and willingness to go for psychiatric/psychological help had changed only marginally. Unfortunately, measuring the overall impact of the campaign on the population’s attitudes towards people with mental health problems was not possible because a standardised attitude questionnaire was not used.

The fourth published study was conducted by Wolff, Pathare, Craig and Leff (1996) in the UK. This study was based on the hypothesis that negative attitudes towards people with mental illness may ‘be fueled by a lack of knowledge’ (Wolff et al., p.191). They surveyed the community’s knowledge and attitudes towards mental illness in two areas before the opening of supported houses for people with mental health problems. In one area they conducted an educational campaign. They then repeated the attitude and knowledge surveys in both areas and they recorded patients social contact with
neighbours. The survey tools included the Community Attitudes to the Mentally Ill Inventory (Taylor and Dean, 1981) and eight knowledge questions developed by Wolff et al., for the study. The educational campaign comprised of a primarily didactic component (an information pack containing a video and information sheets), a primary social component (social events and social overtures from staff) and a mixed component (a formal reception and informal discussion sessions).

Respondents exposed to the campaign showed a small increase in knowledge about mental illness after the campaign, but they found no direct relationship between having been educated and change in attitude over time. Respondents in the experimental area were more likely to make social contact with staff and patients. Wolff et al. (1996) concluded ‘the educational campaign did not in itself lead directly to less fearful attitudes, whereas contact with patients did’ (p.446.).

2.4.12 Mental health campaigns in Bermuda

In 1998 the effects of a public education campaign on community knowledge and attitudes toward mental illness were evaluated (Grainger, 1998). The campaign involved an ‘open house’ held at the island’s only psychiatric hospital, a twelve minute video about Bermuda’s mental health services, a lecture about mental illness, a guided tour of the hospital, an outdoor fair and several displays offering information about mental illness. Newspaper, radio and television advertisements were placed to promote the event. To evaluate the impact of the campaign a survey of the participants’ knowledge and attitudes towards mental illness was conducted at the beginning of the open house and was repeated immediately before participants left the open house. The survey tool included a knowledge scale and the Self-report inventory of fear and behavioural intentions toward the mentally ill. Both scales were developed by Wolf et al. (1996).

One hundred and five people (88 percent of the target population) completed the pre-visit questionnaire. Although only 57 percent of the original sample took part in the post-visit survey, the characteristics of the post-visit respondents were highly
correlated with the pre-visit respondents. After the open house there was a significant increase in the number of respondents reporting that they had confidence in the services offered at the psychiatric hospital. The vast majority also reported finding the open house interesting and informative.

The results of the evaluation suggested that holding an open house at a psychiatric hospital is a useful public relations exercise, and a successful medium for increasing the publics' confidence in mental health services. However, the open house did not significantly increase respondents' knowledge or change attitudes towards people with mental health problems. A difficulty with the study was that there was a large amount of variation in the presentation of the information. It was not uncommon for respondents to attend the ongoing lectures about mental illness in the middle and in some cases just a few minutes before the end. There was also much variation in the length of the hospital tours and in the status of the tour guides.

2.5.13 Explanations for the reluctance of professionals to tackle discrimination

The media, particularly television and radio, have been a surprisingly under-used resource in the mental health field (Barker et al., 1993). Lamontagne and Verreault (1986) reported that when one compares the literature published on mass media and physical health, 'one must realise that mental health professionals have not been very interested in developing, putting into action and evaluating the effectiveness of the use of mass media in mental health' (p.619). Several reasons have been advanced to explain the reluctance of mental health professionals to use the mass media to promote mental health and to reduce mental health discrimination.

Lamontagne and Verreault (1986) suggested that this lack of interest may be due to mental health professionals' pessimistic view about the role of mass media in changing the attitudes and behaviours of the population. They suggested that mental health professionals, in collaboration with media specialists, should develop experimental designs which would confirm or refute this hypothesis.
Another reason Lamontagne and Verreault (1986) suggested to account for the apparent lack of interest to use the mass media is the poor quality of most experimental studies. Controlled studies are difficult to conduct in this area, but to date no experimental designs have been developed which could be tested in a laboratory setting. In 1986 Lamontagne and Verreault recommended that pilot studies be conducted with small groups of participants to evaluate the effects of different information and prevention programmes. These types of studies would have the advantage of detecting any possible negative effects of a campaign.

Lamontagne and Verreault noted in 1986 that research on tertiary prevention in mental health was very scarce and a great deal of refinement was necessary. They suggested that ‘efforts must be made to develop more accurate research designs with control and comparative groups in order to reach more positive results with the most efficient procedures’ (Lamontagne and Verreault, 1986, p.620). To date, this kind of research has not been conducted.

2.4.14 Implications of mental health research for campaign planning

Lagos, Perlmutter and Saexinger (1977) reported that community education campaigns were failing to impact on the public’s attitudes because of inaccurate teaching. They suggested that rather than teaching the public that they have nothing to fear from people with mental health problems, the public should be made aware of the extent and under what circumstances people with mental disorders should be feared, and how one ought to respond when a person is frightening. This position is supported by research noted earlier by Monahan (1992). Monahan suggested that public education programmes that claim that people with mental illness are no more prone to violence than the rest of us, are ‘doomed to failure, as indeed research shows they have always failed’ (p.519). Bloom (1989) claimed that ‘progress in this area will be slow without a realistic look at dangerousness’ (p.253).

The data that is now available suggests that there appears to be a relationship between mental disorder and violent behaviour (Monahan, 1992). This data cannot be ignored.
It is important, however, to remember, as the Link et al. (1989) study has made clear, it is only people currently experiencing psychotic symptoms who may be at an increased risk of committing a violent offence. Being a service user, a former patient in a psychiatric hospital, or having experienced psychotic symptoms in the past bears no direct relationship to violence. Monahan (1992) emphasised that having experienced psychotic symptoms in the past 'bears an indirect relationship to violence only in the attenuated sense that previous disorder may raise the risk of current disorder' (p.519). Link et al., and Monahan have clearly stated that by all indicators, the vast majority of people with mental problems are not violent. They have reported that the data does not justify the sensationalised media presentation of mental illness or the public's discriminatory attitudes. When compared with the magnitude of risk associated with alcoholism and drug abuse, the risk associated with mental health problems is modest indeed (Monahan, 1992).

What are the implications for mental health campaigns of the conclusion that a mental disorder may be a significant, although modest, risk factor for the occurrence for violence? Although Monahan (1992) acknowledged that it may be difficult for mental health advocates to convey more accurate, but more complex, information about the relationship between mental disorder and violence 'in sound bites and bumper stickers that have come to frame public discourse' (p.519) he does not make any suggestions on how to communicate more accurate information. Clearly, it is important how this information is presented, as most mental health professionals would be concerned about heightening discrimination against people with mental health problems.

Wiegman and Gutteling (1995), specialists in risk communication, suggested that in their opinion, the main question was not whether it would ever be possible to present a comprehensive risk message for a broad audience, but that the public should be supplied with knowledge that is relevant to their own personal circumstances and applicable to their own behavioural repertoire.
It is possible that attempts to explain the aetiology and multi-dimensionality of schizophrenia or to educate the public about mental illness via information campaigns may at best confuse the public and reduce their motivation to listen, and at worse it may add to the mystification of mental illness. In view of the Wiegman and Gutteling (1995) advice regarding the communication of risks, the Lagos et al. (1977) suggestion that the public should be made aware of the extent and under what circumstances people with mental disorders should be feared, and how one ought to respond when a person is frightening, seems the most sensible way forward. The Lagos et al. (1977) recommendation is consistent with Bandora’s theory of self-efficacy and it also addresses Blooms’s (1989) and Monahan’s (1992) concerns about campaigns misleading the public by not looking realistically at the issue of dangerousness. It is also consistent with the research in AIDS prevention that showed that interventions that included behavioural advice were more effective than information-only programmes (e.g., Kelly, St. Lawrence, Hood, and Brasfield, 1989).

2.4.15 Summary of mental health research

To date there have only been four published studies that have evaluated the impact of a mental health campaign on the community’s attitudes towards people with mental health problems. Most of these campaigns have relied heavily on the power of information to change attitudes and all of the studies found education to be largely ineffective in changing the public attitudes in this area. Although ill-informed beliefs about mental illness have been traced to media accounts, there is a reluctance on the part of mental health professionals to use the media to promote more accurate portrayals of people with mental health problems. Only a limited number of studies that have been carried out, and few have adequately evaluated their impact. A need exists for controlled experimental studies that can refine campaign designs and examine the efficacy of media interventions in tertiary prevention.

2.5 Overall Summary

Research is needed on the development of effective campaigns to reduce discrimination against people with mental health problems. Most mental health
campaigns have relied on the power of information to change attitudes, despite research evidence to the contrary. Attempting to design a campaign to reduce discrimination towards people with mental health problems offers an exciting challenge to psychologists, for whom the study of attitudes and attitude change has been a major research area for decades.

Research has demonstrated that people try to avoid information that contradicts their existing beliefs. They are also likely to reject as unjust and distorted any attitudes that have little in common with their own position. An example of this can be found in an early mental health campaign that involved researchers presenting information that contradicted the community’s existing beliefs (Cumming and Cumming, 1957). The community responded by rejecting the whole campaign, and even showing hostility towards the campaigners. This early campaign highlights the difficulties in supplying the public with knowledge that has little in common with their attitude position and which they cannot relate to their own personal circumstances.

It is now generally accepted that attitudes significantly and substantially predict future behaviours. Therefore changing attitudes can produce corresponding changes in behaviour. Models of behaviour such as reasoned action or the theory of planned behaviour have shown that in order to design adequate interventions to promote behaviour change, an understanding of the determinants of behaviours is necessary. Mental health research has identified four main determinants of mental health discrimination, namely: attribution of responsibility, poor prognosis, disruption of social interaction and dangerousness.

Several studies have shown that the association between dangerousness and mental illness is an important factor in maintaining discrimination against people with mental health problems. Research suggests that the public believes there is a link between violent behaviour and mental illness. Recent findings indicate that there is an association between the two, but this relationship only exists for people who are currently experiencing psychotic symptoms. To convey this information, researchers in
Risk communication suggests that the public should be supplied with knowledge relevant to their own personal circumstances. That is the public should be made aware of the extent and under what circumstances people with mental disorders should be feared, and how they ought to respond when a person is frightening.

Social psychologists have studied persuasive communications extensively to identify those variables that are beneficial or harmful for attitude change. To date the findings suggest that persuasion is increased if the communicator is perceived to be an expert who holds prestige in the public’s eye. Persuasion can also be increased if the communicator repeats a strong message and when the message is not of the type that was expected (i.e., when the audience is surprised).

According to the dual-process theories of persuasion, campaigns should include strategies to motivate the audience to process the arguments the campaign. Research on self-interest and attitude importance suggests that although self-interest may not have a direct influence on how people behave, it does increase their motivation to process the arguments contained in a message. In health communication, one factor that influences self-interest is personal vulnerability. Research has shown that imagining the development of an illness with easy-to-imagine symptoms can increase perceived susceptibility to that illness.

2.6 The Current Study
The area of mental health discrimination was chosen because it became apparent during clinical work in the UK and in Bermuda that community attitudes affect the quality of life of patients. It has come to the attention of the Community Mental Team in Bermuda that patients have been refused accommodation and have been fired from their place of employment when it became known that they had a psychiatric label. Potential patients have also declined appointments with mental health specialists because they are fearful about being seen at an outpatient psychiatric clinic.
If a media campaign could be designed to successfully change attitudes, the plan would be to use the mass media to air such a campaign across Bermuda. It is hoped that on an island the size of Bermuda (population 58,000), a successful campaign could have a significant impact on the attitudes of the community. Research in this area was therefore considered clinically important.

2.7 Aims and Rationale of the Study
Through their extensive review of campaigns aimed at reducing health-impairing behaviours, Fisher and Fisher (1992) demonstrated that campaigns based on formal theoretical conceptions were more successful than educational campaigns. Previous research by Cumming and Cumming (1957) and Gatherer and Reid (1963) showed that negative attitudes towards people with mental health problems did not decrease following exposure to educational campaigns. More recently, a study by Wolff, Pathare, Craig and Leff (1996) also found no relationship existed between education about mental illness and attitude change. Despite these findings, scientific principles derived from social psychological theories of attitude and behaviour are rarely used in the planning of health campaigns. The vast majority of mental health campaigns still rely on the assumption that giving people information will be enough to decrease negative attitudes. The central hypothesis of this research project is that a campaign designed from social psychological theories will produce a significant decrease in negative attitudes towards people with mental health problems, whereas an educational campaign will be ineffective in this regard. An essential aspect of this research was to produce a mental health campaign based on psychological theories. The theoretical rationale for the campaign is summarised below.

The dual processing models of persuasion reviewed in the introduction suggest that a major issue in campaign design is motivating the audience to process the messages contained in a campaign. Petty and Cacioppo (1990) demonstrated that as the personal importance of a topic increases, the audience becomes more motivated to process the messages in a campaign. Research by Boninger, Berent and Krosnick (1995) found that attitudes can be made important by leading people to link their self-interest to the
attitudes involved. In the context of health communication self-interest has been shown to be influenced by perceived vulnerability. Gregory, Cialdini and Carpenter (1982) demonstrated that imagining the occurrence of an event leads to a heightened expectancy of such an event occurring. An implication of this research is that self-related stories could be used to increase perceived vulnerability that can increase self-interest which could motivate an audience to process the arguments in a campaign. With regard to the construction of the arguments in the campaign, Manstead, Proffitt and Smart (1983) demonstrated that the campaign arguments should be based on careful analysis of the motives underlying a particular attitude. Cacioppo and Petty (1985) have shown that repetition of high-quality arguments results in increase persuasion. The use of an expert who holds prestige in the public eye to present the arguments has also been shown to increase persuasion through heuristic processing that relies on rudimentary rules to evaluate the validity of an argument (Chaiken, Liberman and Eagly, 1989).

A campaign was designed from the theories outlined above. The arguments in the campaign were designed to influence the four main determinants of mental health discrimination (attribution of responsibility, poor prognosis, disruption of social interaction and the perceived dangerousness of people with a mental illness). The arguments were repeated three times and presented by a physician. A self-relevant scenario depicting the development of a mental illness was used to increase the audiences perceived vulnerability to mental illness. As outlined above it was predicted that the increased perceived vulnerability would increase self-interest, which in turn would increase the importance attached to the issue of mental health discrimination, motivating the audience to process and yield to the arguments in the campaign.

To test the central hypothesis, (i.e., a theoretical campaign would be more effective than an educational campaign at reducing negative attitudes) a campaign designed to educate and inform the audience about mental illness was produced. This information-based campaign outlined the main categories of mental illness along with prevalence rates and treatment options. It was designed to be similar to those typically used by
mental health advocates. This campaign was compared with the theoretical campaign. To evaluate the effectiveness of the two campaigns, participants were randomly assigned to a group and exposed to one campaign. Participants exposed to the information-based campaign are referred to throughout the project as the “information group” and participants exposed to the campaign designed from formal theoretical conceptions are referred to as the “theoretical group.” A modified version of the Community Attitudes to the Mentally Ill Inventory (CAMI) was administered to the participants before, immediately following and six weeks after the campaigns. The CAMI inventory produces an overall score, as well as scores for the social control, goodwill and fear & exclusion scales. The reasons for choosing this attitude measure are outlined in the method section.

In addition to the information and theoretical campaigns, a control campaign was used to check for confounding variables that may have influenced the attitudes of the participants. For example during the six-week period between the administrations of the attitude measures, the media may have published a positive or a negative story about a person with a mental illness that could have influenced the participant’s attitudes. It is also possible that completing a questionnaire about mental illness may have resulted in the participant thinking about the issue, which in turn may have influenced their attitudes. Participants in the control group listened to a campaign that outlined the harmful effects of smoking. This topic was chosen because it was sufficiently removed from the issue of mental health. Participants exposed to the control campaign are referred to throughout the project as the “control group.”

The research project explores nine hypotheses which are reported in the following section. The main research hypothesis is that the theoretical group will show a significant decrease in negative attitudes towards people with mental health problems after hearing the campaign. It also predicts that the information and control groups will not show a significant decrease in negative attitudes after the campaigns.
The second hypothesis relates to the duration of attitude change. Researchers (e.g., Petty and Cacioppo, 1986) have demonstrated that attitude change induced by systematic processing was more resistant to change than attitude change induced by peripheral or heuristic processing. Thus, attitudes brought about by scrutinising and processing the arguments in a campaign should be resistant to change. The theoretical campaign was designed to increase the motivation of the audience to systematically process and scrutinise the arguments by increasing self-interest through the use of a self-relevant scenario. As such it is hypothesised that the predicted decrease in negative attitudes following exposure to the theoretical campaign would continue to be present six weeks later.

The third hypothesis tests the relationship between susceptibility to mental illness and self-interest. In the context of health communication, self-interest has been shown to be influenced by personal vulnerability (Stroebe and De Wit, 1996). It is therefore hypothesised that participants who perceived themselves as susceptible to mental illness will report higher levels of self-interest-based attitudes towards mental health discrimination compared with participants who did not think they were susceptible to mental illness. The measures used to assess perceived susceptibility to mental illness and self-interest are discussed in the next section.

Boninger et al. (1995) found a significant relationship between attitude importance and self-interest on many social issues. The fourth hypothesis therefore predicts that in the area of mental health discrimination there will be a significant relationship between attitude importance and self-interest.

The fifth hypothesis predicts that participants who express more positive baseline attitudes towards people with mental illness will attach more importance and personal relevance to the issue of mental health discrimination compared with participants who do not rate the issue as important or personally relevant.
Gregory et al. (1985) found that imagining a self-relevant scenario about a negative event resulted in heightened expectations for the occurrence of the event. Boninger et al. (1995) showed that self-relevant scenarios about a topic resulted in an increase in the level of self-interest and importance placed on that topic. Based on their research, hypotheses six, seven and eight state that participants will express an increase in their perceived level of susceptibility to mental illness, and view the topic of mental health discrimination as more personally relevant and more important after they have listened to the theoretical campaign. These three hypotheses also state that participants exposed to the information and control groups will not report an increase in these areas after they have listened to the control or the information campaigns.

The secondary aim of this project is to explore the main sources of attitude importance for mental health discrimination. Several researchers (e.g., Key, 1961; Petty, Cacioppo and Haugtvedt, 1991) have suggested that an attitude may become important to an individual as the result of three factors: self-interest, social identification and value relevance. The subsidiary hypothesis predicts that these factors will be the main sources of attitude importance for mental health discrimination.

2.8 Hypotheses

2.8.1 Main Hypotheses:

1. *The first/central experimental hypothesis (one-tailed)*

The theoretical group will show a significant decrease in negative attitudes towards people with mental health problems after hearing the campaign. The information and control groups will not show a significant decrease in negative attitudes after the campaigns. Therefore, scores on the overall CAMI scale, the fear and exclusion, social control and goodwill scales will be significantly lower\(^1\) after the campaign for participants in the theoretical group. No significant difference will be found between the pre and post scores on these scales for the information or control groups.

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\(^1\) Higher scores on the CAMI represent more negative attitudes
Null hypothesis
No significant difference will be found in the pre and post scores on any of the CAMI scales for any of the groups.

2. *The second experimental hypothesis (one-tailed)*
The theoretical group will show a significant decrease in negative attitudes towards people with mental health problems *six weeks* after the campaign. The information and control groups will not show a significant decrease in negative attitudes six weeks after the campaigns. Therefore, scores on the overall CAMI scale, the fear and exclusion, social control and goodwill scales will be significantly lower six weeks after the campaign for participants in the theoretical group. No significant difference will be found between the pre and follow up scores on these scales for the information or control groups.

Null hypothesis
No significant difference will be found in the scores before and six weeks after the campaigns on any of the CAMI scales for any of the groups.

3. *The third experimental hypothesis (one-tailed)*
Participants who perceived themselves as more susceptible to mental illness will report higher levels of self-interest-based attitudes. Therefore, those participants who reported that it was likely that they may develop a mental health problem will have significantly higher scores on the self-interest index compared with participants who did not report that it was likely that they may develop a mental health problem.

Null hypothesis
There will be no significant difference between scores on the self-interest index for participants who reported that it was likely that they may develop a mental health problem compared with participants who reported that they did not think it was likely that they would develop a mental health problem.
4. *The fourth experimental hypothesis (one-tailed)*
There will be a significant relationship between self-interest and attitude
importance. Therefore, scores on the self-interest and attitude importance
indexes will be significantly correlated.

Null hypothesis
There will not be a significant relationship between self-interest and attitude
importance.

5. *The fifth experimental hypothesis (one-tailed)*
Higher levels of self-interest and attitude importance will be associated with
more positive attitudes towards people with mental illness. Therefore,
participants who score above the mean on the self-interest and attitude
importance indices will have significantly lower scores on the overall CAMI
scale, the fear and exclusion, social control and goodwill scales compared with
those participants who score on or below the means on these indices.

Null Hypothesis
Higher levels of self-interest and attitude importance will not be associated with
more positive attitudes towards people with mental illness.

6. *The sixth experimental hypothesis (one-tailed)*
The theoretical group will show a significant increase in the importance they
attach to the issue of mental health discrimination after they have listened to the
campaign. The information and control groups will not show a significant
difference in attitude importance after listening to the campaigns. Therefore,
scores on the attitude importance index will significantly increase after the
campaign for participants in the theoretical group, but no significant difference
will be found between the pre and post attitude importance scores for the
information or control groups.
Null hypothesis
No significant difference will be found between the pre and post attitude importance scores for any of the groups.

7.  The seventh experimental hypothesis (one-tailed)
The theoretical group will show a significant increase\(^2\) in self-interest-based attitudes after they have listened to the campaign. The information and control groups will not show a significant difference in these attitudes after listening to the campaigns. Therefore, scores on the self-interest index will significantly increase after the campaigns for participants in the theoretical group, but no significant difference will be found in the pre and post self-interest scores for the information or control groups.

Null hypothesis
No significant difference will be found between the pre and post self-interest scores for any of the groups.

8.  The eighth experimental hypothesis (one-tailed)
There will be an increase in participants’ perceived likelihood of developing a mental health problem at some point in their lives after the theoretical campaign. There will not be a significant increase for participants in the control and information groups. Therefore, likelihood ratings will significantly increase after the campaign for the theoretical group, but no significant difference will be found in the pre and post ratings for the information or control groups.

\(^2\) Higher scores on the self-interest and attitude importance indexes represent a larger presence of the factor.
Null hypothesis
No significant difference will be found in the pre and post campaign likelihood ratings for any of the groups.

9. *The ninth experimental hypothesis*
Participants with an increase in attitude importance after the theoretical campaign will report more positive attitudes on the CAMI scales when compared with participants whose attitude importance scores stay the same or decrease.

Null hypothesis
There will be no significant difference in the CAMI scores for participants who report an increase in attitude importance after the theoretical campaign compared with participants who did not report an increase.

2.8.2 Subsidiary Hypothesis:
The three main sources of attitude importance for mental health discrimination will be social identification, self-interest and value-relevance. Participants will state no other explanations of attitude importance frequently enough to be recognised as a separate category.
3. METHOD

3.1 Participants:
One hundred and ninety-two conscripted soldiers from the Bermuda regiment participated in the study. Six conscripts did not participate, either because they declined (n=4) or they had literacy problems (n=2). It was anticipated that 250 participants would be available to participate in the research. However, there were fewer participants than expected. The Commander of the regiment explained that it was not usual for a lower turn out on the first week back after the summer break. Unfortunately, because of various training events organised by the regiment, this was the only week the data could be collected. A decision was made to divide the participants between the two experimental groups, thus reducing the overall number of participants in the control group. The total number of participants in each group was as follows: theoretical 76, information 69 and control 47.

Each year in Bermuda a random selection of males between the ages of 18 to 30 are conscripted into the regiment for a period of three years. The conscripts maintain their civilian employment, but they are required to attend the regiment on a weekly basis and to attend regular training events. Males who are pursuing further education are exempt from service while they are completing their education.

3.2 Materials:
Three five-minute audio campaigns were produced at a professional recording studio. The campaigns were recorded onto a compact disc. One campaign used theoretical formulations to guide the content; the second contained only educational information about mental illness and the third contained information about the harmful effects of cigarette smoking. The third campaign was used as a control.

The same introductory music and presenter was used in each campaign. The presenter was chosen because he was a physician (position of authority) and a well-known actor in Bermuda. A description of the content of each campaign is outlined below. A transcript of the campaigns can be found in appendix 2.
3.2.1 Theoretical campaign

The arguments in the campaign were based on the four identified determinants of mental health discrimination, namely: attribution of responsibility, poor prognosis, disruption of social interaction and dangerousness. Following the introductory music, the campaign started with the presenter manipulating the 'self-interest' variable by presenting a behavioural scenario in the second person, present tense (e.g., “you go to see a psychiatrist”). The presenter asked the participants to imagine a scenario where they were having difficulties coping with financial problems and some negative life events. The scenario described the development of a range of easily imagined mental health symptoms (e.g., insomnia, sadness, tearfulness, irritability, lethargy, paranoia). Following the advice of his family doctor, the subject in the scenario seeks help from a psychiatrist. He finds talking to the psychiatrist helpful and relaxing.

Incorporating the results of recent research which suggested that people considered the arguments more when they were of the type that they did not expect (i.e., violation of expectancies), an element of surprise was introduced. The presenter quickened the pace and increased the volume when he announced that the subject was now “a mental patient” whom we should assume was dangerous; who should not be allowed to hold a responsible job; who should be isolated from the community; who should not be allowed to live in an ordinary house on an ordinary street; who should have to go out of town to receive help and whom the community should now treat like a child.

Continuing to manipulate the self-interest variable the presenter challenged the other three main determinants of discrimination by questioning how logical it was to assume that the subject would never recover (poor prognosis), or would no longer know how to behave in social situations (disruption of social interaction). The presenter asked the audience to consider whether any of this made sense and whether believing that this can only happen to other people was logical (attribution of responsibility).

The last part of the campaign confronted the issue of dangerousness in more detail by discussing the link between mental disorder and violence. Research data was presented showing that this link existed, but it was modest and that only people who were
actively experiencing psychotic symptoms were at a slightly higher risk of violent behaviour. The audience was made aware that when people were actively experiencing psychotic symptoms, the symptoms were not usually covert, but were typically quite obvious (e.g., bizarre speech, talking to self in public). To increase the audiences' self-efficacy, they were given information on how to deal with a person whose behaviour was frightening. The presenter stressed that behaving in a non-threatening and calm manner was important because people experiencing psychotic symptoms were often scared. It was suggested that if they were concerned they could contact the mental health services.

The messages in the campaign were kept as simple as possible and repeated three times. The presenters did not suggest how the audience should think or feel. No information was presented about the aetiology or prevalence of mental illness.

### 3.2.2 Educational campaign

The main focus of this campaign was on the dissemination of information about mental illness. The presenters outlined the main categories of mental illness along with prevalence rates, an overview of the aetiology of mental illness, treatment options and prognosis. The issue of dangerousness was addressed by informing the audience that most people diagnosed with mental health problems were not dangerous.

### 3.2.3 Control campaign

The campaign outlined the numerous health risks associated with smoking and suggested strategies to help someone break the habit. The information in the campaign was based on that found on an Internet site (http://www.webmd.com, January, 1999).

### 3.3 Measures:

#### 3.3.1 Attitudes towards mental illness

The decisions about data collection procedures were based on the outcome of a review that explored this area. The review can be found in the Academic dossier. It was decided to collect the data using both open and closed-ended questions in a self-
response format. A questionnaire with closed-ended questions was used to measure attitudes towards people with a mental illness. This format was chosen because it reduces the social desirability factor and allows for large amounts of data to be analysed relatively quickly (Brockman, D’Arcy and Edmonds, 1979). No previous research has examined the origins of attitude importance and mental health discrimination. Therefore to explore the participants’ explanations of why they considered mental health discrimination to be important or unimportant, open-ended questions were used because they allowed for the identification of other potential causes of attitude importance.

A modified version of the Community Attitudes to the Mentally Ill (CAMI) Inventory was used to measure attitudes towards mental illness. Taylor and Dear (1981) developed the CAMI for the ‘systematic description of community attitudes toward the mentally ill’ (Taylor and Dear, 1981, p.226). Previous attitude scales had been constructed and applied primarily in a professional context. To develop the CAMI, Taylor and Dear adapted two existing scales, the Opinion About Mental Illness Scale (Cohen and Struening, 1962) and Community Mental Health Ideology Scale (Baker and Schulberg, 1967). The Opinion About Mental Illness Scale (OMI) contains five scales that Cohen and Struening empirically derived (via factor analysis) from a pool of one hundred opinion statements. They labeled the five scales, authoritarianism, benevolence, social restrictiveness, mental hygiene ideology and interpersonal etiology. The Community Mental Health Ideology Scale (CMHI) was designed specifically to measure an individual’s commitment to a community mental health ideology. It contains thirty-eight opinion statements expressing different aspects of the basic ideology.

Taylor and Dear (1981) wanted to construct an instrument that could discriminate between those individuals who accept and those individuals who reject the mentally ill in their community. To this end they identified three of the OMI scales (authoritarianism, benevolence, and social restrictiveness) and the CMHI as the most useful scales for their purpose. These four scales had been developed with
professionals as the potential respondents. The construction of the CAMI therefore involved developing revised versions of the original scales to emphasise community, rather than professional attitudes towards people with mental health problems.

The items pooled by Taylor and Dear (1981) for pretest purposes comprised 40 statements, ten statements from each of the four scales. The themes expressed in the new scales are as follows. The authoritarianism scale reflects a view of the mentally ill as an inferior class requiring coercive handling. Sentiments embedded in the benevolence scale, are based on a sympathetic view of patients. The social restrictiveness statements reflect themes such as the dangerousness of people with mental health problems and views them as a threat to society. For the CMHI scale, statements express the therapeutic value of the community and stress that the best therapy for people with mental health problems is to be part of a normal community. The response format for each statement was the standard Likert five-point scale: (strongly agree, agree, neutral, disagree, disagree strongly).

To assess the reliability and validity of the statements and scales, Taylor and Dear (1981) conducted two separate pretests on a total of 375 undergraduates. The alpha coefficients for all four scales were above .50, which they claimed was a modest level of reliability. They revised the scale and replaced those statements that made little contribution to their parent scale with statements expressing similar sentiments. They administered the revised scales to members of the public living in Toronto (n = 1,090). Three of the four scales (social restrictiveness, benevolence and community mental health ideology) had high levels of reliability (i.e., above .75). The coefficient for authoritarianism (α = .68) was lower, although still felt to be satisfactory.

To examine the external and predictive validity of the scales, Taylor and Dear (1981) analysed the relationship between the attitude scales and various measures of people's responses to mental health facilities. Their rationale for using this method was based on previous research (e.g., Rabkin, 1974) which had demonstrated that people's attitudes towards the mentally ill were a major influence on their reactions to mental health facilities.
Taylor and Dear (1981) measured reactions to mental health facilities in both attitudinal and behavioural terms. They asked all the Toronto respondents (n = 1,090) to rate the desirability of having a mental health facility in their neighbourhood. Ratings were on a nine-point scale ranging from “extremely desirable” to “extremely undesirable.” If the respondents gave an “undesirable” rating they asked them what, if any, action they would most likely take in opposition. They showed them a list of nine possible actions such as writing to a newspaper, contacting a politician or forming a protest group. Taylor and Dear (1981) reported significant relationships between all four of the attitude scales and the responses to the hypothetical mental health facilities. They concluded that their analysis had provided strong support for the validity and reliability of the scales and demonstrated their usefulness for studying attitudes towards the mentally ill. They acknowledged that it remained for future studies to establish the applicability of the CAMI scales beyond the Toronto situation.

A study by Brockington, Hall, Levings and Murphy (1993) was the first to test the applicability of the CAMI scales outside Toronto. They surveyed 1,987 people in the UK. Using a principal-component analysis they obtained three factors. The first factor accounted for 39 percent of the shared variance, and corresponded to the factor Taylor and Dear (1981) called ‘community mental health ideology’. Their second factor accounted for 37 percent of the shared variance, and was highly loaded on statements such as “A woman would be foolish to marry a man who has suffered from a mental illness” (+0.68), “Anyone with a history of mental health problems should be excluded from public office” (+0.57). They reported that this factor had some affinity with the factor Taylor and Dear labeled ‘authoritarianism’. Their third factor accounted for 23 percent of the shared variance and corresponded with the factor Taylor and Dear called ‘benevolence’. Taylor and Dear’s fourth factor ‘social restrictiveness’ did not emerge as a separate factor in the Brockington et. al., study. Brockington et al., reported that overall there was ‘an impressive similarity in the results of the factor analysis conducted by Taylor and Dear and our own results’ (p.98).
In 1996 a study by Wolff, Pathare, Craig and Leff was the first to use the CAMI scales as indices of attitude change. They surveyed 215 people in London UK, before and after a public mental health educational campaign. They carried out factor analysis on the CAMI and the results showed that three factors could adequately represent the data. The three factors were extracted by calculating the mean value of the scores for items with loadings of greater than or equal to 0.05 on the respective factors. These derived scales consisting of twenty questions represented a valid short form of the CAMI (personal communication with Dr. Tom Craig in April 1998 verified that this was the correct interpretation of the data).

Wolff et al. (1996) identified the themes underlying the three extracted factors as follows: In factor one, the main theme was fear of the mentally ill and exclusion from residential areas. It loaded heavily on items such as: “It is frightening to think of people with mental health problems living in residential neighbourhoods.” They labeled this factor ‘fear and exclusion’. In factor two, the main underlying theme was to do with social control. It loaded heavily on items such as “Mental patients need the same kind of control and discipline as a young child.” They labeled this factor ‘social control’. In factor three, the dominant theme was to do with benevolence towards the mentally ill. This factor loaded heavily on items such as: “We have a responsibility to provide the best possible care for the mentally ill.” They labeled this factor “goodwill.”

To assess the predictive validity of the short-form CAMI scales, Wolff et al. (1996) asked participants to complete a ten-item self-report inventory about their behavioural intentions towards people with a mental illness. They constructed the inventory especially for the study and included items such as “Would you be willing to work with somebody with a mental illness?” “If somebody had been a former psychiatric patient, would you have them as a friend?” All three factors on the CAMI had some predictive validity of the respondents’ own evaluation of how they would respond to people with mental health problems.
Wolff et al. (1996) reported that their factors (*fear and exclusion*, *social control* and *goodwill*) broadly corresponded with the factors proposed by Taylor and Dear (1981) and Brockington et al. (1993). They claimed that 'although attitudes derived from the CAMI are rather imprecise and encompass broad concepts they have a good degree of stability over time and place' (Wolff et al., p.188, 1996). They suggested that understanding that people may hold a conflicting range of attitudes at the same time was important. To stress this point they quoted Somerset Maugham (1938) who wrote: 'it has amazed me that the most incongruous traits should exist in the same person and for all that yield a plausible harmony' (cited by Wolff et al., p.188, 1996).

a) Reasons for choosing the CAMI
The CAMI was chosen for several reasons. First, as outlined in the previous section Taylor and Dear (1981) and Wolff, Pathare, Craig and Leff (1996) have demonstrated that the CAMI is a reliable and valid instrument. Secondly, the sub-scales in the CAMI permit a detailed analysis of the attitudinal impact of the research campaigns. For example, the “fear and exclusion” sub-scale reflects a view of the mentally ill as dangerous people that pose a threat to society and need to be excluded from residential areas. This scale can be used to evaluate how effectively the issue of dangerousness was tackled in the campaign. Other attitude inventories such as the Mental Health Attitude Questionnaire (Chou, Mak, Chung and Ho, 1996) do not include sub-scales. The CAMI is also one of the few reliable and valid instruments that has been used as an index of attitude change. In 1996, Wolff, Pathare, Craig and Leff used the CAMI to survey people before and after a public mental health education campaign.

Another reason for choosing the CAMI was that a short form of the inventory was available which consisted of 20-items. The shorter version was developed and shown to be reliable and valid by Wolff et al. (1996). In the current research project the short form of the CAMI was used because it was felt that administering the full 40-item inventory would be excessively burdensome on the participants because the CAMI made up only half of the items included in the overall questionnaire (other items related
to self-interest, attitude importance, satisfaction with the campaign and demographics). Participants would also be asked to complete the questionnaire three times. It was considered that any benefits that may have resulted from using the 40-item version may have been outweighed by the possible ‘boredom effect’ if participants were asked to complete an excessively long questionnaire three times. Krosnick (1991) argued that long questionnaires may induce “satisficing,” a response strategy that involves investing little thought to provide answers that merely appear reasonable, instead of thinking carefully to generate optimal answers.

A Social Distance Scale was considered for the current research project. These questionnaires are frequently used to measure attitudes towards people with mental health problems (Bogardus, 1933, Socall and Holtgraves, 1992; Link, Cullen, Frank and Wozniak, 1987). They consist of approximately seven items about the degree of social proximity participants would be willing to have with a mentally ill person. The items mention different situations, such as working with the person, having the person as a neighbour, marrying the person. The participant is asked whether he or she would be willing to do each of these things. In a review of 22 studies, all of which employed social distance scales, Brockman, D’Arcy and Edmonds (1979) concluded that an understanding of the affective and cognitive dimensions involved in the public reaction to the mentally ill requires more than the seven social distance items used by many researchers. To this end, it was decided that the results of the CAMI would allow for a more thorough understanding of the attitudinal effects of the campaigns.

3.3.2 Self-interest and attitude importance measures
The current research is interested in the subject’s beliefs about why they care about mental health discrimination as well as their beliefs about why they do not care about this issue. The measures and coding scheme used in this study were taken from the study by Boninger et. al., (1995). The participants were asked to rate how important the issue of mental health discrimination was to them personally, how much they personally cared about the issue and how much the issue meant to them. The three questions were answered on five-point scale (i.e., extremely important, very important,
somewhat important, not too important and not at all important). The self-interest index asked participants how much the issue of mental health discrimination affected them personally, how much they felt that they had an interest at stake in it, and how easy it was for them to think of ways the issue might affect them. The three questions were also answered on a five-point scale. As a manipulation check, the participants’ perception of the likelihood of ever having a mental health problem was measured on a five-point scale.

Boninger et. al., (1995) confirmed that the questions about attitude importance and self-interest tapped the intended construct by conducting a confirmatory factor analysis. They also assessed the reliability of the measures by computing indexes of attitude importance and self-interest (Cronbach, 1951). For the issues of abortion, capital punishment and traffic safety the respective indexes were as follows: 0.93, 0.92 and 0.94 for attitude importance and 0.89, 0.89, 0.79 for self-interest.

The participants were also asked to write down all the thoughts, beliefs, feelings and ideas that they considered in deciding how important the issue of mental health discrimination was to them. If references to self-interest were absent from the explanations provided by the participants, serious doubt would be cast on some of the hypotheses.

a) Coding scheme
Statements were coded as relating to self-interest if they referred to being directly affected or unaffected by the issue, if they referred to personal goals that were or were not tied to the issue, or if they referred to having or not having had direct behavioural experiences with the issue (e.g., having had a mental health problem). Statements were separated into those that affirmed the presence of self-interest concerns and those that denied the presence of self-interest concerns (e.g., “Mental health issues have never really affected me”).
Statements were coded as related to social identification if they referred to social groups, family, or close friends having interests at stake or not at stake, or as being affected or unaffected by the issue. Statements were also coded as related to social identification if they referred to the extent to which social groups, family or close friends cared about the issue. Statements were again categorised as those that affirmed social identification concerns (e.g., “I have a friend who has a mental illness”), and those that denied them.

Statements were coded as value relevant if they referred to the extent to which values (e.g., freedom or equality), religious values, or general political values were related to the issue. These statements were separated into those that affirmed value relevance (e.g., “I believe that this issue is important because all people should be allowed to live free from discrimination”) and those that denied value relevance (e.g., “I am not concerned about this issue because it doesn’t really seem to affect human rights”).

Additional categories were created to account for statements that went beyond these three core categories. For example, statements describing participants’ knowledge about an issue or information relevant to the issue (e.g., time spent reading about mental health information).

b) Coding procedure

Two judges were asked to assign each statement to a coding category. To resolve the discrepancies between the judges the discrepant statements were averaged and placed in each category. The correlation between the two judges was calculated. The judges were a psychologist and a physician.

### 3.3.3 Demographics

The following demographic questions were asked:

i. Age, grouped by decade.

ii. Marital status: single, married or cohabiting, widowed, separated or divorced.
iii. Occupation of head of household: (A) higher managerial, administrative or professional, (B) intermediate managerial etc., (C1) supervisors, clerical or junior managerial etc., (C2) skilled manual workers, (D) semiskilled or unskilled manual workers (E) state pensioners and those at the lower level of subsistence.

iv. Occupation of the respondent. As there are difficulties in defining the term 'head of the household' the questionnaire asked for information on both the occupational status of the respondent and that of the stated 'head of household'. The social class of either the respondent or the head of the household - whichever was higher - was defined as the social class.

v. Ethnic origin: black Bermudian, Portuguese Bermudian, white Bermudian. For other categories participants were asked to specify their ethnic origin.

vi. Number of children in the household under the age of sixteen.

vii. Questions about the participants’ experience of mental illness: this question was broken down into personal experience; experience through a family member or a friend, and no experience at all.

3.4 Procedure:

Approval for the research was obtained from the Bermuda Hospitals Board’s ethics committee (see appendix 1). A meeting was held with the Commander of the regiment and the regiment physician. It was agreed that all three companies in the regiment would be asked to participate in the research and that the data would be collected over three evenings. The participants were randomly assigned to three groups (theoretical, information, control) and listened to one of the following campaigns:

- A campaign derived from formal theoretical conceptions.
- An educational campaign that contained information about mental illness.
- A campaign outlining the dangers associated with smoking (control group).

To ensure that the participants were randomly assigned to the groups a set of green, yellow and red cards were vigorously shuffled and one card was given to each subject.
The colour of the card identified which group they had been assigned (theoretical, information or control). Each group was then taken into a hall to listen to a specific campaign. Each subject was given two appended questionnaires and two adhesive labels that had a letter identifying which group they had been assigned to and a number. They were instructed to put one label on the back of their questionnaires and to put the other label somewhere safe to be retrieved in six weeks. They were also asked to write their name on the coloured card. They completed the first questionnaire before they had listened to the campaign. The second questionnaire was completed immediately after they heard the campaign. The questionnaires and the cards were then collected in separate boxes.

To assess the longer-term impact of the campaigns, the participants completed the questionnaires again six weeks later. During the follow-up study, participants were divided into their original three groups by roll call. This was possible because they had written their names on the coloured cards. They were asked to stick the second label that they received at the initial data gathering on the back of their questionnaire. This procedure allowed for the participants' questionnaires in the follow-up study to be paired with their original questionnaires, while maintaining confidentiality. In addition, the questionnaires for each group were printed on different coloured paper to ensure it would be possible to identify which campaign a subject had heard, even if they had lost or forgotten to bring their label to the follow-up study.

The questionnaire administered at the follow-up study was the same as the original questionnaire except: (1) It did not require the participants to write down the thoughts and feelings they had considered in deciding how important the issue of mental health discrimination was to them. (2) It did not ask the participants for their views on the campaigns. (3) It included an additional question that asked what they remembered most about the campaign they heard six weeks earlier. At the end of the follow-up study participants were informed about the purpose the research. The initial data was collected over three evenings and it took approximately 40-minutes per group. The follow-up study took approximately 15-minutes per group.
3.5 Statistical Analysis

Analysis of differences between personal characteristics among the three groups was carried out using the $\chi^2$ test. Tests that related attitudes to personal characteristics were based on a difference of means test (t-test) where the characteristic had two categories (e.g., familiarity with mental illness), and a one-way ANOVA (with the Tukey correction procedure) where there were more than two categories (e.g., occupational status). Analysis of differences between the statements categorised as related to the hypothesised origins of attitude importance (e.g., self-interest, value-relevance and social identification statements) was carried out using the $\chi^2$ test. The relationship between attitude importance and self-interest was tested by parametric correlation (Pearson’s $r$).

A mixed factorial ANOVA with a between groups factor (the three groups) and a repeated measures factor (attitude scores before and after the campaigns) was used to determine attitude change. Bonferroni’s correction procedure was used to control for Type 1 error. Finally, analysis of differences between categorical variables between the original and the follow-up groups was carried out using the $\chi^2$ test (using Fisher’s exact test where necessary).
4. RESULTS

4.1 Participants

The data from eight participants was discarded because they did not fully complete the CAMI scales. The majority of the participants who provided incomplete data were from the information group. The data from 184 participants was used in the analysis. The total number in each group was as follows: theoretical 75, information 63 and control 46.

Seventy percent (n = 129) of participants were between the ages of eighteen to twenty-four. Twenty-two percent (n = 41) were between the ages of twenty-five to thirty-four, only 2 percent (n = 4) were over the age of thirty-five. Five percent (n = 10) did not state their age. With regards to ethnicity, 55 percent (n = 102) were black Bermudians, 20 percent (n = 37) were white Bermudians, 13 percent were Portuguese Bermudians (n = 23) and 8 percent (n = 14) were from other ethnic groups (including mixed race, Mexican, Spanish and Asian). Four percent (n = 8) did not state their ethnicity. This ethnic mix is similar to the 1996 Bermuda population census data.

Eighty percent of the participants (n = 148) were single, 13 percent (n = 23) were married/cohabiting and 1 percent (n = 2) were separated. None of the participants were divorced or widowed. Six percent (n = 11) did not state their marital status. Thirty-two percent (n = 58) had children under the age of 16 living in their household, 64% (n = 118) knew someone with a mental illness and 9 percent (n = 16) claimed they had suffered from a mental illness. Three percent did not answer these questions.

The occupational status of the participants is outlined in Table 1. Just under 50 percent (n = 86) of participants were skilled or semiskilled manual workers. Eighteen percent (n = 34) were from the higher occupational classes. Ten percent (n = 19) of participants did not answer this question. Unfortunately, comparing the occupational status of the participants with the 1996 population census data was not possible because the Bermudian census data only provides statistics on broad areas of employment (e.g., agriculture, tourism, business).
Table 1
Occupational Status for all Participants

<table>
<thead>
<tr>
<th>Occupational Status</th>
<th>Percent</th>
<th>Participants (n=)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher managerial or professional</td>
<td>9</td>
<td>17</td>
</tr>
<tr>
<td>Intermediate managerial etc.,</td>
<td>9</td>
<td>17</td>
</tr>
<tr>
<td>Supervisors, clerical or junior managerial etc.,</td>
<td>23</td>
<td>42</td>
</tr>
<tr>
<td>Skilled manual workers</td>
<td>18</td>
<td>33</td>
</tr>
<tr>
<td>Semiskilled or unskilled manual workers</td>
<td>29</td>
<td>53</td>
</tr>
<tr>
<td>Lowest level of subsistence</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>No response</td>
<td>10</td>
<td>19</td>
</tr>
</tbody>
</table>

4.2 Reliability of the inventory

Coefficient alphas were computed to obtain internal consistency estimates of reliability for the CAMI inventory and on the three scales hypothesised to assess fear and exclusion, social control and goodwill. The coefficient alpha for the overall CAMI scale was .84. For the fear and exclusion, social control and goodwill scales the alphas coefficients were .85, .62 and .54 respectively. The alpha coefficients for all the scales were above .50, which can be regarded as a satisfactory (although modest) level of reliability (Taylor and Dear, 1981). However, an inspection of the statement-scale correlations showed that item twenty ("The mentally ill deserve our sympathy") made very little contribution to the inventory or its parent scale (goodwill). This statement is somewhat ambiguous as it could infer a sympathetic view, or it could suggest an overly paternalistic view towards people with a mental illness. The item was therefore eliminated from the scale and from all future analysis. The coefficient alphas were again computed for the new revised scales. The alpha for the revised inventory was .85. For the fear and exclusion, social control and goodwill scales the alphas were .85, .62 and .65 respectively. Brockington et al. (1993) and Wolff et al. (1996) did not state alpha coefficients so comparisons were not possible.
Coefficient alphas were also conducted on the attitude importance and self-interest measures. Questions assessing attitude importance asked participants how important the issue of mental health discrimination was to them personally; how much they personally cared about the issue and how much the issue meant to them. Questions assessing self-interest asked participants how much they had at stake in the issue, how much the issue affected them personally and how easy it was for them to think of ways the issue might affect them. The coefficient alphas were .85 for attitude importance and .70 for self interest.

4.3 Comparison of demographics variables across the three groups

Only 1 percent (n = 2) of participants were separated, so the single and separated categories were combined into one single group. Only 2 percent (n = 4) of participants were over the age of thirty-five. The age groups were therefore combined into the following two categories: 24 or below and 25 or above. These categories will be used for the remainder of the analyses.

Chi-square tests were conducted to assess whether there were significant differences in the sociodemographic variables among the three groups. The number of participants in each category and the results of these tests are presented in Table 2. The chi-square test, which evaluates differences between proportions, was significant for the number of children under the age of 16 living in the household ($\chi^2 (2, N = 178) = 8.51, p = 0.01$). Follow-up pairwise comparisons were conducted to evaluate the differences among these proportions. The Bonferroni criterion was used to control for type 1 error across all three comparisons. The only significant pairwise difference was between the participants in the control and the theoretical groups ($\chi^2 (1, N = 118) = 8.44, p < 0.01$). The results indicate that the proportion of participants with children under the age of 16 living in the household was much greater for participants in the theoretical group than for participants in the control group.

The results of the chi-square tests conducted to assess whether there were significant differences in the other sociodemographic variables among the three groups were not significant. Overall, these results indicate that except for participants in the theoretical
group having significantly more children living in the household when compared with participants in the control group, there was no other significant difference in the sociodemographic variables across the three groups.

Table 2
Participants characteristics across the three groups

<table>
<thead>
<tr>
<th>Sociodemographic variables</th>
<th>Theoretical Group</th>
<th>Information Group</th>
<th>Control</th>
<th>Results Chi-square tests (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below 24</td>
<td>49 (68)</td>
<td>43 (75)</td>
<td>37 (82)</td>
<td>$\chi^2 (2, N = 174) = 2.97, p = 0.23 (NS)$</td>
</tr>
<tr>
<td>Above 25</td>
<td>23 (32)</td>
<td>14 (25)</td>
<td>8 (18)</td>
<td></td>
</tr>
<tr>
<td>Ethnicity:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black Bermudian</td>
<td>43 (60)</td>
<td>36 (61)</td>
<td>23 (51)</td>
<td>$\chi^2 (4, N = 176) = 2.4, p = 0.71 (NS)$</td>
</tr>
<tr>
<td>White Bermudian</td>
<td>14 (19)</td>
<td>10 (17)</td>
<td>13 (29)</td>
<td></td>
</tr>
<tr>
<td>Portuguese and others</td>
<td>15 (21)</td>
<td>13 (22)</td>
<td>7 (20)</td>
<td></td>
</tr>
<tr>
<td>Children:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>30 (41)</td>
<td>21 (35)</td>
<td>7 (16)</td>
<td>$\chi^2 (2, N = 178) = 8.51, p = 0.01$</td>
</tr>
<tr>
<td>No</td>
<td>43 (59)</td>
<td>39 (65)</td>
<td>38 (84)</td>
<td></td>
</tr>
<tr>
<td>Marital Status:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single or separated</td>
<td>61 (86)</td>
<td>50 (88)</td>
<td>39 (87)</td>
<td>$\chi^2 (2, N = 173) = 0.09, p = 0.96 (NS)$</td>
</tr>
<tr>
<td>Married/cohabitating</td>
<td>10 (14)</td>
<td>7 (12)</td>
<td>6 (13)</td>
<td></td>
</tr>
<tr>
<td>Occupational Class:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A or B</td>
<td>12 (19)</td>
<td>11 (19)</td>
<td>12 (27)</td>
<td>$\chi^2 (6, N = 165) = 5.45, p = 0.49 (NS)$</td>
</tr>
<tr>
<td>CI</td>
<td>14 (22)</td>
<td>15 (26)</td>
<td>12 (27)</td>
<td></td>
</tr>
<tr>
<td>C2</td>
<td>15 (23)</td>
<td>14 (25)</td>
<td>4 (9)</td>
<td></td>
</tr>
<tr>
<td>D or E</td>
<td>23 (36)</td>
<td>17 (30)</td>
<td>16 (36)</td>
<td></td>
</tr>
<tr>
<td>Know someone with a mental illness:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>51 (71)</td>
<td>37 (61)</td>
<td>30 (67)</td>
<td>$\chi^2 (2, N = 178) = .154, p = 0.46 (NS)$</td>
</tr>
<tr>
<td>No</td>
<td>21 (29)</td>
<td>24 (39)</td>
<td>15 (33)</td>
<td></td>
</tr>
<tr>
<td>Suffered with a mental illness:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>6 (8)</td>
<td>5 (8)</td>
<td>5 (11)</td>
<td>$\chi^2 (2, N = 179) = 0.35, p = 0.84 (NS)$</td>
</tr>
<tr>
<td>No</td>
<td>67 (92)</td>
<td>56 (92)</td>
<td>40 (89)</td>
<td></td>
</tr>
</tbody>
</table>

Note: The numbers in parentheses represent percentages.
4.4 Baseline attitudes scores across the three groups and attitude change
Boxplots were used to explore the pre and post data. The boxplots showed some extreme scores across the groups. The elimination of these extreme scores resulted in no significant difference in the pattern of results. A decision was therefore made not to eliminate them from the analysis. In this research it is the within-subject factors that are of principal interest. The means and standard deviations for scores on the four CAMI scales before and after each campaigns are reported in Table 3.

4.4.1 Overall CAMI Scores
To compare the scores on the overall CAMI scale before and after the campaigns, a mixed factorial ANOVA with a between-groups factor (theoretical, information and control) and a within-subjects factor (CAMI scores before and after the campaigns) was conducted. The ANOVA was significant for the within-subjects effect (F (1, 181) = 20.51; p < 0.01, multivariate $\eta^2 = 0.10$). It was not significant for the group effect (F (2, 181) = 1.85; p = 0.16), and it was significant for the interaction effect between the scores and the groups (F (2, 181) = 7.14; p = 0.01). The results indicate that there were no significant difference in the overall baseline CAMI scores for the three groups.

The primary purpose of the study was to determine which type of campaign was the most effective. Follow-up analyses to the main within-subjects effect examined this issue. The follow-up tests consisted of all pairwise comparisons among the three groups. The Holm’s Bonferroni procedure was used to control for Type 1 error across the pairwise comparisons. Each comparison was tested at the 0.017 level. The results of these tests are reported in Table 3. Participants in the theoretical group reported a significant decrease in negative attitudes towards people with a mental illness after they had heard the campaign. The eta square ($\eta^2$) was 0.3, indicating a small effect. There was no significant difference between the pre and post campaign attitude scores for either the information or the control groups. These results support the central research hypothesis that a campaign derived from formal psychological theory would be more effective at reducing negative attitudes towards the mentally ill than an information-based or a control campaign.
4.4.2 Fear and exclusion scale

To evaluate the effects of the three campaigns on the fear and exclusion scale a mixed factorial ANOVA with a between-groups factor (theoretical, information and control) and a within-subjects factor (fear and exclusion scores before and after the campaigns) was conducted. The ANOVA was significant for the within-subjects effect ($F (1, 181) = 31.80; p < 0.01$, multivariate $\eta^2 = 0.15$), the group effect ($F (2, 181) = 3.42; p = 0.04$), and the interaction effect between the scores and the groups ($F (2, 181) = 7.40; p = 0.01$).

The results of the ANOVA indicate a significance within-subjects effect for the fear and exclusion scale before and after the campaigns. Follow-up tests were conducted to evaluate pairwise differences among the means. The Holm’s Bonferroni procedure was used to control for Type 1 error across the pairwise comparisons. Each comparison was tested at the 0.017 level. The results indicate that participants in the theoretical group reported significantly less negative attitudes on the fear and exclusion scale after they had listened to the campaign. The eta square ($\eta^2$) was 0.3, indicating a small effect. There was no significant difference on this scale for the control or information groups. The results suggest that participants in the theoretical group reported less fear and more community oriented attitudes after they had heard the campaign. These results support the central research hypothesis.

The results of the ANOVA also indicate a significant difference among the three groups. Follow-up tests were conducted to evaluate pairwise differences among the means. The Levene’s test of equality of error variances was nonsignificant for the data before ($F (2, 181) = 1.03, p = 0.36$) and after the campaigns ($F (2, 181) = 0.781, p = 0.46$), so the Tukey HSD procedure that assumes equal variances was conducted. The Tukey procedure was used to control for type 1 error across the pairwise comparisons. The results of this analysis indicate a significant difference in the baseline attitude scores between the theoretical and information groups. The results suggest that the information group scored significantly lower on the fear and exclusion scale ($M = 28.81, SD = 6.27$) than the theoretical group ($M = 32.52, SD = 7.40$). There was
no significant difference between the control and information groups, or the control and theoretical groups.

**4.4.3 Social control scale**

A mixed factorial ANOVA with a between-groups factor (theoretical, information and control) and a within-subjects factor (social control scores before and after the campaigns) was conducted to explore the effects of the campaigns on the social control scale. The ANOVA was significant for the within-subjects effect ($F (1, 181) = 3.83; p = 0.05$, multivariate $\eta^2 = 0.021$). It was not significant for the group effect ($F (2, 181) = 0.42; p = 0.67$) or the interaction effect ($F (2, 181) = 0.25; p = 0.25$). The results indicate that there was no significant difference in the baseline social control scores for the three groups.

The ANOVA results indicate a significance difference in the social control scores before and after the campaigns. The follow-up tests consisted of all pairwise comparisons among the three groups. The Holm’s Bonferroni procedure was used to control for Type 1 error. Participants in the theoretical group reported significantly fewer socially restrictive attitudes after they had heard the theoretical campaign. The eta square ($\eta^2$) was $0.1$, indicating a small effect. There was no significant change in the scores on the social control scale for either the information or the control groups. These results support the central hypothesis that the theoretical campaign would be more effective at reducing negative attitudes than the information-based campaign.

**4.4.4 Goodwill scale**

The results of a mixed factorial ANOVA conducted to explore the effects of the campaigns on the goodwill scale was not significant for any of the factors.

**4.4.5 Summary of attitude change**

The results indicate that with the exception of the information group having significantly more positive baseline attitudes than the theoretical group on the fear and exclusion scale, there were no other significant differences in baseline attitudes among
the three groups. The ANOVA results for the within-subjects factors were significant for the overall CAMI scale, the fear and exclusion and social control scales. The follow-up tests indicate that the participants in the theoretical group had a significant decrease in negative attitudes on those scales after hearing the campaign. The information and control groups did not show a significant change on any of the CAMI scales. These results support the main research hypothesis that a campaign derived from formal psychological theories would be more effective at decreasing negative attitudes than an information-based campaign. There was no significant change on the goodwill scale for any of the groups. The data for the pre and post scores are reported in Table 3 and graphically presented in Figures 1, 2 and 3.

Table 3
CAMI scores before and after the campaigns

<table>
<thead>
<tr>
<th>Groups</th>
<th>Overall CAMI</th>
<th>Exclusion</th>
<th>Control</th>
<th>Goodwill</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre Post</td>
<td>Pre Post</td>
<td>Pre Post</td>
<td>Pre Post</td>
</tr>
<tr>
<td>Theoretical</td>
<td>52.96 49.09</td>
<td>32.52 29.40</td>
<td>15.85 15.13</td>
<td>4.59 4.56</td>
</tr>
<tr>
<td></td>
<td>10.91 11.78</td>
<td>7.40 7.86</td>
<td>4.00 4.14</td>
<td>1.64 1.59</td>
</tr>
<tr>
<td></td>
<td>t (74) = 5.86,</td>
<td>t (74) = 6.14,</td>
<td>t (74) = 2.85,</td>
<td>t (74) = 0.19,</td>
</tr>
<tr>
<td></td>
<td>p = &lt; 0.01*</td>
<td>p = &lt; 0.01*</td>
<td>p = &lt; 0.01*</td>
<td>p = 0.85</td>
</tr>
<tr>
<td>Information</td>
<td>49.05 47.83</td>
<td>28.81 27.80</td>
<td>16.03 15.87</td>
<td>4.21 4.16</td>
</tr>
<tr>
<td></td>
<td>8.26 8.43</td>
<td>6.27 6.47</td>
<td>3.10 3.28</td>
<td>1.28 1.11</td>
</tr>
<tr>
<td></td>
<td>t (62) = 1.76,</td>
<td>t (62) = 2.10,</td>
<td>t (62) = 0.51,</td>
<td>t (62) = 0.38,</td>
</tr>
<tr>
<td></td>
<td>p = 0.08</td>
<td>p = 0.04</td>
<td>p = 0.61</td>
<td>p = 0.71</td>
</tr>
<tr>
<td>Control</td>
<td>51.83 51.41</td>
<td>31.54 30.78</td>
<td>16.07 15.93</td>
<td>4.22 4.70</td>
</tr>
<tr>
<td></td>
<td>9.59 9.32</td>
<td>7.20 6.42</td>
<td>3.59 3.78</td>
<td>1.60 1.44</td>
</tr>
<tr>
<td></td>
<td>t (45) = 0.61,</td>
<td>t (45) = 1.89,</td>
<td>t (45) = 0.41,</td>
<td>t (45) = -2.69,</td>
</tr>
<tr>
<td></td>
<td>p = 0.54</td>
<td>p = 0.07</td>
<td>p = 0.68</td>
<td>p = 0.02</td>
</tr>
</tbody>
</table>

Note: The Bonferroni t-tests must be significant beyond the 0.017 level to be deemed significant.* Significant < 0.01 level.
Figure 1
Scores on the overall CAMI scale before and after the campaigns

Figure 2
Scores on the fear and exclusion scale before and after the campaigns

Figure 3
Scores on the social control scale before and after the campaigns
4.5 Perceived susceptibility, attitude importance and self-interest

4.5.1 Relationship between self-interest and perceived susceptibility

An independent t test was conducted to evaluate the relationship between self-interest and perceived susceptibility to mental illness. The test was significant, t (83) = 2.56, p = 0.01, the effect size ($\eta^2 = 0.07$) was medium. This result supports the third hypothesis that participants who reported it was likely that they may develop a mental health problem would have higher scores on the self-interest index compared with participants who reported that it was unlikely that they would develop a mental illness.

4.5.2 Relationship between attitude importance and self-interest

It was hypothesised that there would be a significant relationship between the attitude importance index and the self-interest index. The Pearson product-moment correlation coefficient was significant ($r (182) = .525, p< 0.01$, one-tailed). The strength of the relationship, as assessed by the effect size, was strong. Twenty-eight percent of the variance ($0.525^2$) of the self-interest variable was accounted for by its linear relationship with attitude importance. This finding supports the fourth research hypothesis that self-interest and attitude importance would be significantly correlated.

4.5.3 Relationship between attitude importance, self-interest and CAMI scores

The fifth hypothesis stated that higher levels of self-interest and attitude importance would be associated with more positive attitudes towards people with mental health problems. To test this hypothesis, CAMI scores were compared for participants who scored on or below the mean on the self-interest and attitude importance indices with participants who scored above the mean on these indices. The results of these tests are reported in Tables 4 and 5 and the data is displayed graphically in Figure 4.

Attitude importance and self-interest showed a consistent relationship with the CAMI scores. The observed direction of the relationship confirms the hypothesis that higher levels of self-interest and attitude importance are associated with more positive attitudes towards people with mental health problems.
### Table 4
Association between self-interest and the CAMI scores

<table>
<thead>
<tr>
<th>Self-interest scores</th>
<th>N</th>
<th>Means</th>
<th>Std Deviation</th>
<th>Effect Size</th>
<th>Independent t tests</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total CAMI</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below the mean</td>
<td>96</td>
<td>53.5</td>
<td>9.8</td>
<td>(\eta^2 = )</td>
<td>(t = (181) 3.15)</td>
</tr>
<tr>
<td>Above the mean</td>
<td>87</td>
<td>49.8</td>
<td>9.4</td>
<td>0.05</td>
<td>(p = &lt; 0.01^*)</td>
</tr>
<tr>
<td><strong>Fear and Exclusion</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below the mean</td>
<td>96</td>
<td>32.1</td>
<td>7.3</td>
<td>(\eta^2 = )</td>
<td>(t = (181) 2.23)</td>
</tr>
<tr>
<td>Above the mean</td>
<td>87</td>
<td>29.8</td>
<td>6.8</td>
<td>0.03</td>
<td>(p = 0.03^*)</td>
</tr>
<tr>
<td><strong>Social Control</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below the mean</td>
<td>96</td>
<td>16.7</td>
<td>3.5</td>
<td>(\eta^2 = )</td>
<td>(t = (181) 2.99)</td>
</tr>
<tr>
<td>Above the mean</td>
<td>87</td>
<td>15.2</td>
<td>3.6</td>
<td>0.05</td>
<td>(p = 0.01^*)</td>
</tr>
<tr>
<td><strong>Goodwill</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below the mean</td>
<td>96</td>
<td>4.7</td>
<td>1.4</td>
<td>(\eta^2 = )</td>
<td>(t = (181) 3.00)</td>
</tr>
<tr>
<td>Above the mean</td>
<td>87</td>
<td>4.0</td>
<td>1.6</td>
<td>0.05</td>
<td>(p = 0.04^*)</td>
</tr>
</tbody>
</table>

*Significant < 0.05 level

### Table 5
Association between attitude importance and the CAMI scores

<table>
<thead>
<tr>
<th>Attitude Importance</th>
<th>N</th>
<th>Means</th>
<th>Std. Deviation</th>
<th>Effect Size</th>
<th>Independent t tests</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total CAMI</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below the mean</td>
<td>111</td>
<td>53.7</td>
<td>9.7</td>
<td>(\eta^2 = )</td>
<td>(t = (182) 4.11,)</td>
</tr>
<tr>
<td>Above the mean</td>
<td>73</td>
<td>47.8</td>
<td>8.9</td>
<td>0.08</td>
<td>(p = &lt; 0.01^*)</td>
</tr>
<tr>
<td><strong>Fear and Exclusion</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below the mean</td>
<td>111</td>
<td>32.2</td>
<td>7.1</td>
<td>(\eta^2 = )</td>
<td>(t = (182) 2.81)</td>
</tr>
<tr>
<td>Above the mean</td>
<td>73</td>
<td>29.2</td>
<td>6.9</td>
<td>0.04</td>
<td>(p = .006^*)</td>
</tr>
<tr>
<td><strong>Social Control</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below the mean</td>
<td>111</td>
<td>16.7</td>
<td>3.4</td>
<td>(\eta^2 = )</td>
<td>(t = (182) 3.34,)</td>
</tr>
<tr>
<td>Above the mean</td>
<td>73</td>
<td>14.9</td>
<td>3.6</td>
<td>0.06</td>
<td>(p = &lt; 0.01^*)</td>
</tr>
<tr>
<td><strong>Goodwill</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below the mean</td>
<td>111</td>
<td>4.8</td>
<td>1.5</td>
<td>(\eta^2 = )</td>
<td>(t = (182) 5.26)</td>
</tr>
<tr>
<td>Above the mean</td>
<td>73</td>
<td>3.7</td>
<td>1.3</td>
<td>0.13</td>
<td>(p = &lt; 0.01^*)</td>
</tr>
</tbody>
</table>

*Significant at .05 level
4.5.4 Changes in self-interest and attitude importance scores after the campaigns

Hypotheses six and seven predicted that self-interest and attitude importance scores would increase for those participants who listened to the theoretical campaign. To compare the attitude importance scores before and after the campaigns, a mixed factorial ANOVA with a between-groups factor (theoretical, information and control) and a within-subjects factor (attitude importance scores before and after the campaigns) was conducted. The within-subjects effects were significant ($F(1, 181) = 7.05; p < 0.01$, multivariate $\eta^2 = .037$). The between-groups factor was not significant ($F(2, 181) = 1.86; p = 0.16$). The interaction between the groups and the importance scores was also not significant ($F(2, 181) = 1.12; p = 0.33$). The results indicate that there was no significant difference in the base-line attitude importance scores for the three groups.

Follow-up tests to the significant within-subjects factor were conducted to evaluate pairwise differences among the means. The Holm’s Bonferroni procedure was used to

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1 Higher scores on the CAMI scale represent more negative attitudes
control for Type 1 error across the pairwise comparisons. Each comparison was tested at the 0.017 level. The results indicate that the mean attitude importance score was significantly greater after the campaign, compared with the mean score before the campaign for participants in the theoretical group ($t(74) = 2.58, p = 0.01$). The eta squared effect size was small. There was no significant change in the mean attitude importance scores pre and post campaign for the participants in either the control group ($t(45) = 1.44, p = 0.16$) or the information group ($t(62) = 0.49, p = 0.63$).

These results support the hypotheses that the theoretical group would show a significant increase in the importance they attach to the issue of mental health discrimination after they have listened to the campaign, and that there would be no significant difference between the pre and post attitude importance scores for the control or information groups.

To test the seventh hypothesis that self-interest-based attitudes would increase for the theoretical group after they had listened to the campaign a mixed factorial ANOVA with a between-groups factor (theoretical, information and control) and a within-subjects factor (self-interest scores before and after the campaigns) was conducted. The result of the ANOVA was not significant for the within-subjects factor ($F(1, 180) = 2.98; p = 0.09$), the groups factor ($F(2, 180) = 0.13; p = 0.87$), or the interaction factor ($F(2, 180) = 0.36; p = 0.70$). The results indicate that there were no significant differences in the baseline self-interest scores among the three groups. Although the self-interest scores for the theoretical group increased more than the other groups, the result did not reach statistical significance. The null hypothesis stating that there would be no significant difference in the self-interest scores before and after the theoretical campaign was accepted.

4.5.5 Changes in perceived likelihood of developing a mental health problem

It was hypothesised (hypothesis 8) that after listening to the theoretical campaign, participants would have an increased perceived likelihood of the possibility of developing a mental health problem at some point in their lives. It was hypothesised that there would be no increase for participants in the information and control groups.
To test this hypothesis a mixed factorial ANOVA with a between-groups factor (theoretical, information and control) and a within-subjects factor (perceived likelihood scores before and after the campaigns) was conducted. The results for the ANOVA were not significant for the within-subjects factor ($F (1, 178) = 1.28; p = 0.26$), the group factor ($F (2, 178) = 2.64; p = 0.74$) or the interaction ($F (2, 178) = 2.61; p = 0.76$). The means and standard deviations for the scores across the three groups are reported in Table 6. After listening to the campaigns participants in the theoretical group were more likely than participants in the other two groups to accept the possibility that they could develop a mental health problem at some point in their lives. However, the difference in the scores did not reach statistical significance. This result did not support the hypothesis that participants in the theoretical group would have an increased perceived likelihood of developing a mental illness after they listened to the campaign.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Pre campaign</th>
<th>Post campaign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theoretical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>73</td>
<td>73</td>
</tr>
<tr>
<td>Means</td>
<td>3.19</td>
<td>2.92</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>1.15</td>
<td>1.06</td>
</tr>
<tr>
<td>Information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>63</td>
<td>63</td>
</tr>
<tr>
<td>Means</td>
<td>3.38</td>
<td>3.43</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>0.80</td>
<td>0.86</td>
</tr>
<tr>
<td>Control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>Means</td>
<td>3.27</td>
<td>3.27</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>1.03</td>
<td>1.01</td>
</tr>
</tbody>
</table>

Note: A lower score indicates an increased perceived likelihood of developing a mental health problem.

4.5.6 Association between attitude importance and attitude change

The ninth hypothesis predicted that attitude importance would be a major factor in motivating participants to process the arguments in the campaign. Independent $t$ tests
were conducted to assess whether participants in the theoretical group who had an increase in attitude importance scores after the campaign reported more positive attitudes on the CAMI scales compared with participants whose attitude importance scores stayed the same or decreased. The test was significant for scores on the fear and exclusion scale ($t(73) = 2.05, p = 0.04$). The eta squared effect size ($\eta^2 = .05$) was small to medium. This results supports the hypothesis.

4.6 Origins of attitude importance

To test the subsidiary hypothesis that the three main sources of attitude importance are social identification, self-interest and value-relevance, participants were asked to write down all the thoughts, feelings and beliefs they had considered in deciding how important the issue of mental health discrimination was to them. Ratings of attitude importance were well distributed across the five categories: 10 percent of the ratings were “extremely important,” 27 percent were “very important,” 46 percent were “somewhat important,” 14 percent “not too important,” and 4 percent were “not at all important.” This distribution indicates that participants’ explanations were of both high and low importance ratings.

4.6.1 Content Analyses

Core categories: Of the statements categorised as related to one of the three hypothesised antecedents, 25 percent fell into the self-interest category, 27 percent fell into the social identification category and 48 percent fell into the value-relevance category. There were significantly more value-relevance statements than both self-interest ($\chi^2 (1) = 11.94, p < 0.001$) and social identification statements ($\chi^2 (1) = 9.93, p < 0.01$). Self-interest statements were primarily affirmations (69%) as were social identification statements (64%), and value-relevance statements were all affirmations.

Initially, it appears that participants’ explanations of why they considered mental health discrimination to be personally important or unimportant were related primarily to value-relevance issues (e.g., issues of freedom or equality). However, participants who reported positive self-interest statements were significantly more likely to score above
the mean on the attitude importance index than participants who reported either value-relevance statements ($\chi^2 (1) = 4.17, p < 0.05$) or positive social identification statements ($\chi^2 (1) = 4.29, p < 0.05$). Similarly, participants who stated negative self-interest statements (e.g., “mental illness has never affected me”) all scored below the mean on the attitude importance index, whereas participants who stated negative social identification statements were equally divided between scores above and below the mean on the attitude importance index. These results indicate that although more participants considered value relevant and social identification issues, self-interest appeared to have been a more influential issue in the overall rating of whether mental health discrimination was personally important or unimportant.

*Other categories:* Statements categorised as either self-interest, social identification, or value relevance comprised 51 percent of the total number of statements. An additional 22 percent of the statements involved participants reporting their attitude on the issue. A further 15 percent of statements were placed in the knowledge-information/acquisition category. Ten percent consisted of participants describing their knowledge about mental illness, while only 5 percent were requesting more information. Thus, it appears that information was not a significant factor for participants when they considered their ratings of importance. This finding is consistent with previous research that found that participants rarely used knowledge/information acquisition in arriving at their ratings of importance on issues such as abortion or pollution (Boninger et al., 1995). Eleven percent of statements were unrelated to mental health discrimination. No other explanations of attitude importance were stated frequently enough to be recognised as a separate category. The results support Boninger et al. (1995) findings and the subsidiary hypothesis that the three main sources of attitude importance are social identification, self-interest and value-relevance.

4.7 Changes in participants explanations of why they considered mental health discrimination to be personally important or unimportant

After listening to a campaign, participants were again asked to write down all the thoughts, beliefs and feelings they had considered in deciding how important the issue
of mental health discrimination was to them. Although self-interest statements increased more for participants in the theoretical group in comparison with participants in the other groups, the result of the McNemar test of dependent proportions, $p = .063$, was not significant. There was also no significant difference after the campaign in the proportion of statements falling into other categories (i.e., knowledge-information acquisition, attitude statements). The percentage of statements in each category before and after the campaign are reported in Table 7.

<table>
<thead>
<tr>
<th>Statements</th>
<th>Theoretical</th>
<th>Information</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive self-interest</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre campaign</td>
<td>11</td>
<td>16</td>
<td>25</td>
</tr>
<tr>
<td>Post campaign</td>
<td>26</td>
<td>24</td>
<td>15</td>
</tr>
<tr>
<td>Negative self-interest</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre campaign</td>
<td>3</td>
<td>0</td>
<td>19</td>
</tr>
<tr>
<td>Post campaign</td>
<td>6</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>Positive social identification</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre campaign</td>
<td>19</td>
<td>26</td>
<td>8</td>
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<td>Post campaign</td>
<td>12</td>
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<td>19</td>
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<td>Negative social identification</td>
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<td>Pre campaign</td>
<td>11</td>
<td>6</td>
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<td>Post campaign</td>
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<tr>
<td>Pre campaign</td>
<td>57</td>
<td>52</td>
<td>36</td>
</tr>
<tr>
<td>Post campaign</td>
<td>44</td>
<td>47</td>
<td>41</td>
</tr>
</tbody>
</table>

Note. Numbers represent percentages.
4.8 Attitudes towards the mentally ill and personal characteristics

The majority of participants (73%) responded in a positive way to the statement “We have a responsibility to provide the best care for the mentally ill.” More than 60 percent (64%) agreed with the statement “We have to adopt a far more tolerant attitude to people with a mental illness.” However, allowing people with a mental illness to reside in residential neighbourhoods requires more acceptance, and many participants responded to this idea in a negative way. For example, 19 percent reported that they would not want to live next door to someone who has a mental illness, and 14 percent reported that the mentally ill should be isolated from the rest of the community. There was also a reluctance to assign responsibility to a person with a history of mental illness with 43 percent of participants believing that anyone with a history of mental illness should be excluded from public office. Allowing mentally ill people to receive treatment in the community consistently received the most negative ratings. For example, 50 percent of participants agreed with the statement “Residents have good reason to resist the location of mental health services in their neighbourhood.” The mean score for each item on the CAMI is reported in Appendix 3.

To examine personal characteristics and attitudes towards the mentally ill four subsets of personal characteristics were considered for this analysis: sociodemographic factors, familiarity with mental illness, level of self-interest and attitude importance. Sociodemographic factors were measured by five variables: age, ethnicity, whether there were children under the age of 16 living in the household, marital status and occupational class. Familiarity with mental illness was based on whether the subject or his friends or relatives had ever suffered from a mental illness. Independent-samples t tests were conducted when the characteristic had two categories (e.g., familiarity with mental illness), and a one-way analysis of variance (F test) was conducted when there were more than two categories (e.g., occupational class). The results of these tests, as well as the means and standard deviations for the attitude scores for each of the sociodemographic factors are reported in Table 8.
4.8.1 Sociodemographic factors

1) Age
Participants aged twenty-four or below reported significantly more negative attitudes on the overall CAMI scale than participants aged twenty-five years of age or older ($t(172) = 2.18, p = 0.03$, two-tailed). The effect size ($\eta^2 = 0.03$) was small. Participants aged twenty-four or below also reported significantly more socially restrictive attitudes on the social control scale than participants aged twenty-five years of age or older ($t(172) = 2.88, p < 0.01$, two-tailed). The effect size was small ($\eta^2 = 0.05$). There was no significant difference for the age variable on the fear and exclusion or the goodwill scales.

2) Ethnicity
One-way analysis of variance tests were conducted to evaluate the relationship between ethnicity and the scores on the CAMI scales. The dependent variable was the score on the CAMI scale and the independent variable was ethnicity: Black Bermudian, White Bermudian, Portuguese Bermudian and others. No significant differences were found between the ethnic groups and scores on any of the CAMI scales.

3) Marital status
As only 1 percent ($n = 2$) of participants were separated, the single and separated categories were combined into one group. No significant differences were found between the marital status groups and scores on any of the CAMI scales.

4) Children in the household
Previous research has suggested those participants with children under the age of 16 in their household are generally more authoritarian and correspondingly less benevolent towards people with a mental illness compared with participants who do not have children living in their household (e.g., Taylor and Dear, 1981, Wolff, Pathare, Craig and Leff, 1996). However, in this study no significant difference occurred. This finding is discussed in more detail in the Discussion section.
5) Occupational class

One-way analysis of variance tests were conducted to evaluate the relationship between occupational status and the CAMI scores. The tests were not significant for the overall CAMI scale, the fear and exclusion scale or the goodwill scale. However, significant differences were found among occupational groups on the social control scale ($F (3, 161) = 3.06, p = 0.03$). The strength of the relationship between scores on the social control scale and occupational status, as assessed by $\eta^2$, was small.

Follow-up tests were conducted to evaluate pairwise differences among the means. The test of homogeneity of variance was significant ($p (3, 161) = 0.05$), so the post hoc Dunnett's C test that does not assume equal variances among the groups was conducted to control for type 1 error across the pairwise comparisons. The results of these tests, as well as the mean differences for the four occupational classes, are reported in Table 8.

Examination of the multiple comparisons among the groups revealed that socially restrictive attitudes towards people with a mental illness are characteristic of lower status participants. This result confirms previous research findings that more positive attitudes towards people with a mental illness are associated with higher occupational status.

Overall, two of the five sociodemographic variables examined showed significant relationships with the attitude scales. Taken together, these results indicate that older participants reported more positive attitudes on the overall CAMI scale and that younger participants and those from the lower occupational classes reported more socially restrictive attitudes towards people with a mental illness. These results are reported in Tables 8 & 9 and graphically presented in Figure 5.
### Table 8
Personal characteristics and attitudes towards people with a mental illness

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>N</th>
<th>CAMI score Means SD</th>
<th>Fear and Exclusion Means SD</th>
<th>Social Control Means SD</th>
<th>Goodwill Means SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below 24</td>
<td>129</td>
<td>52.3 9.4</td>
<td>31.6 7.1</td>
<td>16.3 3.4</td>
<td>4.3 1.5</td>
</tr>
<tr>
<td>Above 25</td>
<td>45</td>
<td>48.6 10</td>
<td>29.6 7.5</td>
<td>14.6 3.6</td>
<td>4.4 1.6</td>
</tr>
<tr>
<td><strong>Results</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>t test</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
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<td>-0.23, p =</td>
</tr>
<tr>
<td></td>
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<td>0.11 NS</td>
<td>.004*</td>
<td>0.82 NS</td>
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<td>4.5 1.5</td>
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<td>Portuguese</td>
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<td>4.7 1.3</td>
</tr>
<tr>
<td>Others</td>
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<td>52.4 11</td>
<td>31.4 7.9</td>
<td>17.2 4.2</td>
<td>3.7 1.3</td>
</tr>
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<td><strong>Results:</strong></td>
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<tr>
<td></td>
<td></td>
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<td>F (3, 172) =</td>
<td>F (3, 172) =</td>
<td>F (3, 172) =</td>
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<td>1.29, p =</td>
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<td>30.5 7.0</td>
<td>14.3 3.1</td>
<td>3.8 1.2</td>
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<tr>
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<td>16.0 4.5</td>
<td>4.3 1.4</td>
</tr>
<tr>
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<td>33</td>
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<td>30.7 6.5</td>
<td>16.5 3.2</td>
<td>4.3 1.3</td>
</tr>
<tr>
<td>D or E</td>
<td>56</td>
<td>53.5 10</td>
<td>32.4 7.3</td>
<td>16.4 3.1</td>
<td>4.7 1.8</td>
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<td>F (3, 161) =</td>
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<td>3.06, p =</td>
<td>2.53, p =</td>
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<td>4.4 1.4</td>
</tr>
<tr>
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<td>31.4 7.2</td>
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<td><strong>Results:</strong></td>
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<td></td>
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</tr>
<tr>
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<td>1 (176) =</td>
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<td></td>
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</tbody>
</table>

NS = Not significant at 0.05 level. *Significant at 0.05 level.
Note: High scores represent negative attitudes.
Table 8 (continued)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>N</th>
<th>CAMI score Means</th>
<th>Fear and Exclusion Means</th>
<th>Social Control Means</th>
<th>Goodwill Means</th>
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<tbody>
<tr>
<td></td>
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<td>Marital Status:</td>
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<td>Single/separated</td>
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<td>51.4 9.8</td>
<td>31.1 7.2</td>
<td>15.9 3.4</td>
<td>4.4 1.5</td>
</tr>
<tr>
<td>Married/cohab.</td>
<td>23</td>
<td>49.3 11</td>
<td>30.5 7.8</td>
<td>14.7 4.8</td>
<td>4.1 1.3</td>
</tr>
</tbody>
</table>

Results: $t (171) =$ 0.94, $p = 0.34$, $t (171) = 1.65$, $p = 0.076$, $t (171) = 0.67$, $p = 0.50$ NS

NS = Not significant at 0.05 level. *Significant at 0.05 level.
Note: High scores represent negative attitudes.

Table 9

Multiple comparisons for the social control scale and occupational status

<table>
<thead>
<tr>
<th>(I) Groups</th>
<th>(J) Groups</th>
<th>Mean Differences (I-J)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A &amp; B</td>
<td>C1</td>
<td>-1.71</td>
</tr>
<tr>
<td>A &amp; B</td>
<td>C2</td>
<td>-2.20*</td>
</tr>
<tr>
<td>A &amp; B</td>
<td>D &amp; E</td>
<td>-2.05*</td>
</tr>
<tr>
<td>C1</td>
<td>A &amp; B</td>
<td>1.71</td>
</tr>
<tr>
<td>C1</td>
<td>C2</td>
<td>-0.50</td>
</tr>
<tr>
<td>C1</td>
<td>D &amp; E</td>
<td>-0.34</td>
</tr>
<tr>
<td>C2</td>
<td>A &amp; B</td>
<td>2.20*</td>
</tr>
<tr>
<td>C2</td>
<td>C1</td>
<td>0.50</td>
</tr>
<tr>
<td>C2</td>
<td>D &amp; E</td>
<td>0.15</td>
</tr>
<tr>
<td>D &amp; E</td>
<td>A &amp; B</td>
<td>2.05*</td>
</tr>
<tr>
<td>D &amp; E</td>
<td>C1</td>
<td>0.34</td>
</tr>
<tr>
<td>D &amp; E</td>
<td>C2</td>
<td>-0.15</td>
</tr>
</tbody>
</table>

* The mean difference is significant at the .05 level

4.8.2 Familiarity with mental illness

Participants who were personally familiar with mental illness reported significantly more positive attitudes on the overall CAMI scale than participants who were not familiar with mental illness ($t (176) = -2.22$, $p = 0.03$, two-tailed). The effect size ($\eta^2 =$
0.03) was small. Participants who were personally familiar with mental illness also reported significantly more positive attitudes on the fear and exclusion scale ($t(176) = -2.28, p = 0.02$, two-tailed). The effect size ($\eta^2 = 0.03$) was small. There was no association between this variable and scores on the social control or goodwill scales.

The results of these tests, as well as the means and standard deviations are reported in Table 10 and the significant results are graphically displayed in Figure 1. The results indicate that personal experience of mental health problems, whether direct or indirect, affects subsequent attitudes towards people with a mental illness. This finding is consistent with previous research which has found that people who had used mental health services themselves or whose friends or relatives had used them, expressed more sympathetic attitudes towards people with a mental illness (e.g., Taylor and Dear, 1981).

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>N</th>
<th>CAMI score Means SD</th>
<th>Fear and Exclusion Means SD</th>
<th>Social Control Means SD</th>
<th>Goodwill Means SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Familiarity with</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>mental illness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>122</td>
<td>50.09 10.5</td>
<td>30.14 7.55</td>
<td>15.61 3.82</td>
<td>4.35 1.52</td>
</tr>
<tr>
<td>No</td>
<td>56</td>
<td>53.61 7.78</td>
<td>32.77 6.15</td>
<td>16.52 3.04</td>
<td>4.32 1.50</td>
</tr>
<tr>
<td>Results: $t$ tests</td>
<td></td>
<td>$t(176) = -2.22$, $p = 0.03^*$</td>
<td>$t(176) = -2.28$, $p = 0.02^*$</td>
<td>$t(176) = -1.57$, $p = 0.12$ NS</td>
<td>$t(176) = 0.13$, $p = 0.10$ NS</td>
</tr>
</tbody>
</table>

NS = Not significant at 0.05 level. *Significant at 0.05 level.

Note: All attitude scores represent the mean value for each group. Higher scores represent more negative attitudes.
Figure 5
Personal characteristics and score on the CAMI scales

Age

Occupational Status

Familiarity with Mental Illness

2 Higher scores on the CAMI scales represent more negative attitudes.
4.8.3 Attitude importance and self-interest

One-way analysis of variance tests and independent-samples t tests were conducted to evaluate the relationship between sociodemographic variables and scores on the attitude importance and the self-interest indexes. The results of these tests, as well as the means and standard deviations for the attitude importance and the self-interest scores for the different sociodemographic variables, are reported in Table 11.

Participants who were married or cohabiting reported higher levels of attitude importance than participants who were single/separated (t(171) = -2.14, p = 0.03, two-tailed). The effect size was small (η² = 0.03). Participants who had personal experience of mental illness, whether direct or indirect, also rated the issue of mental health discrimination as significantly more important than participants who reported not having personal experience with mental illness (t(176) = 2.47, p = 0.01, two-tailed). The effect size (η² = 0.03) was small.

Participants who had children living in the household reported significantly higher levels of self-interest than participants who did not have children living in the household (t(175) = 2.21, p = 0.029, two-tailed). The effect size (η² = 0.03) was small. Participants who were personally familiar with mental illness also reported higher levels of self-interest than participants who were unfamiliar with mental illness (t(175) = 2.03, p = .044, two-tailed). The effect size (η² = 0.02) was small. None of the other sociodemographic variables (i.e., ethnicity, age, and occupational status) were associated with attitude importance or self-interest.

The results of these tests indicate that attitude importance was associated with being married or cohabiting. Higher ratings of self-interest were associated with having children in the household. Familiarity with mental illness was associated with high levels of both self-interest and attitude importance.
Table 11
Association between personal characteristics, attitude importance and self-interest

<table>
<thead>
<tr>
<th></th>
<th>N =</th>
<th>Attitude Importance score</th>
<th>Self-interest score</th>
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</thead>
<tbody>
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<td></td>
<td></td>
<td>Means</td>
<td>SD</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below 24</td>
<td>128</td>
<td>9.13</td>
<td>2.47</td>
</tr>
<tr>
<td>Above 25</td>
<td>45</td>
<td>9.82</td>
<td>2.75</td>
</tr>
<tr>
<td>*-tests</td>
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<td>t (172) = -1.57, p = 0.11</td>
<td>t (171) = -0.91, p = 0.37</td>
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<td>Ethnicity:</td>
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<tr>
<td>Black Bermudian</td>
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<td>2.76</td>
</tr>
<tr>
<td>White Bermudian</td>
<td>37</td>
<td>9.24</td>
<td>2.49</td>
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<td>Portuguese</td>
<td>23</td>
<td>8.57</td>
<td>2.19</td>
</tr>
<tr>
<td>Others</td>
<td>14</td>
<td>9.21</td>
<td>1.72</td>
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<tr>
<td>ANOVA</td>
<td></td>
<td>F (3, 172) = 0.85, p = 0.47</td>
<td>F (3, 171) = 0.63, p = 0.6</td>
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<tr>
<td>Marital Status:</td>
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<tr>
<td>Single/separated</td>
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<td>9.17</td>
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<td>2.52</td>
</tr>
<tr>
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<td>t (171) = -2.14, p = 0.03*</td>
<td>t (170) = -0.382, p = 0.70</td>
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<tr>
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<td>t (175) = 2.21, p = 0.03*</td>
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<tr>
<td>ANOVA</td>
<td></td>
<td>F (3, 161) = 0.67, p = 0.57</td>
<td>F(3, 160) = 0.37, p = 0.77</td>
</tr>
<tr>
<td>Familiarity with mental illness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>122</td>
<td>9.63</td>
<td>2.50</td>
</tr>
<tr>
<td>No</td>
<td>56</td>
<td>8.63</td>
<td>2.56</td>
</tr>
<tr>
<td>*-tests</td>
<td></td>
<td>t (176) = 2.47, p = 0.01*</td>
<td>t (175) = 2.03, p = 0.04*</td>
</tr>
</tbody>
</table>

*Significant < 0.05 level. Note: Higher scores represent greater presence of the factor.
4.8.4 Association between personal characteristics and attitude change

All of the sociodemographic categories within the theoretical group showed a positive attitude change. The largest attitude change occurred for those participants who were not personally familiar with mental illness. A paired-sample t test was conducted for those participants who reported being unfamiliar with mental illness to evaluate the difference between the overall CAMI scores before and after the campaign. The results indicate that there was a significant reduction in negative attitudes (t (19) = 5.86, p < 0.01). The eta squared index ($\eta^2$) was 0.6, indicating a medium effect size. The data is graphically presented in Figure 6.

![Figure 6](image)

A comparison of scores on the overall CAMI scale before and after the theoretical campaign based on familiarity with mental illness

The differences in the means for the CAMI scales before and after the theoretical campaign for all the sociodemographic categories are reported in Table 12. The data indicates that younger participants showed more attitude change than older participants, and that participants in occupational class C1 (e.g., supervisors, clerical or junior managerial etc.) consistently showed more positive attitude change compared to the other occupational classes across all of the CAMI scales. Participants with the lowest occupational status (D and E) showed the least attitude change across all the CAMI scales.
Table 12
Attitude change and personal characteristics within the theoretical group

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>N</th>
<th>Overall CAMI</th>
<th>Exclusion</th>
<th>Control</th>
<th>Goodwill</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Pre</td>
<td>Post</td>
<td>Pre</td>
<td>Post</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below 24</td>
<td>49</td>
<td>*54.5</td>
<td>50.5</td>
<td>*33.4</td>
<td>30.2</td>
</tr>
<tr>
<td>Above 25</td>
<td>23</td>
<td>50.7</td>
<td>47.5</td>
<td>31.2</td>
<td>28.8</td>
</tr>
<tr>
<td>Mean Difference</td>
<td></td>
<td>4</td>
<td></td>
<td>3.2</td>
<td></td>
</tr>
<tr>
<td>Ethnicity:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>43</td>
<td>53.5</td>
<td>50.5</td>
<td>32.6</td>
<td>30.2</td>
</tr>
<tr>
<td>White</td>
<td>14</td>
<td>*51.3</td>
<td>46.2</td>
<td>32.1</td>
<td>28.4</td>
</tr>
<tr>
<td>Portuguese and others</td>
<td>15</td>
<td>53.2</td>
<td>48.6</td>
<td>*32.9</td>
<td>28.9</td>
</tr>
<tr>
<td>Marital Status:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single/sep</td>
<td>61</td>
<td>54.2</td>
<td>50.5</td>
<td>33.2</td>
<td>30.4</td>
</tr>
<tr>
<td>Married/cohab</td>
<td>10</td>
<td>*45.0</td>
<td>40.4</td>
<td>*28.8</td>
<td>24.8</td>
</tr>
<tr>
<td>Children:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>30</td>
<td>51.5</td>
<td>47.7</td>
<td>31.6</td>
<td>28.8</td>
</tr>
<tr>
<td>No</td>
<td>43</td>
<td>53.9</td>
<td>50.1</td>
<td>*33.2</td>
<td>30.2</td>
</tr>
<tr>
<td>Occupational Class</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A or B</td>
<td>12</td>
<td>46.8</td>
<td>42.5</td>
<td>29.8</td>
<td>26.3</td>
</tr>
<tr>
<td>Cl</td>
<td>14</td>
<td>*49.0</td>
<td>43.3</td>
<td>*30.2</td>
<td>26.6</td>
</tr>
<tr>
<td>C2</td>
<td>15</td>
<td>55.1</td>
<td>51.5</td>
<td>33.0</td>
<td>30.1</td>
</tr>
<tr>
<td>D or E</td>
<td>23</td>
<td>56.7</td>
<td>54.4</td>
<td>34.4</td>
<td>32.4</td>
</tr>
</tbody>
</table>

Note: Numbers represent mean scores.
* Represents the group within each category that reported the largest attitude change, if applicable.
Table 12 (continued)
Attitude change and personal characteristics within the theoretical group

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>N</th>
<th>Overall CAMI Pre</th>
<th>Overall CAMI Post</th>
<th>Exclusion Pre</th>
<th>Exclusion Post</th>
<th>Control Pre</th>
<th>Control Post</th>
<th>Goodwill Pre</th>
<th>Goodwill Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Familiarity with mental illness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>52</td>
<td>51.0</td>
<td>48.3</td>
<td>31.2</td>
<td>29.0</td>
<td>15.3</td>
<td>14.8</td>
<td>4.5</td>
<td>4.6</td>
</tr>
<tr>
<td>No</td>
<td>20</td>
<td>*57.6</td>
<td>51.2</td>
<td>*35.6</td>
<td>31.1</td>
<td>*35.6</td>
<td>31.1</td>
<td>*4.7</td>
<td>4.5</td>
</tr>
</tbody>
</table>

Note: Numbers represent mean scores.
* Represents the group within each category that reported the largest attitude change, if applicable.

4.9 Participants' satisfaction with the campaigns
4.9.1 Participants' ratings of the campaigns

Participants were asked to rate their satisfaction with the campaigns. They rated the campaign they had just heard in terms of the interest level; whether the campaign held their attention; if they enjoyed listening to the campaign, and if they would recommend the campaign to a friend. A one-way analysis of variance was conducted for each question to evaluate the differences between the participants' views for each of the three campaigns. The results are reported in Table 13.

There were no significant differences in the ratings for any of the campaigns. A more detailed analysis of the ratings for the theoretical campaign is reported in Table 14. The ratings for the information and control campaigns are reported in Appendix 4. Most participants gave a positive or neutral rating for all the questions for all three of the campaigns.

Although the theoretical campaign was more effective at changing negative attitudes no significant difference was found between the participants level of satisfaction for each of the campaign. This results highlights the difficulties of using satisfaction ratings alone to measure the effectiveness of a health campaign.
### Table 13
Mean ratings for the campaigns

<table>
<thead>
<tr>
<th>Questions</th>
<th>Theoretical</th>
<th>Information</th>
<th>Control</th>
<th>ANOVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>The message was interesting</td>
<td>3.51</td>
<td>3.57</td>
<td>3.79</td>
<td>$F(2,181) = 1.607, p = .203$ NS</td>
</tr>
<tr>
<td>The message did not hold my attention</td>
<td>3.48</td>
<td>3.59</td>
<td>3.52</td>
<td>$F(2,181) = 0.222, p = .801$ NS</td>
</tr>
<tr>
<td>I enjoy listening to the campaign</td>
<td>3.15</td>
<td>3.38</td>
<td>3.15</td>
<td>$F(2,181) = 1.247, p = .290$ NS</td>
</tr>
<tr>
<td>I would recommend the campaign to a friend</td>
<td>3.04</td>
<td>3.27</td>
<td>3.48</td>
<td>$F(2,181) = 2.54, p = .081$ NS</td>
</tr>
</tbody>
</table>

Numbers in the first three columns represent the mean score for each question. Note: Higher scores represent a more positive rating. NS = Not significant at the 0.05 level.

### Table 14
Ratings for the theoretical campaign

<table>
<thead>
<tr>
<th>Theoretical Group</th>
<th>The message was interesting</th>
<th>Did not hold my attention</th>
<th>I enjoyed listening to the campaign</th>
<th>Would recommend to a friend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>6.7</td>
<td>4.0</td>
<td>6.7</td>
<td>8.0</td>
</tr>
<tr>
<td>Agree</td>
<td>53.3</td>
<td>16.0</td>
<td>29.3</td>
<td>26.7</td>
</tr>
<tr>
<td>Neutral</td>
<td>29.3</td>
<td>20.0</td>
<td>44.0</td>
<td>37.3</td>
</tr>
<tr>
<td>Disagree</td>
<td>5.3</td>
<td>48.0</td>
<td>12.0</td>
<td>17.3</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>5.3</td>
<td>12.0</td>
<td>8.0</td>
<td>10.7</td>
</tr>
</tbody>
</table>

Figures shown represent percentages

### 4.9.2 What participants liked and disliked about the campaigns

The final section of the questionnaire invited participants to comment about what they liked and disliked about the campaign they had just heard. Participants made a total of
162 comments about the campaigns. The comments were examined and categorised into a variety of groups that reflected the contents of the comments. The participants’ responses were interesting and provided a useful insight into how they perceived the different campaigns. All of the comments are transcribed verbatim in Appendix 5. A summary of the comments for each campaign is outlined below.

i. Theoretical Campaign

Participants in the theoretical group made 70 comments about the campaign. Seventy-three percent (n = 51) of the comments were about what they liked about the campaign and 27 percent (n = 19) were about what they disliked. Twenty-seven percent of participants (n = 20) did not complete this section.

Of the 73 percent (n = 51) of positive comments, 25 percent (n = 13) related to the self-interest component of the campaign (e.g., “It successfully put you in the place of a mentally ill person”, “It gave me a greater awareness that it could happen to me”). Twelve percent (n = 6) of comments referred to community care (e.g., “It made me realise that people with a mental illness do not always have to live in a hospital”). Twelve percent (n = 6) of comments were associated with the dangerousness issue, (e.g., “It helped me understand that most mentally ill people are not dangerous”). Issues relating to the false belief that most patients diagnosed with a mental illness have a poor prognosis were mentioned by 6 percent (n = 3) of participants (e.g., “It made me realise that most people recover from a mental illness”), and 14 percent (n = 7) of comments related to the acquisition of information (e.g., “I learnt new information”, “The message educated me about mental illness”).

Ten percent (n = 5) of positive comments made about the theoretical campaign referred to the clarity of the campaign (e.g., “It was plain and simple”, “It was straight to the point with no jargon”). Along a similar line, 10 percent (n = 5) of comments related to the perceived truthfulness of the message (e.g., “It was truthful”, “It was the truth”). Eight percent (n = 4) of participants stated that what they most liked about the campaign was the introductory music. Sixteen percent (n = 4) of comments fell into
the miscellaneous category (e.g., "I liked the tone of the message", "The message was important").

Participants comments about what they disliked about the theoretical campaign fell into three categories, namely: a lack of information; comments related to the introductory music, and a miscellaneous category. Thirty-two percent (n = 6) of the negative comments referred to a lack information (e.g., "It did not explain mental illness in-depth") and 26 percent (n = 5) referred to not liking the introductory music. Forty-two percent (n = 8) fell into the miscellaneous category (e.g., "Mental illness does not interest me", "It was meant for a person with a mental illness").

ii. Information campaign

Participants in the information group made 51 comments about the campaign. Seventy-five percent (n = 38) were about what they liked about the campaign, and 27 percent (n = 13) were about what they disliked. Thirty-three percent (n = 21) did not complete this section.

Positive comments about the campaign fell into three broad categories, namely: the acquisition of information; the clarity of the campaign and a miscellaneous category. Seventy-one percent (n = 27) referred to the acquisition of information (e.g., "It was very informative", "It helped me understand mental illness") and 13 percent (n = 5) were related to the clarity of the campaign (e.g., "It was clear and to the point"). The remaining 16 percent (n = 6) of comments fell into the miscellaneous category (e.g., "I liked the whole message", "It was appealing"). Classifying the comments about why they disliked the campaign was not possible because they covered a broad range of issues with no consistent themes (e.g., "It was too general", "I already knew about mental illness", "It was too long", "It was too short").

iii. Control/smoking campaign

Participants in the control group made 41 comments about the campaign. Eighty percent (n = 33) were about what they liked about the campaign and 20 percent (n =
8) were about what they disliked. Twenty-two percent (n = 10) did not complete this section. Positive comments about the campaign fell into four broad categories, namely: the acquisition of information, self-interest, the clarity of the campaign and a miscellaneous category. Fifty-five percent (n = 18) of the positive comments referred to the acquisition of information (e.g., "It showed me how to help someone quit smoking without nagging"). Nine percent (n = 3) related to the self-interest issue, and 15 percent (n = 5) related to the clarity of the campaign, and 21 percent (n = 7) of comments fell into the miscellaneous category. Classifying the comments about why they disliked the control campaign was not possible because they covered a broad range of issues with no consistent themes.

An analysis of the comments indicates that the largest category of positive comments about the theoretical campaign was related to the issue of self-interest, and the largest category of positive comments about the information campaign referred to the acquisition of information. This result is to be expected given that the theoretical campaign was designed to manipulate the self-interest variable and the information campaign was designed to impart information. However, if one examines the content of the comments made about the theoretical campaign, many of the comments suggested that the participants were re-examining their attitudes towards people with mental illness (e.g., "It made me realise that it might be me one day so I should not discriminate", "It showed me that mentally ill people are like everyone else", "It made me aware that people with a mental illness should not be excluded from society"). The comments made about the information campaign suggested that although the participants appreciated being given information about mental illness, none of their comments were suggestive of attitude change. The difference in these types of comments encapsulates one of the main themes of the project (i.e., that information on its own is not sufficient to produce attitude change).

It is also interesting that 12 percent of positive comments made by the participants in the theoretical group related to the dangerousness issue, whereas only one subject in the information group mentioned this issue, and the comment was negative (e.g., "It
did not talk about dangerous forms of mental illness - it was biased"). Both the theoretical and the information campaigns informed participants that most people with a mental illness were not dangerous. However, the theoretical campaign discussed patients who were potentially at risk of violence. This appears to have allowed participants to evaluate the information, and this seems to have resulted in more positive comments being made about this issue (e.g., “It made you realise that most mentally ill people are not dangerous”).

The honest discussion about the dangerousness issue may have also been responsible for the 9 percent of comments relating to the perceived truthfulness of the theoretical campaign. These interesting issues will be further explored in the Discussion section.

4.10 Follow-up Study

4.10.1 Participants

Participants’ attitudes towards people with a mental illness were resurveyed six weeks after they had heard the campaigns. Unfortunately, because of various training events held by the Bermuda Regiment, only 45 percent (n = 82) of the original participants were available to participate in the follow-up study. Sixty-one percent (n = 50) of the participants in the follow-up study remembered to bring their identification stickers. In this study, the within-subjects factors are of principal interest (i.e., the changes in attitude scores for each subject), therefore only those participants who remembered to bring their identification stickers were included in this part of the analysis. The total number in each group was as follows: theoretical 24, information 15 and control 11.

To assess if the participants in the follow-up study represented the original group, the demographics of the groups were compared with the original data. Chi-square tests (using Fisher’s exact test where necessary) were conducted to assess whether there was a significant change in the demographic characteristics of the groups. The results indicate that the proportion of married participants in the control group was significantly larger in the follow-up study compared with the original group ($\chi^2 (1, N = 65) = 10.03, p < 0.01$). The results of the tests also indicated that the proportion of
married participants in the theoretical group was significantly larger for participants in
the follow-up study compared with participants in the original group ($\chi^2 (1, N = 115)$
$= 17.45, p < 0.01$). The other sociodemographic categories had not significantly
changed. The results indicate that despite the reduced numbers, the participants in the
follow-up study represented the original group with the exception of marital status.

4.10.2 Attitude change

Boxplots were used to explore the follow-data and these showed some extremes
scores across the groups. The elimination of these extreme scores resulted in no
significant difference in the pattern of results. A decision was therefore made not to
eliminate them from the analysis.

The ANOVA comparing the results of the overall CAMI scores pre campaign and six-
week post campaign was not significant for any of the factors. Although the results are
in the direction of the research hypothesis, they did not reached statistical significance.
The results did not support the second hypothesis that the theoretical group would
show a significant decrease in negative attitudes on the overall CAMI scales six weeks
after the campaign.

A mixed factorial ANOVA was conducted to compare the scores on the fear and
exclusion scale for each group before and six weeks after the campaigns. The between-
groups factor was the three groups and the within-subjects factor was the fear and
exclusion scores before and six weeks after the campaigns. The within-subjects factor
was significant ($F (1, 47) = 7.14; p < 0.01$). Neither the between-groups factor ($F (2,
47) = 0.06; p = 0.94$) or the interaction effect ($F (2, 47) = 2.37; p = 0.11$) were
significant.

Follow-up tests to the significant within-subjects factor were conducted to evaluate
pairwise differences among the means. The Holm’s Bonferroni procedure was used to
control for Type 1 error across the pairwise comparisons. Each comparison was tested
at the 0.017 level. The results indicate that the decrease in negative attitudes on this
scale was still present six weeks later for participants in the theoretical group (t (23) = 3.28, p < 0.01). The eta square index (\(\eta^2\)) was 0.3, indicating a small effect. There was no significant difference between the base-line attitudes and the attitudes six weeks after the campaigns for the control or information groups. This result supports the second hypothesis that the decrease in negative attitudes would still be present six weeks after the campaign for participants in the theoretical campaign.

The results of the ANOVAs comparing the scores on the social control and goodwill scales pre campaign and six-week post campaign were not significant for either of the scales. The mean scores on each of the CAMI scales (before, immediately following and six weeks after the campaigns) are presented in Tables 15 and 16.

To summarise, the results support the conclusion that the theoretical campaign was more effective than an information-based campaign at decreasing negative attitudes towards people with mental illness. The results of the follow-up study support the second hypothesis that the theoretical group would show a significant decrease in negative attitudes towards people with mental health problems six weeks after the campaign.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Pre campaign</th>
<th>Immediately post campaign</th>
<th>Six-weeks post campaign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>30.09</td>
<td>29.36</td>
<td>29.09</td>
</tr>
<tr>
<td>Theoretical</td>
<td>31.33</td>
<td>28.09</td>
<td>28.33</td>
</tr>
<tr>
<td>Information</td>
<td>29.53</td>
<td>29.00</td>
<td>29.53</td>
</tr>
</tbody>
</table>
Table 16
Mean CAMI scores pre and six weeks after the campaigns

<table>
<thead>
<tr>
<th>CAMI Scores</th>
<th>Groups</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total CAMI scores pre campaign</td>
<td>Control</td>
<td>49.81</td>
<td>9.78</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Theoretical</td>
<td>53.39</td>
<td>9.91</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Information</td>
<td>49.27</td>
<td>7.55</td>
<td>15</td>
</tr>
<tr>
<td>Total CAMI scores six weeks post campaign</td>
<td>Control</td>
<td>49.54</td>
<td>8.84</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Theoretical</td>
<td>49.48</td>
<td>8.21</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Information</td>
<td>50.73</td>
<td>10.18</td>
<td>15</td>
</tr>
<tr>
<td>Fear and exclusion scores pre campaign</td>
<td>Control</td>
<td>30.09</td>
<td>8.38</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Theoretical</td>
<td>31.33</td>
<td>6.14</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Information</td>
<td>29.53</td>
<td>6.12</td>
<td>15</td>
</tr>
<tr>
<td>Fear and exclusion scores six weeks post campaign</td>
<td>Control</td>
<td>29.09</td>
<td>6.27</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Theoretical</td>
<td>28.33</td>
<td>5.49</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Information</td>
<td>29.53</td>
<td>6.86</td>
<td>15</td>
</tr>
<tr>
<td>Social control scores pre campaign</td>
<td>Control</td>
<td>15.90</td>
<td>2.63</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Theoretical</td>
<td>16.38</td>
<td>4.45</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Information</td>
<td>15.53</td>
<td>3.20</td>
<td>15</td>
</tr>
<tr>
<td>Social control scores six weeks post campaign</td>
<td>Control</td>
<td>16.00</td>
<td>2.65</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Theoretical</td>
<td>16.29</td>
<td>3.56</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Information</td>
<td>16.40</td>
<td>3.99</td>
<td>15</td>
</tr>
<tr>
<td>Goodwill scores pre campaign</td>
<td>Control</td>
<td>3.81</td>
<td>1.33</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Theoretical</td>
<td>4.67</td>
<td>1.58</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Information</td>
<td>4.20</td>
<td>1.32</td>
<td>15</td>
</tr>
<tr>
<td>Goodwill scores six weeks post campaign</td>
<td>Control</td>
<td>3.91</td>
<td>1.64</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Theoretical</td>
<td>4.50</td>
<td>1.25</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Information</td>
<td>4.60</td>
<td>1.24</td>
<td>15</td>
</tr>
</tbody>
</table>
4.10.3 What participants remembered most about the campaigns

This analysis involved the data from all the participants who took part in the follow-up study (n = 82). Forty-four percent of participants, (n = 36) completed this section. Most participants reported that what they remembered most about the theoretical campaign was that discriminating against people with a mental illness was wrong, and that most people with a mental illness are not dangerous. Four participants reported remembering that it is a curable condition. None of the participants mentioned the argument that most people with a mental illness do not behave in a socially embarrassing manner. For the information campaign the majority of participants reported that what they remembered most was that the content dealt with different types of mental illness.

4.11 Summary of Results

The main aim of this study was to evaluate the efficacy of a campaign designed from formal theoretical conceptions to reduce discrimination against people with mental health problems. The central hypothesis was that a campaign designed from social psychological theories would be more effective at decreasing negative attitudes than an information-based campaign. The results suggest that with the exception of the goodwill scale, the theoretical campaign produced a reduction in negative attitudes on all the CAMI scales. No significant difference was found on any of the CAMI scales before and after the information and control campaigns. These results support the main research hypothesis. Six weeks after listening to the theoretical campaign, scores on the fear and exclusion scale were still significantly below the baseline level indicating a sustained decrease in negative attitudes. This results supports the second hypothesis that the decrease in negative attitudes following exposure to the theoretical campaign would continue to be present six weeks later.

The theoretical campaign was based on the assumption that imagining the development of a mental illness would increase perceived susceptibility, which would increase perceived self-interest, which would in turn increase the level of attitude importance attached to the issue of mental health discrimination. It was hypothesised that
increased attitude importance would motivate the audience to process and yield to the arguments contained within the campaign. The results support hypothesis three that higher levels of perceived susceptibility to mental illness are associated with significantly higher levels of self-interest. They also support hypothesis four that higher levels of self-interest are associated with significantly higher levels of attitude importance. The fifth hypothesis predicted that higher levels of self-interest and attitude importance would be associated with positive attitudes on the CAMI scales. The results support this hypothesis.

The results support the sixth hypothesis that participants would show a significant increase in the level of importance they attached to mental health discrimination after they had listened to the theoretical campaign. The educational and control campaigns did not increase attitude importance. Self-interest and perceived likelihood of developing a mental illness increased after listening to the theoretical campaign, but the increase was not statistically significant. The results therefore do not support hypotheses seven and eight that predicted an increase in self-interest and perceived likelihood of developing a mental illness following exposure to the theoretical campaign.

An increase in attitude importance after listening to the theoretical campaign was a significant factor in discriminating those participants with high and low scores on the fear and exclusion scale. Thus, attitude importance appears to have been an important factor in encouraging respondents to yield to the arguments contained in the campaign. This result supports hypothesis nine that participants in the theoretical group who reported an increase in attitude importance after listening to the campaign would have more positive attitudes on the CAMI scales compared with participants whose attitude importance scores did not increase.

Finally, the results support the subsidiary hypothesis that the three main sources of attitude importance for mental health discrimination would be social identification, self-interest and value-relevance. A more detailed summary of all the results are reported overleaf.
1. Participants in the theoretical group reported a significant decrease in negative attitudes on the overall CAMI scale, the fear and exclusion scale and social control scale after listening to the theoretical campaign. No significant differences were found on these scales for participants in the information or control groups. These findings supported the main research hypotheses that a campaign designed from social psychological theories would produce a significant decrease in negative attitudes towards people with mental health problems, whereas an information-based campaign would not be effective in this regard.

2. Six weeks after the campaign, scores on the fear and exclusion scale for participants in the theoretical group were still significantly more positive than before the campaign. No significant differences were found on this scale for participants in the information or control groups. This finding supported the second hypothesis that a decrease in negative attitudes following exposure to the theoretical campaign would continue to be present six weeks later.

3. It was hypothesised that participants who perceived themselves as susceptible to mental illness would report higher levels of self-interest-based attitudes towards the issue of mental health discrimination compared with participants who did not think they were susceptible to mental illness. The results were consistent with the hypothesis that participants who perceived themselves as more susceptible to mental illness would report higher levels of self-interest-based attitudes. In the context of health communication, self-interest appears to be influenced by personal vulnerability.

4. A significant relationship existed between self-interest and attitude importance. This result supported the fourth hypothesis that scores on the self-interest and attitude importance indexes would be significantly correlated.
5. It was hypothesised that participants who expressed more positive baseline attitudes towards people with mental illness would attach more importance and personal relevance to the issue of mental health discrimination compared with participants who did not rate the issue as important or personally relevant. The results supported this hypothesis.

6. Participants in the theoretical group rated the issue of mental health discrimination as significantly more important after the campaign. There was no significant difference in importance ratings after the campaigns for participants in the information or control groups. This finding supported the sixth hypothesis that participants would express an increase in the level of importance attached to mental health discrimination after they had listened to the theoretical campaign.

7. Participants in the theoretical group did not express an increase in their perceived level of susceptibility to mental illness or an increase in self-interest-based attitudes after listening to the campaign. These results did not support the seventh and eighth hypotheses that exposure to the theoretical campaign would increase perceived susceptibility to mental illness and self-interest.

8. A significant predictor of a decrease in negative attitudes on the fear and exclusion scale within the theoretical group was an increase in attitude importance scores after listening to the campaign. This result is consistent with the ninth hypothesis that participants with an increase in attitude importance after the theoretical campaign would report more positive attitudes on the CAMI scales when compared with participants whose attitude importance scores did not increase.

9. Positive baseline attitudes towards people with a mental illness were associated with higher occupational status and personal familiarity with mental illness. The most significant positive attitude change occurred for those participants who
were not personally familiar (either directly or indirectly) with mental illness.

10. The three main sources of attitude importance for mental health discrimination were: social identification, self-interest and value-relevance. This finding supported the subsidiary research hypothesis.
5. DISCUSSION

5.1 Attitude Change

The theoretical campaign resulted in a reduction in the fear of, and desire to exclude people with mental illness from the community. The theoretical campaign also resulted in a decrease in overall negative attitudes and a decrease in socially restrictive attitudes. It did not lead to a significant increase in goodwill. The information and control campaigns did not have a significant impact on any of the attitude scales. With the exception of the lack of change in goodwill, the results support the central research hypothesis that a campaign designed from social psychological theories would produce a significant decrease in negative attitudes towards people with mental health problems, whereas an information-based campaign would not be effective in this regard.

Following one exposure to the theoretical campaign, its positive effect on reducing fear and exclusion was still present after six weeks. This finding has important implications for the design of mental health campaigns. The results suggest that a campaign based on formal psychological theory can exert a positive long term effect on attitudes towards people with mental illness. This finding is encouraging and will hopefully encourage more psychological research in this area. The overall results of this project question the validity of educational campaigns that rely on the systematic processing of information, without any inherent strategies to motivate attitude change in the audience.

The most significant impact of the theoretical campaign was on reducing fear and exclusion. The study by Link et al. (1987) provided strong empirical evidence that the dangerousness concept is a fundamental cause of the unfavourable view of people with mental health problems. A sizeable part of the theoretical campaign was therefore devoted to trying to reduce fear and promote more community mental health oriented attitudes. This emphasis appears to have been reflected in the results of the attitude survey that showed that the campaign exerted its main effect on decreasing fear and exclusion.
The theoretical campaign led to an increase in positive attitudes on three out of the four CAMI scales. Admittedly, the effect sizes were small. It is possible that repeated exposure to the campaign may have resulted in larger effects.

5.2 Origins of attitude importance for mental health discrimination
The study gauged participants’ explanations of why they considered mental health discrimination to be personally important or unimportant. If self-interest was mentioned as a main source of attitude importance, it would provide initial support for the plausibility of the theoretical framework for the campaign. Because no previous research had examined the source of attitude importance in relation to mental health discrimination, the study used an open-ended approach. The results indicated that the three main sources of attitude importance were self-interest, social identification and value-relevance. Self-interest was the most influential issue in the overall ratings of whether mental health discrimination was personally important or unimportant.¹

It was interesting to note the high prevalence of value-relevant statements made by the participants (i.e., statements relating to terminal values such as freedom or equality). The popularity of these types of statements may stem, at least in part, from the fact that the word ‘discrimination’ was used in the questionnaires, rather than ‘stigma.’ It is possible that the term ‘discrimination’ served to heightened participants’ awareness of issues relating to equality and the injustice of practicing discriminatory behaviour. The theme of discrimination is prominent in Bermuda because of the island’s divided racial history. This may go some way towards explaining why value-relevant statements were mentioned so frequently. However, despite the popularity of value-relevant statements, it was statements relating to self-interest that were most influential in the overall

¹ Participants who mentioned positive self-interest statements (i.e., mental illness could happen to me) were significantly more likely to score above the mean on the attitude importance index than participants who reported either positive value-relevance or social identification statements. Similarly, participants who mentioned negative self-interest statements (i.e., mental illness does not effect me) all scored below the mean on the attitude importance index, whereas participants who stated negative social identification statements were equally divided between scores above and below the mean on the attitude importance index.
ratings of whether mental health discrimination was personally important or unimportant.

5.3 Theoretical framework
The first part of the framework was based on the Boninger et al., (1995) model regarding the mediators of attitude importance. It was hypothesised that attaching personal importance to an attitude (i.e., mental health discrimination) would increase motivation to process and yield to the arguments within the campaign.

According to the Boninger et al., (1995) model, manipulation of self-relevant scenarios increases the perceived likelihood of an event occurring, which increases self-interest in the area, which in turn increases attitude importance. Thus, both perceived susceptibility and self-interest are presumed to mediate the impact of attitude importance. The results of the pre campaign data were analysed to assess if they were consistent with the model. The results confirmed that those participants who reported a greater likelihood that they might develop a mental illness had significantly higher scores on the self-interest index compared with participants who reported that it was unlikely that they would develop a mental health problem. Analysis of the pre campaign data also verified that self-interest was an important source of attitude importance. These results support the model proposed by Boninger et al., regarding the mediators of attitude importance.

The post campaign data was analysed to assess the effectiveness of the model proposed by Boninger et al., (1995) to increase attitude importance. The results showed that in comparison with the control and information groups, participants exposed to the self-relevant scenarios (i.e., the theoretical group) indicated that they perceived themselves as having a higher probability of developing a mental health problem after listening to the campaign. This result replicates previous findings that imagining an event causes people to believe it is more likely to occur (e.g., Gregory, et al., 1985). However the increase, although in the hypothesised direction, did not reach statistical significance.
The results indicate that the theoretical group did report significantly higher levels of attitude importance compared with the information and control groups after listening to the campaign. With regard to self-interest, although the theoretical group did report higher levels of self-interest than the information and control groups after listening to the campaign, the result was not statistically significant. It is not clear at this stage how much self-interest is needed to increase attitude importance. It may be that self-interest issues merely need to be highlighted in order to produce an increase in attitude importance. More research is needed in this area.

The central hypothesis of this study is that increased attitude importance will result in an increased motivation to process and yield to the arguments in the campaign. The results of the project indicate that the theoretical group were persuaded by the arguments in the campaign and subsequently reported a significant decrease in negative attitudes. However, more compelling evidence for this hypothesis comes from the result which indicates that those participants within the theoretical group who attached more importance to the issue of mental health discrimination after the campaign reported significantly more positive attitudes on the fear and exclusion scale than those theoretical group participants who did not show an increase in attitude importance.

The theoretical campaign incorporated the following components: persuasiveness, credibility, self-efficacy and retention. The persuasive component of the campaign was based on arguments derived from the four hypothesised main determinants of negative attitudes and by the incorporation of a surprise element. The determinants of negative attitudes were based on a review by Hayward and Bright (1997). Ideally, the arguments should be based on determinants that have been empirically tested. The study by Link et al. (1987) provided empirical evidence that the dangerousness concept is a main determinant of negative attitudes. However, the other determinants, (i.e., poor prognosis, attribution of responsibility and disruption of social interaction) have not been empirically tested. Further research in this area is needed. The effectiveness of the surprise component (i.e., violation of expectancies) to increase persuasion was not directly tested.
The credibility component was incorporated in two ways. First, the presenter of the campaigns was an expert in the area. Secondly, there was full disclosure of possible risks. The expert presenter component was not directly tested in the current research as the same presenter (a well known physician on the island) was used in all the campaigns. The full disclosure of possible risks was dealt with by openly exploring the dangerousness concept.

A decision was made to tackle the issue of dangerousness by providing the participants with facts about the link between mental disorder and violence. There was a risk that this type of disclosure could lead to a backlash and increased discrimination against people with mental health problems. This study did not bear out these concerns. Comments made by the participants about the theoretical campaign indicated that they appreciated being given ‘the full facts’. There was no evidence to suggest that this type of honest disclosure about the link between mental illness and violent behaviour heightened the participants concerns about the dangerousness issue. The results indicate that after hearing factual evidence about the possible risks of violence, participants’ fear and desire to exclude the mentally ill from community living was significantly reduced.

The self-efficacy component included providing the participants with behavioural strategies they could use if they were confronted with a person who appeared actively psychotic and whose behaviour was frightening. Bandura’s (1977) concept of self-efficacy is a belief in one’s own abilities. The usefulness of this component was not directly tested. It could have been assessed by asking participants if they felt more confident in their ability to cope with a potentially ‘dangerous’ patient after the campaign.

The final component of the campaign was designed to assist with the retention of the persuasive arguments. This was attempted by triple exposure to the arguments. This strategy was not tested directly. Participants were however asked what they remembered most about the campaigns. With the exception of ‘disruption of social interaction,’ the participants mentioned all the arguments in the campaign. However, to
test empirically whether triple exposure aids retention, a campaign would need to be designed which alters the number of times the arguments are presented, while keeping other variables constant. Participants could then be asked to write down everything they remembered about the campaign.

5.4 Relationship between attitudes and sociodemographic variables
Researchers have found that socio-demographic factors such as age and occupational class determine attitudes. However, the strengths of the relationships vary. Wolff et al. (1996) suggested that this could, in part, be due to the different populations under study. For example, the Brockington et al. (1993) data was drawn from two communities in the English Midlands, whereas as Taylor and Dear’s (1981) data was drawn from a sample of the population of Toronto in Canada.

In this study, the sample was not representative of the general population of Bermuda. The participants were mostly young and exclusively male. Any inferences made from the data about attitudes towards mental illness in Bermuda and the relationship between attitudes and sociodemographic variables should, therefore, be tentative.

Three of the six variables examined showed significant relationships with the attitude scales. The variables which showed a significant relationship were age, occupational class and familiarity with mental illness. The three variables not associated with the attitude scales were ethnicity, marital status and having children under the age of 16 living in the household.

In this study increased age was associated with less socially controlling attitudes. This finding is inconsistent with the well-documented findings from many previous studies (Taylor and Dear, 1981; Brockington et al., 1993; Wolff et al., 1995). However, the limited age range (18-35) of the participants in this study prevents any meaningful interpretation of this finding.

Occupational class was found to exert a significant effect on social control with higher occupational classes exhibiting less social control towards people with mental illness.
This finding is consistent with previous research (e.g., Wolff et al., 1996; Taylor and Dear, 1981; Cumming and Cumming, 1957). Wolff et al. (1996) suggested that a possible factor contributing to this relationship may be the ‘social desirability response set’ with participants of higher occupational class being more aware of the ‘right’ answers. However, if this was the case one would have expected a similar effect on the other CAMI scales and there was no such relationship. The well documented finding that positive attitudes are associated with higher levels of education and occupational status, may in part, be responsible for the popular and seemingly intuitive belief that educating people about mental illness will change attitudes.

In terms of familiarity with mental illness, participants who themselves had suffered with mental health problems or whose friends or relatives had suffered with mental health problems expressed more positive attitudes on the overall CAMI scale and on the fear and exclusion scale. Personal experience of mental illness, whether direct or indirect, therefore had a significant positive effect on subsequent attitudes towards people with mental illness. This finding is consistent with previous research (e.g., Wolff et al., 1996; Brockington et al., 1993; Taylor and Dear, 1981).

The presence of children in the household was not associated with negative attitudes on any of the CAMI scales. This finding is in stark contrast to previous findings that have found that participants with children are more authoritarian and socially restrictive (e.g., Wolff et al., 1996; Brockington et al., 1993; Taylor and Dear, 1981). Wolff et al., suggested that the association between having children in the household and negative attitudes may be related to public stereotypes of the mentally ill representing a serous threat to children. The lack of an association between negative attitudes and having children in the household in this study may be connected with the age of the participants. For many participants in this study, it is likely that the children in the household were their siblings, rather than their children. It seems obvious that the relationship between siblings is different from the more protective relationship seen between parents and their offspring.
5.5 Relationship between attitude change and sociodemographic variables

All of the sociodemographic categories within the theoretical group showed an increase in positive attitudes after the campaign. The group that showed the least attitude change across all the CAMI scales was the group with the lowest occupational status (i.e., occupational classes D and E). This result is unfortunate, as it was this group that had the most negative baseline attitudes. The campaign did not significantly impact the attitudes of this group. Further research is needed on how to influence this category of people.

The theoretical campaign had the most impact on participants who were not familiar with mental illness. Fazio (1990) argued that attitudes formed on the basis of direct behavioural experience with an object are more predictive of future behaviour towards that object than are attitudes based on indirect experience. It is well documented that behavioural experience with mental illness, whether direct or indirect, is predictive of positive attitudes towards this group. A major aim of the theoretical campaign was to give participants, through the use of imagination manipulation, a more direct experience of mental illness and mental health discrimination. The results suggest that this experience, particularly for those participants unfamiliar with mental illness, resulted in a decrease in negative attitudes. The decrease in negative attitudes was still present six weeks after the campaign. This result supports the validity of using self-relevant scenarios as a means of attitude change.

5.6 Criticisms of the study

A criticism of the research project relates to the effect sizes. With the exception of the perceived susceptibility/self-interest relationship and the attitude importance/self-interest relationship all the effect sizes were small. Larger effect sizes would increase confidence in the degree to which the null hypotheses were false. The small effect sizes somewhat undermine the power of the theoretical campaign to change attitudes. This is particularly disappointing for the central research hypothesis that predicts that the theoretical group would show a significant decrease in negative attitudes after the campaign. A larger effect size would increase confidence in the theoretical framework used to guide the production of the campaign.
The second major criticism involves the duration of attitude change. The study was designed to bring about persistent attitude change that was resistant to change. To test the persistence of attitude change the participants were retested six weeks after the campaign. A valid criticism of the study design is that six weeks is too short a period to measure the persistence of attitude change. The retesting would have been more valid if it had taken place six months after the campaign.

Another criticism of the study is that the participants may have discussed the campaigns with each other during the six-week period before they were retested. This may have influenced the results of the follow-up study. In retrospect, instructing the participants not to discuss the content of the campaigns until after they had been retested may have reduced this problem.

The fifth hypothesis stated that higher levels of self-interest and attitude importance would be associated with more positive attitudes towards people with mental health problems. To test this hypothesis, CAMI scores were compared for participants who scored on or below the mean on the self-interest and attitude importance indices with participants who scored above the mean on these indices. The relationship between the variables could have been investigated by using a correlational analysis such as the Pearson product-moment correlation coefficient. The advantage of a correlational analysis is that it would have given a measure of the degree of linear relationship between the variables.

Another criticism of this study is the degree to which the results can be generalised beyond the convenient sample of conscripts. This group was chosen because they were accessible and because compulsory conscription ensured that the sample represented all occupational classes, educational levels and ethnic groups. The option of using college students was considered, however, Sears (1986, 1987) suggested that an over reliance on such samples may have led social psychology to paint a misleading portrait of human nature.
A significant limitation of the sample was that the participants were all male. As discussed in the introduction, findings regarding the association between gender and attitudes towards people with a mental illness are mixed. Previous research has suggested that when there is a sex difference, females tended to show more positive attitudes. It seems plausible that if positive attitudes can be increased in an exclusively male population, then one could be cautiously optimistic about the effectiveness of such a campaign in a mixed population.

Another limitation of the sample is the age factor. The majority of the participants were between 18 and 35 years old. Increased age has been associated with more socially restrictive attitudes and so it is likely that the general population may have more socially restrictive attitudes than the youthful participants. It is unclear whether the results would generalise to the older population.

Participants in the theoretical group had significantly more children under the age of 16 living in the household compared with the information and control groups. However, this variable was not associated with any consistent attitude towards people with mental illness, and so it is unlikely to have had a confounding influence. Finally, participants in the information group had significantly more positive baseline attitudes (i.e., attitudes before the campaign) on the fear and exclusion scale than the other two groups. However, as the main focus of the research was on the change between each participant’s pre and post scores, it seems unlikely that this confounding variable significantly influenced the results.
6. CONCLUSION

This study put forward a theoretical framework for the production of a media campaign to reduce mental health discrimination. It identified the components needed for high quality persuasive arguments and the psychological ingredients to motivate people to process those arguments. It is hoped that this project will stimulate more experimental research on campaign design using the vast amount of social psychology research literature on attitude formation and change.

The results suggest that a campaign based on formal psychological theories was able to significantly decrease negative attitudes towards people with mental health problems. A campaign which contained only educational information about mental illness had no effect in this regard. This result was consistent with research conducted by Wolff et al. (1996) which also found that no direct relationship existed between having been educated about mental illness and attitude change. As previously mentioned, the XIth World Congress of Psychiatry (1999) launched a world wide programme to fight mental health discrimination. They intend to develop educational campaigns to interrupt the cycle of discrimination. The results of this project indicate that careful design of these campaigns is needed for them to be effective in meeting this aim.

In closing, it is important to note that the findings reported here do not preclude the role of educating the public about mental illness. However, the results suggest that to tackle the issue of mental health discrimination in the next century, we need to do more than simply educate the public about mental illness. An effective strategy to reduce discrimination may be to encourage people to attach personal importance to the issue. The work reported here provides an empirical basis for recommendations to help achieve this goal.
7. REFERENCES


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7. APPENDICES

Appendix 1  Ethical approval
Appendix 2  Campaign scripts
Appendix 3  CAMI mean scores
Appendix 4  Distribution of CAMI scores
Appendix 5  Distribution of attitude importance scores
Appendix 6  Satisfaction ratings for the information and control campaigns
Appendix 7  A list of the thoughts and feelings reported by the participants in deciding how important the issue of mental health discrimination was to them personally
Appendix 8  Questionnaires
April 30, 1999

Dr. D. Granger
Psychologist
St. Brendan's Hospital

Dear Dr. Granger,

Re: Research Proposal

Please be informed that the Ethics Committee has approved your research proposal, and hope that the project will be successful. We would be grateful if you could share the results with us on completion of the project.

Yours sincerely,

ALDWIN SAVERY
Chairman
Appendix 2: Campaign Scripts

1) Control/Smoking campaign

In last 10 years society’s attitudes toward smoking has changed dramatically and now there are many new products to help smokers break their habit. I’m Dr. Phillip Jones. What are the benefits of smoking? Well, according to smokers there are many. They say tobacco helps them relax, it provides an enjoyable break during work, it helps them deal with unpleasant situations, it prevents nicotine withdrawal, it stops them getting bored. They say they enjoy smoking, it gives them something to do with their hands, it helps them to focus.

When asked what the drawbacks were, they said it might kill me, or they talk about how their breath, clothes, hair and car smell bad, or how they get out of breath more easily, how expensive smoking is or how ant-social it is. Some worry about setting a bad example for their children.

What are the facts? There are more than 1,000 identified chemicals in cigarette smoke. You may recognize some of these: Arsenic, Acetone, Ammonia, Benzene, Lead & Mercury, Carbon Monoxide, Formaldehyde - the list goes on and on, but it is Nicotine that is the main active ingredient, and it is a powerful drug. It produces a temporary state of enhanced well-being by affecting many important brain chemicals. As a result smokers feel a heightened pleasure and a state of alert relaxation. It can pep you up when you are feeling sluggish, help you concentrate more effectively and under certain conditions it increases memory. What are the drawbacks? All tobacco products are toxic. They are all poisonous. So-called light cigarettes are no less toxic. The health risks of smoking are numerous and range from minor problems like bad breath, allergies, tooth stains, tooth loss and gum disease to major illnesses like emphysema, heart attacks, and cancers of the lung, mouth, throat, and many other organs. It can also cause gangrene and limb loss, especially in diabetics. As well, there is little evidence that using tobacco reduces stress. Surveys show that smokers are more stressed than nonsmokers, and that people feel less stressed after they quit smoking. This may be because tobacco worsens stress because of the negative moods that occur during times of nicotine deprivation.
Control/Smoking campaign cont’d

The number of people who die prematurely because of their tobacco use is the equivalent of three 747 jumbo jets crashing every day of the year. Tobacco use is the leading killer of human beings. Cigarettes kill half of those who continue to use it. Would you fly on a jumbo jet that had a 50% chance of crashing? Among those living today who use cigarettes, 500 million will be fatally poisoned by their smoking.

If you want to stop smoking, it's best to prepare. The more you prepare the more likely you will be able to kick the habit. The average smoker has tried to quit six to eight times before they're successful. Select a goal. Decide whether you want to reduce or stop smoking. Don't rush it. Preparation time may take up to three months. If you use more than ten cigarettes a day, or you think you're addicted to nicotine, look at the possibility of using a form of nicotine replacement that can help with the withdrawal symptoms. You can use nicotine gum, nasal spray, inhaler or patches. Talk to your doctor about these options.

When you stop smoking you'll some signs of nicotine withdrawal. Tobacco users are in a constant state of nervous stimulation. Many physical symptoms that smokers experience when they quit are the result of their nervous system returning to normal. These symptoms can start within 20 minutes after you last used tobacco, and usually peak by the second or third day. The drug generally leaves the body within three to five days. The best way to get through this often difficult time is to arrange as much support as possible. Remind yourself that the unpleasant feelings usually pass within a few days. Then you will be free from this bothersome, embarrassing and life-threatening habit.

The physical symptoms of nicotine withdrawal vary from person to person, but may include increased appetite, especially for carbohydrates and sweets. Increased coughing, sweating, fatigue, cramps, weight gain and nausea. Happily, there are also many positive effects. They include happiness about getting free from tobacco,
Appendix 2: Campaign Scripts

Control/Smoking campaign cont’d

improved ability to smell and taste, lowered blood pressure, improved circulation and generally feeling better.

How can you help a friend quit smoking? First, you can help them feel that it is possible for them to take control of their habit. Try not to nag them while they are smoking or to lecture them about the dangers of smoking. Making them feel guilty or shameful simply overwhelms them and can make them want to reach for another cigarette. Remember, it is only when they want to stop that progress can occur. Let them know you will continue to care about them no matter what they decide to do about smoking. If they decide to stop smoking, celebrate the decision. Let them know that you are confident they’ll succeed. Be understanding. The first two weeks are the hardest. Try to keep your friend away from other smokers and tobacco products. Support them by sitting in no-smoking areas and join them in activities or places that are removed from their old smoking friends while they make the transition. If you smoke yourself, try giving it up for the first days or weeks as your friend makes the change to a healthier lifestyle.

Quitting smoking will allow you to experience a higher level of health and well being. It can lead to very powerful and positive changes in your life.
2) Information Campaign

Mental illness? What is it? What are the signs? Most people are pretty confused about the facts. I’m Dr. Phillip Jones. A mental illness is a disorder in which people’s thoughts or behaviours are disturbing to them or to the community. Treatment is important when these problems affect the individual’s day to day life, or when there is a risk to the individual or others.

Mental illnesses can be divided into two large groups. Minor disorders, and major disorders. The main difference between the two is that in minor disorders, the person knows that their feelings and behaviours are a problem. They know they’re having difficulties. In psychological terms, they would be seen as having “insight” into their illness. However, in major disorders this insight can be lost and the person may not realise that they’re having problems. Most people who seek help from the mental health services have minor disorders such as depressive and anxiety problems.

Anxiety is like fear or worry. When the anxiety becomes so extreme that a person can no longer cope with day to day life, the person may be suffering from an anxiety disorder. The signs of anxiety are many and include muscle tension, shortness of breath, headaches, dizziness, knotted stomach, a dry mouth. There are five types of anxiety disorders. They include panic disorders, phobias, obsessive compulsive disorders, post-traumatic stress disorder and generalized anxiety disorder. Panic disorders are brief episodes of panic and fear which occur suddenly without any obvious reason. Phobias are an unreasonable fear of certain objects like spiders or elevators. Obsessive Compulsive disorder is a more complex disorder and involves repetitive thoughts that aren’t logical and can lead to pointless actions. For example, a person with an obsessive compulsive disorder may wash their hands many many times or constantly recheck the door locks. Post-traumatic stress disorder is a type of anxiety problem that can occur following an event that is very frightening. The signs include thinking about or dreaming about the frightening event over and over again for many months after it happened. Generalized anxiety disorder is a state of excessive
Information campaign cont’d

worry about lots of issues. It involves constant stress and many other anxiety symptoms.

Depression is another common type of mental illness. It affects your mood and it can cause serious problems at work and in personal relationships. In severe cases it can lead to suicide. Unlike passing sadness, if left untreated depression can last for months or years. It affects one out of every five adults, and twice as many women as men suffer with depression. Some signs are low-mood, loss of energy, poor concentration, problems sleeping and eating. People with depression often complain of not being able to get pleasure from anything and feel hopeless about the future with thoughts of death or suicide.

Schizophrenia is a major mental illness. It is a disorder that can be difficult to understand and there are many false beliefs about the illness. A common one is that schizophrenia is about having multiple or split personalities, like Dr. Jekyll and Mr. Hyde. This is completely untrue. Schizophrenia has nothing to do with having more than one personality. Another popular idea is that people who have schizophrenia are dangerous or violent. Most people with this diagnosis are not dangerous. The truth is they are often timid and frightened. One person out of every hundred will suffer from schizophrenia before they reach the age of 45 and the illness tends to first develop in early adulthood. Those affected may not know that something is wrong.

The signs of schizophrenia include hearing voices that are not there and delusions. A delusion is an idea that is not likely to be true that gets stuck in the person’s mind. For example, a sufferer may believe that they have special powers or that someone is trying to harm them. They may believe their thoughts are being spoken out loud or that their minds are being controlled from outside. Their conversation can sometimes be strange and mixed up. Schizophrenia can also cause a loss of energy, and the person may have problems taking care of themselves.
Information campaign cont’d

There are many different ideas about what causes mental illness. Research suggests that some mental illnesses, especially the more severe ones, are the result of an increase in certain chemicals in the brain. What causes the chemicals to increase is not really known. However, stress and disturbing events such as death, divorce, birth, loss of a job, are known to cause mental disorders in some people. Also, some street drugs such as LSD, speed or even marijuana, can trigger mental illness in some people.

Two common forms of treatment for mental illness are medication and psychotherapy. Medication helps when the illness is due to a chemical imbalance. Psychotherapy involves talking to patients to help them understand why they are having problems. Psychotherapy is helpful when the problems stem from stress or unpleasant life events such as a difficult childhood, stress at work or adjusting to a major physical illness. Just as there are different types of medications available, there are also various types of therapies such as individual psychotherapy, family therapy or cognitive therapy. What will work for one person may not work for another, and most people are helped by a combination of medication and psychotherapy.

We hope that this has been helpful in clearing up some of the confusion surrounding mental illness.

words: 906
Appendix 2: Campaign Scripts

3) Theoretical Campaign
Imagine what life would be like if you had financial problems, if 1BELO, 2TELCO, the bank and your landlord were all asking for money that you don’t have. Imagine... how you would feel if those closest to you left the island or even worse if they died? Now imagine how it would feel if those feelings got on top of you. Perhaps you’d feel irritable and bad tempered most of the time, have problems sleeping, headaches, maybe you’d feel like you had no energy, that you just couldn’t be bothered to do anything. Imagine how it would be if you felt everyone was against you or that you just couldn’t cope - that no one could help. You know that you are a strong person who always copes. However, you know something is wrong. You go to your family doctor who recognises that you are not yourself and suggests you seek help from an expert. You go to see a psychiatrist. He listens, you talk... you start to understand what has been happening to you. You start to feel relaxed...and....

(Quicken the pace and volume) You are now a mental patient3! People are thinking, and some are saying you must be dangerous, you should not be allowed to hold a responsible job, you should be kept away from the community, you should not be allowed to live in an ordinary house, on an ordinary street. You should only be able to get treatment from clinics that are outside town, away from children and ordinary normal people. People start treating you like a child and worst of all they assume that you will never recover. Your friends no longer want to be around you - they’re worried about what you may do. You are now a social embarrassment. Does any of this make sense? Does it make sense to think that this could never happen to you - that it only happens to other people?

I’m Dr Phillip Jones4 and let’s look at the facts. First, could it happen to you? Chances are you will go through life and never develop a mental illness. But, as I’m sure you’re

---

1Bermuda Electric Light Company Limited
2Bermuda Telephone Company Limited
3Surprise element
4Well known local actor and physician
Theoretical campaign cont’d

aware, no one is immune from mental health problems. No matter how clever you are, how rich you are, how strong-willed you are, if you’re male, female, black, white, tall, small - none of us are protected from developing mental health problems.

Do people with mental health problems get better? What do you think? Of course they do! Like most problems with time and help they pass. If they didn’t, the mental health service in Bermuda would be packed full of people. As a doctor, I can tell you that most people who seek help from mental health services get better.

Some people are frightened of those with mental health problems, because they think they may be dangerous. Most people who seek help from the psychiatric services have depression or anxiety problems and these people present no threat to anyone but themselves. To find out about the risk of violence by people with serious problems like schizophrenia we need to look at research. What does this tell us?

Most studies have shown that there is no connection between mental illness and violent behaviour. A few studies have shown that when there is a connection, the link is small and only occurs when people are actively having psychotic symptoms. You’ve probably seen people with these types of problems. Psychotic symptoms include bizarre and mixed up conversation - they don’t really make sense. The person may talk about having special powers or that someone is controlling their thoughts or trying to hurt them. The important thing to remember is that when people are having these types of symptoms they are often frightened and scared themselves. If you find yourself in a situation with someone you think might be having these types of problems, the best thing to do is just act calm and non-threatening. If you are concerned about them, contact the mental health services.

So, we know that people who suffer from a mental illness are very rarely violent. This is a myth made popular by the media - it may make for an exiting theme in a movie, but
Appendix 2: Campaign Scripts

Theoretical campaign cont’d

it is not based in reality. Most people in our prisons do not have a mental illness and most of the dangerous people who you should be scared of don’t have a mental illness. It is important to remember that anyone could suffer from a mental illness. Of course if you did have a mental illness you could live in an ordinary house, on an ordinary street, socialize with your friends, work, get married, have children and receive treatment in the community and you, like most people, would not need to be kept in a hospital and would probably make a full recovery.

So, to conclude, if you were to suffer from a mental illness here are a few things to remember. There is nothing special or different about you - anyone can develop a mental illness; like most people with these problems you wouldn’t be violent; and chances are you wouldn’t do or say any more socially embarrassing things than you did before. Of course, if you were a jerk before you became ill, you’ll be a jerk with a mental illness. And finally, you, like almost everyone else would make a full recovery.

Words: 899
### Appendix 3: CAMI Results

<table>
<thead>
<tr>
<th>CAMI Items</th>
<th>Means</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locating mental health facilities in residential neighbourhoods does not endanger local residents.</td>
<td>2.8</td>
<td>1.0</td>
</tr>
<tr>
<td>Residents have good reason to resist the location of mental health services in their neighbourhood.</td>
<td>3.3</td>
<td>.99</td>
</tr>
<tr>
<td>It is frightening to think of people with mental health problems living in residential areas.</td>
<td>2.8</td>
<td>1.1</td>
</tr>
<tr>
<td>Residents have nothing to fear from people coming into their neighborhood to obtain mental health services.</td>
<td>2.9</td>
<td>.96</td>
</tr>
<tr>
<td>Having mental patients living within residential area neighbourhoods might be good therapy but the risks to residents are too great.</td>
<td>3.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Locating mental health facilities in a residential area downgrades the neighbourhood.</td>
<td>3.0</td>
<td>1.0</td>
</tr>
<tr>
<td>I would not want to live next door to someone who has been mentally ill.</td>
<td>2.6</td>
<td>1.0</td>
</tr>
<tr>
<td>Mental health facilities should be kept out of residential areas.</td>
<td>3.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Residents should accept the location of mental health facilities in their neighborhoods to serve the needs of the local community.</td>
<td>2.8</td>
<td>1.0</td>
</tr>
<tr>
<td>No one has the right to exclude the mentally ill from their neighbourhood.</td>
<td>2.4</td>
<td>1.0</td>
</tr>
<tr>
<td>The mentally ill should be isolated from the rest of the community.</td>
<td>2.3</td>
<td>1.0</td>
</tr>
<tr>
<td>Mental patients need the same kind of control and discipline as a young child.</td>
<td>3.2</td>
<td>1.0</td>
</tr>
<tr>
<td>One of the main causes of mental illness is lack of self-discipline and willpower.</td>
<td>2.5</td>
<td>1.0</td>
</tr>
<tr>
<td>As soon as a person shows signs of mental disturbance, he or she should be hospitalized.</td>
<td>2.8</td>
<td>1.1</td>
</tr>
<tr>
<td>Anyone with a history of mental illness problems should be excluded from public office.</td>
<td>2.8</td>
<td>1.1</td>
</tr>
<tr>
<td>There is something about the mentally ill that makes it easy to tell them from normal people.</td>
<td>2.8</td>
<td>1.1</td>
</tr>
<tr>
<td>The best way to handle the mentally ill is to keep them behind locked doors.</td>
<td>1.9</td>
<td>.86</td>
</tr>
<tr>
<td>We have a responsibility to provide the best care for the mentally ill.</td>
<td>2.1</td>
<td>.89</td>
</tr>
<tr>
<td>We need to adopt a far more tolerant attitude to the mentally ill in Bermuda</td>
<td>2.3</td>
<td>.89</td>
</tr>
</tbody>
</table>

*Lower scores are associated with more positive attitudes on all the items*
Appendix 4

Distribution of CAMI scores for all subjects before the campaigns
Appendix 5

Distribution of attitude importance scores for all subjects before the campaigns

5 = Extremely important
4 = Very important
3 = Somewhat important
2 = Not too important
1 = Not at all important
<table>
<thead>
<tr>
<th>Ratings</th>
<th>The message was interesting</th>
<th>Did not hold my attention</th>
<th>I enjoyed listening to the campaign</th>
<th>Would recommend to a friend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>1.6</td>
<td>1.6</td>
<td>6.3</td>
<td>6.3</td>
</tr>
<tr>
<td>Agree</td>
<td>61.9</td>
<td>11.1</td>
<td>38.1</td>
<td>36.5</td>
</tr>
<tr>
<td>Neutral</td>
<td>31.7</td>
<td>20.6</td>
<td>46.0</td>
<td>36.5</td>
</tr>
<tr>
<td>Disagree</td>
<td>1.6</td>
<td>60.3</td>
<td>6.3</td>
<td>19.0</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>3.2</td>
<td>6.3</td>
<td>3.2</td>
<td>1.6</td>
</tr>
</tbody>
</table>

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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>13.0</td>
<td>2.2</td>
<td>6.5</td>
<td>19.6</td>
</tr>
<tr>
<td>Agree</td>
<td>65.2</td>
<td>17.4</td>
<td>32.6</td>
<td>37.0</td>
</tr>
<tr>
<td>Neutral</td>
<td>10.9</td>
<td>13.0</td>
<td>37.0</td>
<td>21.7</td>
</tr>
<tr>
<td>Disagree</td>
<td>8.7</td>
<td>60.9</td>
<td>17.4</td>
<td>15.2</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>2.2</td>
<td>6.5</td>
<td>6.5</td>
<td>6.5</td>
</tr>
</tbody>
</table>

All figures are percentages
Appendix 7: Comments made by participants regarding the three campaigns

1] **Positive comments about the theoretical campaign**

a) **Comments relating to self-interest**

It gave me a greater awareness that it could happen to me
It could happen to you and it is treatable
It made mentally ill people seem like you or me
It put the listener in the position of a mental health patient
The message allows you to see that anyone can suffer from a mental illness
It successfully put you in the place of a mentally ill person
It made you feel like mental illness could happen to you
It made me realise that it might be me one day so I should not discriminate
That anyone can develop a mental illness and recover
It showed me how easy mental illness can come about
That mental illness is a part of all our lives
It helped me to understand that it could happen to me
It made me realise that judging people is wrong because it could happen to you

b) **Comments relating to community care**

It made me realise that people with a mental illness do not always have to live in a hospital
That mentally ill people are simply normal people
I liked that it said that mentally ill people could be treated in the community
It showed me that mentally ill people are like everyone else
That mental illness is not a disease, but part of modern life
It made me aware that people with mental health problems should not be excluded from society

c) **Comments relating to the dangerousness issue**

Awareness that you don’t have to be afraid of people with a mental illness
It helped me understand that most mentally ill people are not dangerous
The fact that violent crime was not linked to mental illness
It made you realise that most mentally ill people are not dangerous
Appendix 7: Comments made by participants regarding the three campaigns

That most patients with a mental illness are not violent
That people with a mental illness are not to be feared

d) Issues relating to a poor prognosis
That mental illness can be healed
It helped me understand that it would not be the end of the world if you develop a mental illness
It made me realise that most people recover from a mental illness

e) Comments relating to the acquisition of information
It taught me things about mental illness that I did not know
It explained about mental illness
I learnt something
I learnt new information
I liked the information about mental illness
I learnt something new about mental illness
The message educated me about mental illness

f) Comments relating to the clarity of the message
It was plain and simple
Straight to the point
It was straight to the point
Simple explanations
It was straight to the point - no jargon

g) Comments relating to the perceived truthfulness of the message
It was truthful
It was the truth
It was real
It was truthful
It was the truth
Appendix 7: Comments made by participants regarding the three campaigns

h) Comments about the introductory music
I liked the intro music
The music was good
I liked the music
I enjoyed the music

I) Miscellaneous comments
It made a good point
The message was important
The tone of the message
It depicted mental illness in a different light from how most people perceive it
I think people could identify with the message
It debunked myths about mental illness
It described the way people feel sometimes
I liked the message because it let me know that someone is doing something about the issue.

1.1) Negative comments about the theoretical campaign
a) Comments relating to a lack of factual information
It did not explain mental illness in-depth
Not enough information
It did not mention chronically mentally ill people
It did not differentiate between major and minor disorders
It did not talk about the really bad cases
More figures about mental illness in Bermuda

b) Comments relating to the introductory music
Did not like the music
Did not like the music
Did not like the music
Did not like the music
The music was boring
Appendix 7: Comments made by participants regarding the three campaigns

c) Miscellaneous comments
The message was patronising
The message did not “grab” me
It under played the severity of mental illness in some cases
It did not interest me
It did not say that mentally people can take out their problems on their children
Mental illness does not interest me
Nothing was particularly likeable about the message
It was meant for a person with a mental illness

2] Positive comments about the information campaign
a) Comments relating to the acquisition of information
It was interesting
Very informative and interesting
It helped me understand mental illnesses better
It was informative
It explained different ways of obtaining a mental illness
It was informative about the different types of mental illnesses
It helped cleared up some misconceptions about mental illness
It dismissed stereotypes
It cleared up some issues surrounding mental health
It was very informative
Helped me understand a few more things
It was informative
It was interesting how professionals classify sickness
It clarified different types of illnesses
It gave a wider perspective on mental illness
It was educational
It got rid of some confusion over exactly what mental illness is
It was informative
It was very informative
Appendix 7: Comments made by participants regarding the three campaigns

I really learnt a thing or two
Informative
Informative
It explained what mental illness is
It told many facts that people don’t know
I learnt things before which I did not know
It cleared up certain misconceptions about mental illness
It gave me information about mental illness
It taught me things I did not know
It helped me understand the different symptoms and the real meaning behind them
It helped me understand mental illness
It helped me learn more about mental illness
It described different illnesses and I learnt that they are not all bad
Informative
It showed me what to look for if it happened to me or my family

b) Comments relating to the clarity of the message
It was to the point
Succinct
It was straight to the point
It was right to the point
Clear and to the point

c) Miscellaneous comments
I liked the whole message
I liked it
It was about helping those in need
It taught me that some people cannot help themselves
It was appealing
It would help people who have never experienced mental illness
Appendix 7: Comments made by participants regarding the three campaigns

2.1] Negative comments about the information campaign

He said nothing about mental retardation or other illnesses
It could have been more informative
Did not discuss in enough detail about the treatments for the mentally ill
It was boring
It was too long
I already know all about mental illness
It was too general
It was too short
It did not talk about dangerous forms of mental illness - it was bias
I did not like any of it
It did not talk much about cures
It was not very interesting
I already knew about mental illness

3] Positive comments about the control/smoking campaign

a) Comments relating to the acquisition of information

Facts about smoking
It focused on the dangers of smoking
Informative
The facts about what smoking does
That smoking kills
Detailed information about what nicotine does to people
It made me aware of the dangers of smoking
Not pushy - just gave you all the facts
It told you how to support people when they attempt to quit smoking
It told you clearly about all the harmful effects of smoking
I learnt just how bad smoking is for your health
It was useful information for those who want to quit
It was factual and helpful
It gave good factual information
Appendix 7: Comments made by participants regarding the three campaigns

It helped me know the facts
It gave smokers useful information to help them quit without necessarily going “cold turkey”
The facts were helpful
It showed me how to help someone quit, without nagging

b) Comments relating to self-interest
Good if you smoke - I don’t
It was good if you want to quit - I don’t
If you have a smoking problem it was good, I don’t have that problem

c) Comments relating to the clarity of the message
Clear and concise
It got all the points across well
It was truthful and clear
It was straight to the point
It was clear and told the truth

d) Miscellaneous comments
An interesting health issue
It was positive
A positive message
It was a positive message
It showed both sides
It made me think
It was a positive message

3.1] Negative comments about the control/smoking campaign
It does not affect me as neither me nor my family has ever smoked
It was a bit long
It could have been more informative
Appendix 7: Comments made by participants regarding the three campaigns

Needed to give facts about smokers in Bermuda
I really don’t think it’s going to get through to these guys
Propaganda - I will decide when to stop smoking
Did not say anything about marijuana
I don’t smoke
Appendix 8: Questionnaires

Please circle the response that most closely reflects your views for each question. There are no right or wrong answers. This survey is confidential. It is important that you answer every item.

1. Locating mental health facilities in residential neighbourhoods does not endanger local residents.
   Strongly agree  Agree  Neutral  Disagree  Strongly disagree

2. Residents have good reason to resist the location of mental health services in their neighbourhood.
   Strongly agree  Agree  Neutral  Disagree  Strongly disagree

3. It is frightening to think of people with mental health problems living in residential areas.
   Strongly agree  Agree  Neutral  Disagree  Strongly disagree

4. Residents have nothing to fear from people coming into their neighborhood to obtain mental health services.
   Strongly agree  Agree  Neutral  Disagree  Strongly disagree

5. Having mental patients living within residential area neighbourhoods might be good therapy but the risks to residents are too great.
   Strongly agree  Agree  Neutral  Disagree  Strongly disagree

6. Locating mental health facilities in a residential area downgrades the neighbourhood.
   Strongly agree  Agree  Neutral  Disagree  Strongly disagree

7. I would not want to live next door to someone who has been mentally ill.
   Strongly agree  Agree  Neutral  Disagree  Strongly disagree
8. Mental health facilities should be kept out of residential areas.

   Strongly agree   Agree   Neutral   Disagree   Strongly disagree

9. Residents should accept the location of mental health facilities in their neighborhoods to serve the needs of the local community.

   Strongly agree   Agree   Neutral   Disagree   Strongly disagree

10. No one has the right to exclude the mentally ill from their neighbourhood.

    Strongly agree   Agree   Neutral   Disagree   Strongly disagree

11. The mentally ill should be isolated from the rest of the community.

    Strongly agree   Agree   Neutral   Disagree   Strongly disagree

12. Mental patients need the same kind of control and discipline as a young child.

    Strongly agree   Agree   Neutral   Disagree   Strongly disagree

13. One of the main causes of mental illness is lack of self-discipline and willpower.

    Strongly agree   Agree   Neutral   Disagree   Strongly disagree

14. As soon as a person shows signs of mental disturbance, he or she should be hospitalized.

    Strongly agree   Agree   Neutral   Disagree   Strongly disagree

15. Anyone with a history of mental illness problems should be excluded from public office.

    Strongly agree   Agree   Neutral   Disagree   Strongly disagree
Appendix 8: Questionnaires

16. There is something about the mentally ill that makes it easy to tell them from normal people.
   *Strongly agree*    *Agree*    *Neutral*    *Disagree*    *Strongly disagree*

17. The best way to handle the mentally ill is to keep them behind locked doors.
   *Strongly agree*    *Agree*    *Neutral*    *Disagree*    *Strongly disagree*

18. We have a responsibility to provide the best care for the mentally ill.
   *Strongly agree*    *Agree*    *Neutral*    *Disagree*    *Strongly disagree*

19. We need to adopt a far more tolerant attitude to the mentally ill in Bermuda.
   *Strongly agree*    *Agree*    *Neutral*    *Disagree*    *Strongly disagree*

20. The mentally ill deserve our sympathy.
   *Strongly agree*    *Agree*    *Neutral*    *Disagree*    *Strongly disagree*

21. How important to you is the issue of people being discriminated against because they have a mental health problem?
   *Extremely*     *Very*     *Somewhat*     *Not too*     *Not at all*  
   *important*     *important*     *important*     *important*     *important*

22. How much do you personally care about mental health discrimination?
   *Care deeply*    *Care a lot*    *Care somewhat*    *Care very little*    *Don't care at all*

23. How much does this issue mean to you?
   *Means a great deal*    *Means a lot*    *Means somewhat*    *Means very little*    *Means nothing*
Appendix 8: Questionnaires

24. Please write down all the thoughts, beliefs, feelings and ideas that you considered in deciding how important the issue of mental health discrimination is to you personally.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

25. How much do you feel you have an interest at stake in the issue of mental health discrimination?

A great deal   A lot   Somewhat   Very little   Not at all

26. How relevant is this issue to your life?

A great deal   A lot   Somewhat   Very little   Not at all

27. How easy is it for you to think of ways that the issue of mental health discrimination might effect you?

Very easy   Easy   Somewhat   Not very easy   Impossible

28. How likely do you think it is that you may at some point in your life develop a mental health problem?

Very likely   Fairly likely   Not sure   Fairly unlikely   Very unlikely

Please wait for further instructions

Please do not turn the page
Appendix 8: Questionnaires

Please circle the response that most closely reflects your views for each question. There are no right or wrong answers. This survey is confidential. It is important that you answer every item.

1. Locating mental health facilities in residential neighbourhoods does not endanger local residents.
   - Strongly agree
   - Agree
   - Neutral
   - Disagree
   - Strongly disagree

2. Residents have good reason to resist the location of mental health services in their neighbourhood.
   - Strongly agree
   - Agree
   - Neutral
   - Disagree
   - Strongly disagree

3. It is frightening to think of people with mental health problems living in residential areas.
   - Strongly agree
   - Agree
   - Neutral
   - Disagree
   - Strongly disagree

4. Residents have nothing to fear from people coming into their neighborhood to obtain mental health services.
   - Strongly agree
   - Agree
   - Neutral
   - Disagree
   - Strongly disagree

5. Having mental patients living within residential area neighbourhoods might be good therapy but the risks to residents are too great.
   - Strongly agree
   - Agree
   - Neutral
   - Disagree
   - Strongly disagree

6. Locating mental health facilities in a residential area downgrades the neighbourhood.
   - Strongly agree
   - Agree
   - Neutral
   - Disagree
   - Strongly disagree

7. I would not want to live next door to someone who has been mentally ill.
   - Strongly agree
   - Agree
   - Neutral
   - Disagree
   - Strongly disagree
Appendix 8: Questionnaires

8. Mental health facilities should be kept out of residential areas.

   Strongly agree   Agree   Neutral   Disagree   Strongly disagree

9. Residents should accept the location of mental health facilities in their neighborhoods to serve the needs of the local community.

   Strongly agree   Agree   Neutral   Disagree   Strongly disagree

10. No one has the right to exclude the mentally ill from their neighbourhood.

    Strongly agree   Agree   Neutral   Disagree   Strongly disagree

11. The mentally ill should be isolated from the rest of the community.

    Strongly agree   Agree   Neutral   Disagree   Strongly disagree

12. Mental patients need the same kind of control and discipline as a young child.

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13. One of the main causes of mental illness is lack of self-discipline and willpower.

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14. As soon as a person shows signs of mental disturbance, he or she should be hospitalized.

    Strongly agree   Agree   Neutral   Disagree   Strongly disagree

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    Strongly agree   Agree   Neutral   Disagree   Strongly disagree
Appendix 8: Questionnaires

16. There is something about the mentally ill that makes it easy to tell them from normal people.

   Strongly agree   Agree   Neutral   Disagree   Strongly disagree

17. The best way to handle the mentally ill is to keep them behind locked doors.

   Strongly agree   Agree   Neutral   Disagree   Strongly disagree

18. We have a responsibility to provide the best care for the mentally ill.

   Strongly agree   Agree   Neutral   Disagree   Strongly disagree

19. We need to adopt a far more tolerant attitude to the mentally ill in Bermuda.

   Strongly agree   Agree   Neutral   Disagree   Strongly disagree

20. The mentally ill deserve our sympathy.

   Strongly agree   Agree   Neutral   Disagree   Strongly disagree

21. How important to you is the issue of people being discriminated against because they have a mental health problem?

   Extremely important   Very important   Somewhat important   Not too important   Not at all important

22. How much do you personally care about mental health discrimination?

   Care deeply   Care a lot   Care somewhat   Care very little   Don’t care at all

23. How much does this issue mean to you?

   Means a great deal   Means a lot   Means somewhat   Means very little   Means nothing
Appendix 8: Questionnaires

24. Please write down all the thoughts, beliefs, feelings and ideas that you considered in deciding how important the issue of mental health discrimination is to you personally.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

25. How much do you feel you have an interest at stake in the issue of mental health discrimination?

A great deal    A lot    Somewhat    Very little    Not at all

26. How relevant is this issue to your life?

A great deal    A lot    Somewhat    Very little    Not at all

27. How easy is it for you to think of ways that the issue of mental health discrimination might effect you?

Very easy    Easy    Somewhat    Not very easy    Impossible

28. How likely do you think it is that you may at some point in your life develop a mental health problem?

Very likely    Fairly likely    Not sure    Fairly unlikely    Very unlikely
Appendix 8: Questionnaires

About the tape you have just heard?

The message on the tape was interesting:
Strongly agree  Agree  Neutral  Disagree  Strongly disagree

The message did not hold my attention:
Strongly agree  Agree  Neutral  Disagree  Strongly disagree

I enjoyed listening to the tape:
Strongly agree  Agree  Neutral  Disagree  Strongly disagree

I would recommend listening to the tape to a friend.
Strongly agree  Agree  Neutral  Disagree  Strongly disagree

What I liked about the message was: ____________________________________________
___________________________________________________________________________
___________________________________________________________________________

What I disliked about the message was: ___________________________________________
___________________________________________________________________________
___________________________________________________________________________

About You

Please tick the correct response:

Sex: Male  Female

Age: 15 - 24  25 - 34  35 - 44  45 - 54  over 55

Ethnicity: Black Bermudian  White Bermudian
              Portuguese Bermudian  Other (please specify) ..........................
Appendix 8: Questionnaires

Marital Status: Single Married/cohabiting Widowed Separated Divorced

Are there children under the age of 16 living in your household? Yes No

What is your occupation/job...

What is the occupation of the head of your household...

Do you know somebody with a mental illness? Yes No

If yes, are they? A friend A family member An acquaintance

Have you ever suffered from a mental illness? Yes No

Thank you for your time
An Investigation of Delayed Development of Theory of Mind in Adults with Autism

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1. ABSTRACT

This study further investigates the hypothesis that in autism there is a specific developmental delay in the development of a “theory of mind.” Adults with autism were evaluated as to whether a theory of mind had developed. They were also assessed to see whether their acquisition of various mental state concepts showed a more normal pattern of development in comparison with children with autism. In addition, the study explores whether the development of a theory of mind is correlated with autistic disturbance and the level of social functioning. This is the first empirical study to investigate the latter two issues.

Twenty-nine adults with autism living in four different residential facilities were invited to take part in the study. Following initial screening with the Autistic Behaviour Checklist and two tests of intelligence, the resulting sample of 20 adults were given a series of tests to measure the development of a theory of mind. Relevant staff were asked to complete the Socialisation Domain of the Vineland Adaptive Behaviour Scales for each participant.

This study did not find evidence to support Baron-Cohen’s (1991) hypothesis that people with autism have a specific developmental delay in the area of meta-representation. Adults with autism failed the theory of mind test with the same frequency as children with autism. There was also no evidence to suggest that the sequence of acquisition of mental state concepts reflected a less deviant pattern of development in adults compared with children with autism. A positive relationship between the development of a theory of mind and social maturity was demonstrated. No relationship was found between the development of a theory of mind and the level of autistic disturbance.
2. INTRODUCTION

Autism is a disorder which begins in the first 36 months of life (DSM-IIIR, 1987). Symptoms include an absence of symbolic play (Ungerer and Sigman, 1981), the presence of ritualistic behaviour (DSM-IIIR, 1987) and a severe impairment in the ability to relate socially (Kanner, 1943). In order to explain the specific impairments of childhood autism, Baron-Cohen, Leslie and Frith (1985) put forward a suggestion which was derived from a model of meta-representational development (Leslie, 1984). This model specifies a mechanism which underlies a crucial aspect of social skill development, namely being able to conceive of mental states (i.e., knowing that other people know, want, feel, or believe things). Premack and Woodruff (1978) termed the mechanism a “theory of mind”. According to Leslie’s model a “theory of mind” does not appear until the second year of life and is responsible for the emergence of pretend play.

The results of research conducted by Baron-Cohen et al. (1985) lent support to their hypothesis that in autism there is a failure to develop a theory of mind. In their study and many subsequent studies (e.g., Dawson and Fernald, 1987; Leslie and Frith, 1988; Swetnam, 1990; Leekham and Perner, 1990) a small percentage of children with autism were able to demonstrate a theory of mind. Analysis of the age of these participants revealed that they were among the oldest in the samples (Baron-Cohen et al. 1985, 1986). This led to the development of a specific developmental delay hypothesis (Baron-Cohen, 1986). This hypothesis suggests that with maturity a theory of mind may eventually develop, at the lowest level, many years after it would normally be present. To date, research findings in this area are unclear as to whether maturity alone would lead to the development of a theory of mind, or whether the small percentage of children who demonstrate this ability have less autistic disturbance. The relationship between the development of a theory of mind and socially adaptive behaviour in people with autism has also not been investigated. This study intends to explore these issues.
2.1 Autism

Autism was first described as a clinical syndrome in 1943 by Kanner. He considered it to be an ‘inborn, innate condition in which children suffered from an autistic disturbance of affective contact which gives rise to a profound disturbance of social functioning’ (p. 217). Despite this classic description of the childhood behaviour, it was still a generally held belief that autism was a variant of schizophrenia beginning in early life. In the 1970s there was growing recognition of a need to separate disorders arising in early infancy and psychoses of later childhood and adolescence (Gillberg, 1990).

In 1980 the American Psychiatric Association first used the term "Pervasive Developmental Disorders", (PDD) emphasising the developmental origins of these conditions and the distinctions between these diagnoses and mental illness occurring in later life. Autism is now generally considered to be an organic neurodevelopmental disorder involving basic cognitive and social deficits (Gillberg, 1990). It is more common in males, with a sex ratio of 4:1 (Smalley, Asarnow and Spence 1988) and contrary to the earlier literature, does not show a higher social class bias (Gillberg and Schaumann, 1982).

2.2 Classification of Autism

Gillberg (1983) suggested that the PDD concept is problematic for a number of reasons. Firstly, whereas autistic disorder is defined on the basis of stringent diagnostic criteria, PDD is more loosely defined. Secondly, the term PDD is inconsistent in that it does not refer to all pervasive developmental disorders (e.g., mental handicap is not included). Gillberg suggested that there is much clearer support for the category of autism put forward by Wing and Gould (1979) which emphasises the ‘triad of social, language and behavioural impairments’ (p. 131).

Autism has proved to be a relatively valid diagnostic term which can be used with a certain degree of inter-rater and test-retest reliability (Rutter and Garmezy, 1983). There is general consensus that autism encompasses a set of three major behaviourally
defined diagnostic criteria; these being delay and deviance in the fields of social relatedness, communication and behaviour/ imagination (Gillberg, 1990).

2.3 Assessment
A variety of rating scales have been devised to help identify individuals with autistic behaviours. The Childhood Autism Rating Scale (CARS) is commonly used in clinical practice. It has a 15 item scale and should be administered by a trained rater during an observation of the individual. This rating scale has been documented to be reliable and valid for both children and adolescents (Gillberg, 1990). The Autism Behaviour Checklist (ABC) is a 57 item questionnaire with relatively simple statements and requiring only yes/no answers. This rating scale is useful for screening to identify individuals with high levels of autistic behaviour (Volkmar, Cicchetti, Dykens, Sparrow, Leckman and Baron-Cohen, 1988). Gillberg (1990) reviewed the literature and concluded that the ABC is a relatively useful instrument for evaluating the level of "autistic-type disturbance" and for eliciting pertinent information at the first interview. However, he suggested that no rating scale alone can specify a clinical diagnosis and that all individuals with a suspicion of autism should be individually assessed by a competent medical practitioner in the field.

2.4 Epidemiology of Autism
The epidemiology of autism has become an increasingly important field of investigation since the late 1980s. Before this period there seemed to be general agreement that the frequency of the disorder was somewhere in the range of 4-6 per 10,000 people (Gillberg, 1990). However, even in the late 1970s, Wing and Gould (1979) had shown that certain autistic-like conditions were much more common than previously believed. They reported frequency figures for the ‘triad of impairments’ of 21 per 10,000 in a South-East London Borough. This figure was later confirmed by Gillberg in 1986 who found that 21 per 10,000 teenagers had the combination of the triad and a mental handicap (Gillberg, Person, Gruffman and Temner, 1986).
Writers in the field of the epidemiology of autism (e.g., Gillberg, Person, Gruffman and Temner, 1986, Wing and Gould, 1979) acknowledge the possibility that the high prevalence figures in recent studies could have been obtained by gradual inflation of the concept of autism and better detection among those with severe and profound learning difficulties. Whether this is the case will probably never be resolved. However, the fact remains that the proportion of individuals with the combination of severe autistic-disturbances of social relatedness, communication and behaviour and severe restrictions of imagination is now greater than was generally held to be the case in the early 1980s.

2.5 Aetiology of Autism

Autism is not identified by a unique aetiology (Gillberg and Svendsen, 1983). It is now commonly accepted that it is a biologically caused syndrome arising from some subtle brain abnormality, occurring probably well before birth (Frith, 1991). Until recently anatomical evidence for brain abnormalities in autism did not exist and consequently biological aspects tended to be ignored. Now such evidence does exist, but further technological advances, such as refinements in brain imaging, will be necessary in order to delineate if a structural abnormality is responsible for this disorder (Frith, Morton and Leslie, 1991). Frith (1992) argued that our state of ignorance means that it is still necessary to make speculations about the biological basis of autism.

2.5.1 Biological Aspects of Autism

The most consistent recent finding in the field of autism and neurobiology has been associated with brainstem pathology. For example the enlargement of the fourth ventricle (Gillberg and Svendsen, 1983; Herold, Frackowiak, Le Couteur, Rutter and Howlin, 1988), prolongation of brainstem transmission time (Ornitz, 1985) and the recently documented association of hydrocephalus and Moebius syndrome with autism (Fernell, Gillberg and Von Wendt, 1990; Gillberg and Steffenburge, 1989).

Studies in the clinical field have shown that a number of identifiable medical conditions can occur in conjunction with autism (Gillberg, 1988). The most important of these
seems to be the fragile X syndrome (Hagerman, 1990), tuberous sclerosis (Gillberg, 1988), and rubella embryopathy (Wing, 1990). Although each occurs in less than five to ten per cent of people with autism, together they make up a substantial proportion of all cases referred with a diagnosis of autism (Gillberg 1990).

In summary, there is considerable evidence that infantile autism has major biological roots.

2.5.2 Psychological Aspects of Autism

It is clear that any theoretical account of autism must include its biological basis, yet the gulf between the brain and complex behaviour is great (Gillberg, 1991). The causal chain between biological factors and the resulting impairments in behaviour requires a mediating level. The level or bridge which lies between biological and behavioural phenomena is the domain of psychological process.

The period since 1985 has witnessed an upsurge in the study of fundamental psychological processes in autism. When Rutter (1983) surveyed the field of cognition in autism in the early 1980s, he concluded that cognitive deficits were not secondary to other features and that they underlie many of the important handicaps of children with autism. Since Rutter's survey, a number of experiments concerning the nature of the basic social, cognitive and emotional deficits in autism have been conducted. Two of the most influential sets of studies have come from Frith and her group of researchers, and Hobson and his group. Frith and her colleagues have concentrated on cognitive factors whereas Hobson and his colleagues have concentrated on affective factors. Both sets of researchers have developed specific theories which have been empirically tested and reformulated on the basis of research findings.

2.5.2.1 Affective Research in Autism

The "affective" theory formulated by Hobson (1986), draws on Kanner's original case descriptions (1943) and his assertion that children with autism have 'inborn disturbances of affective contact' (p.230). This view should not be confused with the
notion that autism is an emotional response to trauma (Bettelheim, 1967; Tinbergen and Tinbergen, 1983). The affective theory states that the social and communication problems in autism are secondary to an irreducible, affective deficit which involves an innate dysfunction in the ability to perceive other people's mental states as reflected in their bodily expressions. Hobson's own studies (Hobson 1986; Hobson, Ouston and Lee, 1988) which investigated autistic children's understanding of emotional expressions provided support for his theory. However, Baron-Cohen (1988) noted that Hobson's tasks required intermodal recognition of emotions (i.e., gestures, vocalisation, contexts, and facial expressions), and it is therefore unclear which component in all this might have caused their failure.

Studies by Sigman and Mundy (1984), Mundy, Sigman, Ungerer and Sherman (1986) and Sigman, Mundy, Sherman and Ungerer (1986) indicated that some attachment behaviours, eye contact and reaching after tickling (all of which could be seen as primary "affective" variables) tended to be preserved in autism. The affective theory does not account for why emotional attachment in autism may to some degree be unaffected, or why the social smile at six weeks of age may be present in autism (Parks, 1983) nor why autistic children may enjoy rough-and-tumble play (Damasio and Maurer, 1978).

Hobson's model predicts that conceptual role-taking (i.e., the ability to attribute different beliefs to others) should be impaired in autism. There is empirical support for this hypothesis (Baron-Cohen, et al., 1985). However, Baron-Cohen (1988) claimed that it was not clear why Hobson's model should make this prediction, as difficulty in understanding emotions does not necessarily imply difficulty in understanding beliefs (the differences between the mechanisms involved in understanding beliefs and emotions will be explained in the next section). Moreover, Baron-Cohen (1986) suggested that the model does not account for unimpaired functioning in perceptual role-taking i.e., knowing what another person is looking for, or in self-recognition (Flannery, 1976; Neuman and Hill, 1978).
To summarise, it would appear that the affective theory requires more clarification and empirical evidence than is presently available.

### 2.5.2.1 Cognitive Research in Autism

Although autism was first described in 1943, for the first 20 years cognitive research was rarely conducted into autism. Gillberg (1990) suggested that this was partly because Kanner (1943), in his paper delineating the disorder, implied that autism was a purely emotional disorder and in the 1960s psychologists focused on autism as a developmental language disorder.

Two new insights led to the shift towards seeing autism as a disorder of cognition. First, studies revealed that language disorder alone was unable to account for the social abnormalities found in autism, since such social deficits were not commonly found in other language-impaired children (Rutter and Bartak, 1973). Secondly, a series of seminal studies by Hermelin and O'Connor (1970) revealed specific cognitive deficits in autism. Baron-Cohen (1990) summarised these main three findings as follows:

1. The perceptual systems of people with autism are not specifically impaired in any way (although sensory handicaps can sometimes occur in conjunction with autism).
2. People with autism seem to be specifically impaired in tasks which require comprehension of meaning, irrespective of their level of functioning.
3. People with autism seem to process information in a qualitatively different way than people without autism.

As a result of these early findings recent cognitive research has concentrated on a "meta-representation theory" to explain the specific deficits commonly found in autism.

### 2.5.2.2 Meta-representation Theory

As with the affective theory, the meta-representational theory developed by Leslie (1987) also considers the autistic child's difficulty in understanding other people's mental states to be crucial. However, unlike the affective theory, this view starts from
the premise that mental states are not directly observable but have to be inferred, which requires a complex cognitive mechanism (to be described later). The theory also places more emphasis on the ability to infer mental states such as beliefs, rather than emotions. The rationale for this is that beliefs and desires are held to be the most important mental states in making sense of the social world. This is because they have a causal relationship with action (Dennett, 1978). They have this by virtue of their contents; beliefs and desires are always about something (i.e., I believe that x..., and I believe you believe that y...). Baron-Cohen (1988) refers to this as the "aboutness" of mental states. Unlike mental states like beliefs and desires, emotional states such as happiness, sadness, fear, and anger do not necessarily have content, and as such may be of less use in predicting and making sense of social behaviour (Baron-Cohen 1991).

As mentioned earlier, the inferential operation involved in attributing mental states such as beliefs is held to require complex cognitive structures. This has been summarised by Leslie (1978) as follows:

Our beliefs about or concepts of the physical world may be called primary representations. However, our beliefs about our own and other people's mental states (such as beliefs and desires) are representations of other representations. These are called second-order representations or meta-representations. Primary and meta-representations have very different logical properties (p.413).

The cognitive theory suggests that in autism the capacity for meta-representation is impaired. Moreover, the theory predicts that only those social skills requiring a meta-representational capacity should be impaired.

It has been argued that the underlying inability to form meta-representations is a key aspect of the more general cognitive problems which are basic to the disorder of autism (Prior, 1984; Rutter, 1983). One manifestation of this proposed deficit is a lack of a "theory of mind", that is, an inability to attribute mental states to oneself and other people. The development of a theory of mind in normal children seems to be a very
early achievement, in progress from the end of the first year of life (Baron-Cohen, 1990) and firmly established by the age of around three to four years (Astington, Harris and Olson, 1988).

Baron-Cohen, et al. (1985) suggested that there might be a specific impairment in the development of a theory of mind, because a theory of mind is essential to understand and predict much of human behaviour (Dennett, 1978; Wellman, 1985) and for competence in communication (Grice, 1975; Searle, 1983). Because social and communication abnormalities comprise two key symptoms in autism, Baron-Cohen, et al. (1985) suggested that a specific impairment in the development of the child's theory of mind seemed a plausible hypothesis.

2.6 Empirical Research and the Theory of Mind Hypothesis

One way to test if children understand mental states is to examine if their spontaneous speech contains words that refer to mental states. This approach has been used in studying clinically normal children (Bretherton, Mcnew and Beeghly-Smith, 1981; Shatz, Wellman and Silber 1983). These studies revealed that from 18 to 24 months old normal children spontaneously produce mental state terms (such as think, know, what, pretend, etc.). Baron-Cohen (1988) noted that the problem posed by such data is that it is hard to establish the extent to which children of this age actually understand the terms they are using in their speech.

A simple but more stringent experimental test of children’s understanding of the mental state "belief" was developed by Wimmer and Perner, in 1983. They selected belief as the mental state to test because this is arguably the clearest case of a mental state that is about something in the world (Dennett, 1978). That is, it is a mental state that posses "intentionality" (Searle, 1979, 1983). This test is based on a puppet story in which a character holds a false, therefore different belief to that held by the child. Children are scored as passing this test if they can demonstrate that they can take into account the story character's different belief, and that they can predict the story character's action, given its false belief.
Baron-Cohen, et al. (1985) gave an adaptation of Wimmer and Perner's (1983) "False Belief Test" to children with autism, as well as to a group of children with learning difficulties (all of whom had a diagnosis of Down's Syndrome), and a group of clinically normal children. The advantage of this paradigm is that it does not require any expressive language abilities. The child is only required to point to one location or the other, in response to key questions. Furthermore, control questions establish if the child can comprehend the narrative of the story.

The critical event in the test is that one of the characters is not present when another character moves an object from A to B. When asked where the character will look for the object upon her return, the correct answer is location A, since this is where she originally put it, and therefore where she believes it to be. Baron-Cohen et al. (1985) found that whilst 86 per cent of the Down's Syndrome subjects, and 85 per cent of the normal children passed this False Belief Test, only 20 per cent of the children with autism did so, and this was so despite this group having a higher mental and chronological age than the two comparison groups. Instead, 80 per cent of the children with autism indicated that the character would look for the object at location B, where the object really was. The data from the control groups indicated that the theory of mind deficit was autism-specific, rather than the result of general developmental delay. The data from control questions revealed that children with autism had no difficulty answering questions involving memory, or questions which did not involve mental state attribution. The result from this experiment lent preliminary support to the hypothesis that in autism there is a failure to develop a theory of mind.

Over the last seven years, this pattern of results has been replicated in many studies, using a number of different paradigms. Some have used real people (e.g. Leslie and Frith, 1988; Sodian and Frith, 1990) whilst others have used dolls (e.g. Baron-Cohen, 1989; Leekham and Perner, 1990), or direct questioning (Dawson and Fernald, 1987) and even computer-generated images (Swetnam, 1990). Only two studies have obtained mixed results (Prior, Dahlstrom, Squires 1990; Oswald and Ollendick, 1989). The number of successful replications suggest that this finding is highly robust and
consequently an autism-specific deficit in theory of mind has been proposed to explain the results (Frith, 1989).

However, the generality of the conclusions about such an autistic deficit is somewhat undermined by the fact that in each study a small number of children (between 18-28 per cent) have been successful in demonstrating a theory of mind. This would suggest that a lack of a theory of mind is not inevitable in autism, as clearly some children do have this capacity.

One hypothesis that has been advanced by Baron-Cohen (1990) was that there may be a delay in the development of a theory of mind in autism, such that children with autism are late in developing this ability, but that after a delay it may emerge. Evidence for this hypothesis comes from the fact that to date studies have found no child with autism aged less than 11 years old who can pass the False Belief tests. Evidence also comes from studies such as Leslie and Frith (1988) and Baron-Cohen et al. (1985) that found that autistic participants who demonstrated comprehension of false belief tended to have a higher chronological age (CA) compared to their unsuccessful counterparts.

An additional variable that seems to be important in distinguishing those children with autism who can make first-order belief attributions from those who cannot, is verbal mental age (verbal MA). The first study to show a significant difference in verbal MA between the "passers" and "failers" of a theory of mind task was Eisenmajer and Prior (1991). Although many studies have shown this trend in their data (e.g., Leslie and Frith 1988; Baron-Cohen 1990) none had been significant. Eisenmajer and Prior argued that once a certain level of verbal competence is reached, a child with autism is likely to be able to demonstrate a theory of mind. They found no significant difference between "passers" and "failers" on CA. They suggested since most children with autism experience some level of intellectual handicap, CA often has little relevance to their true level of cognitive functioning.
Although CA might have little relevance to their intellectual abilities, the theory of mind deficit in autism has been used to explain the major social deficit found in this population. It is therefore feasible that the development of a theory of mind might be affected not only by cognitive abilities, but by the amount of exposure one has to other people's behaviour. Older people with autism by virtue of their age, have had more exposure to other people's behaviour.

If older people with autism are more likely to develop a theory of mind, then how can Eisenmajer and Prior's (1991) finding that there was no significant difference on CA between "passers" and "failers" on the False Belief tests be explained? Firstly, it is important to note that in their study no child below the age of eight years and seven months was able to pass the false belief task. Secondly, the mean CA of their sample was 11 years and eight months. Baron-Cohen (1989), hypothesised that there may be a delay in the emergence of a theory of mind in some individuals with autism. Children who are not autistic develop this ability around the age of four years old. It may well be that this delay is longer than seven years.

On way of clarifying this issue would be to test adults with autism on False Belief tests, however the vast majority of research in autism and theory of mind has concentrated on children. There have only been two studies that have tested adults (Bowler, 1992; Happe, 1991). The results of these studies support the prediction that adults with autism are more likely to develop a theory of mind. However both studies involved high-functioning adults with autism who had normal and near normal intelligence. It is therefore difficult to assess if it was their increased chronological age or their verbal MA that helped them succeed on the false belief tasks.

Frith (1989) suggested, on the basis of informal evaluation, that children who were able to pass the false belief task generally displayed milder autistic disturbances. Whether these children were less handicapped as a result of a more developed theory of mind, or whether they were more able to develop a theory of mind because they had a less severe form of autism is not clear. Frith suggested that further studies are needed to investigate how social deficits relate to theory of mind/meta-representational ability.
Eisenmajer and Prior (1991) argued that the problem which exists with Leslies's meta-representational model is that it is an *all-or-none affair*. That is, an individual either has higher-order representations or they are capable of only base-level representations. They suggested that the model should account for a developmental sequence of meta-representational ability for it to be of heuristic value.

In 1991 Gopnik and Slaughter investigated a range of mental states within a single group of clinically normal children. Their study suggested a three-stage model of development:

Stage 1: Pretence, perception and imagination.
Stage 2: Desire and intention.
Stage 3. Knowledge and belief.

Gopnik and Slaughter (1991) argued that stage one was easiest, because they are non-representational. Stage two states are thought to be of intermediate difficulty because they are representational states with *conditions of satisfaction* rather than truth conditions. Stage three states are thought to be the most difficult because they are representational states with *truth* conditions. The distinction between stage two and three is summarised by Gopnik and Slaughter: ‘a belief is satisfied if it is true, a desire is satisfied if it is fulfilled’ (p.184).

Baron-Cohen (1991) investigated a range of mental states using an adaption of Gopnik and Slaughter (1991) experimental paradigm. He used three groups of children: clinically normal children (aged three to four years old); children with autism; and children with a mental handicap but without autism. The number of mental states was limited to five (pretence, perception, imagination, desire and belief) to prevent fatigue and loss of concentration. Baron-Cohen hypothesised that deviance as well as delay should characterise any development of a theory of mind in autism. Specifically, he hypothesised that children with autism would find perception easier to understand than desire, and desire easier than belief (thus mirroring normal development in sequence if not in timing), however, he hypothesised that in autism, understanding of imagination and pretence would be more difficult than understanding perception and desire. The
results of the study supported his hypothesis. Normal children showed a characteristic pattern of performance held to reflect the sequence of acquisition of these concepts. Children with a mental handicap, but of a similar mental age to the normal group, showed a strikingly similar pattern of difficulty.

In contrast, children with autism showed a pattern of performance that is not seen in the normal case. While they found perception the easiest mental state, followed by desire, and belief to be the most difficult, they found imagination and pretence more difficult than perception. Baron-Cohen (1991) argued that these results strongly indicated that the development of mental state concepts in autism was deviant as well as delayed (i.e. the sequence of acquisition of these concepts is different from that seem in children who are not autistic). Baron-Cohen argued that the experimental paradigm ‘provides a method with which to assess the point an individual with autism has reached in the development of his or her theory of mind’ (p.46).

2.7 Linking a Theory of Mind with Behaviour
Abnormalities in social behaviour in autism have as their common feature a lack of "reciprocity" (Rutter, 1983). In its most severe form, the individual may be totally withdrawn, but in its mildest form the individual may attempt to interact with other people but does so in an "odd, one-sided, stilted and repetitive way" (Wing and Gould, 1979, p. 139). Baron-Cohen (1990) suggested that this kind of social behaviour was what one might predict if a person was "blind" to the beliefs, intentions, desires or other mental states of other people. Although observed social and communicative behaviour in autism resembles what we imagine this would look like if one lacked a theory of mind, observation alone is insufficient to conclude that this behaviour is due to this type of deficit. A stronger case could be made if it was shown that measures of social functioning correlated with performance on theory of mind tests. Such a correlation would also give social validity to the theory of mind hypothesis. There is very little research in this area. A study of this nature is currently being conducted with high ability autistic children (Frith and Happe, personal communication 1992). These researchers have developed a questionnaire to measure a person's theory of mind ability.
2.8 Summary

There is considerable consensus in the scientific literature that autism is a disorder of biological origin. The two key symptoms of autism are social and communicative abnormalities. Research has considered whether a cognitive deficit might be responsible for the specific social and communicative abnormalities in autism. One recently tested hypothesis is whether people with autism are specifically impaired in the ability to represent mental states (such as belief, desires, intentions etc). This research question has been summarised in terms of whether children with autism have developed a theory of mind. Several studies have found that autistic children suffer an inability to attribute mental states to other people. However, the generality of the findings has been undermined by the fact that in each study a small number of children demonstrate a theory of mind. It has been suggested that there may be a delay in the development of a theory of mind in autistic people (Baron-Cohen, 1989). Based on informal evaluation it has also been suggested that children who were able to pass the False Belief tests generally displayed milder autistic disturbance (Frith, 1989). However, this supposition has not been empirically tested.

A problem for theory of mind research in the past has been that the meta-representational model has been an all-or-none affair (Eisenmajer and Prior, 1991). Baron-Cohen (1991), using an adaption of Gopnik and Slaughter (1991) experimental paradigm has provided a method with which to assess the point an individual with autism has reached in the development of his or her theory of mind. The results of Baron-Cohen’s (1991) investigation indicated that for children with autism there is deviance as well as delay in their development of a theory of mind. The results suggested that the main difference for children with autism, was that representing pretence and imagination was distinctly more difficult than representing perception, whereas for participants without autism, these representations were all equally easy.

It has been suggested that the development of a theory of mind would allow for a better understanding of social and moral rules, and interpersonal relations (Eisenmajer and Prior 1991). However, to date there is no published empirical study supporting this assumption.
2.9 Aims

The aim of the present study is to investigate the development of a theory of mind in a sample of adults with autism. It will focus on whether chronological age affects the development of this mechanism and the relationship between the comprehension of false belief and social behaviour.

The study has four main aims. First to investigate Baron-Cohen's hypothesis that in autism there is delay rather than a deficit in the development of a theory of mind. To investigate this hypothesis a sample of adults with autism will be tested on the False Belief Test and the results will be compared with the findings from the children with autism in the study by Baron-Cohen, et al. (1985). To control for Mental Age the adults in this study will have similar verbal and non-verbal MAs to the sample of children with autism in the study by Baron-Cohen et al. The second aim is to explore whether adults with autism will show a sequence of acquisition of mental state concepts that reflect a less deviant pattern of development compared with children with autism. To explore this hypothesis the experimental paradigm developed by Gopnik and Slaughter (1991) and adapted by Baron-Cohen (1990) will be used. The results of this study will be compared with the sample of children with autism in the Baron-Cohen study (1991).

The third aim is to investigate the relationship between the development of a theory of mind and social behaviour. This relationship will be investigated by comparing the scores on the Socialisation Domain of the Vineland Adaptive Behaviour Scales and the level reached on the mental state tests. The fourth aim is to empirically investigate Frith's (1989) suggestion that participants with autism who demonstrated comprehension of false belief tended to display milder autistic disturbances. This hypothesis will be tested by comparing scores on the Autism Behaviour Checklist and the level reached on the mental state tests. Finally, this study will also assess whether there is a relationship between participant's scores on the Theory of Mind Questionnaire devised by Frith and Happe (1992) and the development of a theory of mind.
2.10 Hypotheses

1. Developmental Delay Hypothesis:
   Experimental Hypothesis: (one-tailed)
   Significantly more adults with autism in the present study will pass the False Belief test compared with the percentage of children with autism who passed the test in the study by Baron-Cohen et al. (1985).

   Null Hypothesis:
   There will be no significant difference between the frequency of adults who pass the False Belief test in the present study compared to the percentage of children who passed the test in the study by Baron-Cohen et al. (1985).

2. Deviant Versus Normal Development of a Theory of Mind:
   Experimental Hypothesis: (one-tailed)
   Gopnik and Slaughter’s three-stage model of normal development of a theory of mind will be replicated by participants in the present experiment. Specifically, representing pretence and imagination will not be more difficult than representing perception.

   Null Hypothesis:
   The results of the mental state tests will not fit the pattern of results found by Gopnik and Slaughter’s three-stage model of normal development of a theory of mind. Specifically, representing pretence and imagination will be more difficult than representing perception.

3. Severity of Autistic Disturbance and Ability to Pass the False Belief Test
   Experimental Hypothesis (one-tailed)
   Subjects who pass the False Belief test will show significantly less autistic disturbance as measured by the Autistic Behaviour Checklist compared with participants who fail the False Belief test.
Null Hypothesis
There will be no relationship between the level of autistic disturbance as measured by the Autistic Behaviour Checklist and the ability to pass the False Belief test.

4. Theory of Mind and Social Behaviour

Experimental Hypothesis (one-tailed)
Higher age equivalent scores on the Socialisation Domain of the Vineland Adaptive Behaviour Scales will correlate with a higher level reached on the mental state tests.

Null Hypothesis
Higher age equivalent scores on the Socialisation Domain of the Vineland Adaptive Behaviour Scales will not correlate with a higher level reached on the mental state tests.

5. Experimental Hypothesis (one-tailed).
Subjects who score “Average” or “Above Average” on the Interpersonal Relationships Sub-domain of the Vineland Adaptive Behaviour Scales, will reach a significantly higher level on the mental state tests compared with participants who score “Below Average” on this scale.

Null Hypothesis
There will be no relationship between scores on the Interpersonal Relationships Sub-domain on the Vineland Adaptive Behaviour Scales and the level reached on the mental state tests.

6. Subsidiary Hypothesis

Experimental Hypothesis (two-tailed)
There will be a significant relationship between the level reached on the mental state tests and scores on the Theory of Mind Questionnaire developed by Happe and Frith (1992).
Null Hypothesis
There will not be a significant relationship between the level reached on the mental state tests and scores on the Theory of Mind Questionnaire developed by Happe and Frith (1992).
3. METHOD

3.1 Participants

The participants lived in four residential homes for people with autism. Twenty-nine participants originally took part in the study. Nine were excluded because they did not meet the inclusion criteria outlined below. All of the participants scored above the cut off point of 69 on the ABC checklist and they had all been diagnosed with autism by a Consultant Psychiatrist who was a specialist in the field of autism. Seven of the participants were female and 13 were male. The mean chronological age was 25 years and 8 months, with a range from 19 years to 32 years.

The first inclusion criteria was a verbal MA of at least three years. This was included because previous research (Baron-Cohen, et al., 1985) suggested that a verbal age of three is needed to be able to follow the narrative of the mental state tests. Nine participants did not meet this criteria. The second inclusion criteria was that participants could pass a control task, which is described later. Although a minimum verbal MA of three years was required, the mean verbal MA was six years and three months (verbal MA range from 4 years to 12 years and six months) and the mean non-verbal MA was nine years and nine months (non-verbal MA ranged from seven years to 14 years and three months). The non-verbal MA was markedly higher than the verbal MA, which reflects the typical discrepancies in the IQ profile for this population (De Meyer, 1976). Verbal MA was assessed using the British Picture Vocabulary Scales (Dunn, Dunn, Whetton, Pintilie, 1982). Non-verbal MA was assessed using the Leiter International Performance Scale (Leiter, 1980).

There was no significant discrepancy between the mean verbal and non-verbal MAs for participants in the current study and the participants in the 1985 study by Baron-Cohen, et al. (1985). There was a discrepancy between the mean non-verbal MA in the Baron-Cohen (1991) sample of children with autism and the mean non-verbal MA in the present study (seven years and nine months versus nine years and nine months). The mean for the adults with autism was higher than the mean for the children with autism. Details of the participants are summarised in Table 1.
Table 1
Participant variables: Means, standard deviations (SD), and ranges of chronological (CA) and mental age (MA)

<table>
<thead>
<tr>
<th>Sample</th>
<th>n</th>
<th>CA</th>
<th>Non-verbal MA*</th>
<th>Verbal MA**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baron-Cohen, et al. Mean</td>
<td>20</td>
<td>11.11</td>
<td>9.3</td>
<td>5.5</td>
</tr>
<tr>
<td>1985 sample of children with autism</td>
<td></td>
<td>3.0</td>
<td>2.2</td>
<td>1.6</td>
</tr>
<tr>
<td>Range</td>
<td></td>
<td>6.1 - 16.6</td>
<td>5.4 - 13.9</td>
<td>2.8 - 7.5</td>
</tr>
<tr>
<td>Baron-Cohen, et al. Mean</td>
<td>15</td>
<td>15.3</td>
<td>7.9</td>
<td>6.2</td>
</tr>
<tr>
<td>1991 sample of children with autism.</td>
<td></td>
<td>2.4</td>
<td>1.7</td>
<td>1.7</td>
</tr>
<tr>
<td>Range</td>
<td></td>
<td>12.8 - 18.0</td>
<td>5.0 - 11.2</td>
<td>3.4 - 9.4</td>
</tr>
<tr>
<td>Current study (adults with autism)</td>
<td>20</td>
<td>25.8</td>
<td>9.9</td>
<td>6.3</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td>4.09</td>
<td>9.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Range</td>
<td></td>
<td>19 - 32</td>
<td>7 - 14.3</td>
<td>4.0 - 12.6</td>
</tr>
</tbody>
</table>

* Leiter International Performance Scale
** British Picture Vocabulary Test

3.2 Experimental Measures

3.2.1 The “False Belief” Test
The “False Belief” test was developed by Wimmer and Perner (1983). In order to succeed on this test the participant has to be aware that different people can have different beliefs about a situation. This paradigm was used by Baron-Cohen et al. (1985). More information on the details of this test will be given in the procedure section.

3.2.2 Mental State Tests
The mental state tests were adapted by Baron-Cohen (1991) from tests developed by Gopnik and Slaughter (1988). The tests probe awareness of the participant’s own mental state rather than that of somebody else. The tests used in this study are: perception, desire, pretend, imagination and belief. For information on their application see the procedure section.
3.2.3 The Vineland Adaptive Behaviour Scales

The Vineland Adaptive Behaviour Scales are a revision of the Vineland Social Maturity Scale (Sparrow, Balla & Cicchetti, 1984). The survey form contains 297 items and is designed to assess strengths and weaknesses of individuals from birth to 18 years (or "a low functioning adult") from information supplied by someone who knows that individual well. This assessment takes between 20 and 60 minutes. The survey form was standardised on a sample of 4,800 people with and without handicaps. In addition, supplementary norms were derived for ambulatory and nonambulatory people with learning difficulties of 18 years or older who lived in residential and nonresidential facilities. The norms regarding ambulatory mentally handicapped adults in residential facilities, who are 18 years or older were used for the present study.

Split-half coefficients, inter-rater reliability coefficients, construct validity, content validity and criterion-related validity were all carried out on the survey form and show the scale to be a reliable instrument (Sparrow et al., 1984). The survey form measures adaptive behaviour in four domains: communication, daily living skills, socialisation and motor skills. The Socialisation Domain was used in the present study. It assesses three areas: interpersonal relationships (measuring how the individual interacts with others), play and leisure time (measuring an individual’s ability to play and make use of leisure time) and coping skills (measuring how the individual demonstrates responsibility and sensitivity to others). The Maladaptive Behaviour Scale was also used in the current study. This scale assesses undesirable behaviours which may interfere with an individual's adaptive functioning.

The Socialisation Domain and the Maladaptive Behaviour Scales both use the concept of age equivalence to compare scores of an individual to that expected for his or her chronological age. For the Socialisation Domain there are also three adaptive levels: “Below Average,” “Average” and “Above Average,” which provide a qualitative description of the individual’s performance compared with others of the same chronological age group and handicap. The adaptive levels are based on percentile ranks of 1-29, 30-69 and 70-99 respectively. For the Maladaptive Behaviour Scale,
there are three levels or descriptive categories: the “Nonsignificant Level” which indicates that the individual does not exhibit a large number of maladaptive behaviours compared with others of the same age group. The “Intermediate Level” which indicates that, although the individual exhibits more maladaptive behaviours than fifty per cent of the individuals of the same age group, the frequency is not large enough to be significant. The last category is the “Significant Level” which indicates that the individual exhibits sufficient maladaptive behaviours to place them in the extreme 16 percent of individuals of the same age group.

3.2.4 Autism Behaviour Checklist
The Autism Behaviour Checklist (ABC) provides an screening tool in the diagnosis of autism. The checklist presents diagnostically valid and reliable behavioural characteristics used in the identification of autism (Gillberg, 1990). The checklist requires from 10 to 20 minutes to complete. The person evaluating should have approximately 3-6 weeks or more experience with the person with autism. The checklist was developed by Krug, (1980). Of the original sample used to validate the test, ninety-five percent who received a score of 68 or higher had a previous diagnosis of autism.

3.2.5 The British Picture Vocabulary Scale
The scale was developed by Dunn, Dunn, Whetton and Pintillie, (1982). The British Picture Vocabulary Scale (BPVS) consists of a series of pictures or plates and is designed to measure an individual's receptive (hearing) vocabulary for standard English and can, according to the manual be used ‘successfully with autistic, withdrawn, and even psychotic people’ (p.1). The reliability and validity of this test has been well established.

3.2.6 The Leiter International Performance Scale
The Leiter International Performance Scale was first constructed in 1927 in the Hawaiian Islands. The scale uses blocks to measure intelligence through performance or non-verbal means. Leiter (1980) claimed the test ‘surpassed the criteria of reliability and validity’ (p.18).
3.3 Research Design
The study involved a repeated measures design. The tests were counter balanced to prevent any fatigue or learning effects. Control participants were not used as it has been clearly demonstrated in the research literature that people with other learning disabilities can pass mental states tests and that children with autism have great difficulties with these tests (e.g. Baron-Cohen et al., 1985). The results of the theory of mind tests were compared with the sample of children with autism in the study by Baron-Cohen, et al. (1985). The results of the mental states tests were compared with the sample of children with autism and the sample of clinically normal children in the study by Baron-Cohen (1991).

3.4 Procedure
The participants were living in residential homes in three different regions. Permission to conduct the study was obtained from the ethical committees in each area. Permission was sought from the parents/guardians of the participants (see appendix A and B) and from the officers in charge of the residential facilities. The tests were explained to the participants and they were asked if they wanted to take part (see appendix C). None of the participants declined to take part in the study. The ABC Checklist, the Socialisation Domains of the Vineland Adaptive Behaviour Scales and the Maladaptive Behaviour Scales were completed by interviewing the key worker for each participant.

All participants were tested individually in their own homes. A member of staff accompanied them during testing. After an initial familiarisation period, the tests were presented.

3.4.1 The “False Belief” Test
There were two doll protagonists called Sally and Anne. They were introduced to the participants. The experimenter then checked that the participants knew which doll was which (naming question). The doll named Sally placed a marble into her basket. She then leaves the scene, and the marble is transferred by Anne and hidden in her box. Then Sally returned, and the experimenter asked the critical belief question: “Where
will Sally look for her marble?” If the participants points to the previous location of the marble, then they pass the belief question by appreciating Sally’s now false belief. If however, they point to the marble’s current location, then they fail the question by not taking into account the doll’s belief. These conclusions were warranted if the two control questions were answered correctly: ‘Where is the marble really?’ (Reality question); “Where was the marble in the beginning?” (Memory question).

Baron-Cohen et al. (1985) emphasised that the control questions are crucial because they ensure that the participants have both the knowledge of the real current location of the object and an accurate memory of the previous location. The scenario was repeated using a new location (the experimenter’s pocket).

3.4.2 Mental State Tests
These tests begin by establishing that a particular mental state is held by the participants, after which a manipulation is made to that mental state. The participants were then asked to recall his or her original mental state.

1. Control task
The participants first received a control task to ensure that they understood the questions and could remember past events. As mentioned earlier this was part of the inclusion criterion for the rest of the experiment. None of the adults failed the control task. In the control task, the participants were presented with a change in an object and were asked to recall the previous state of the object. Participants were shown a black box and the lid was removed, revealing a small green wooden brick inside. The experimenter then replaced the lid and asked the participants what was inside the box. All of the participants replied “a green brick.” The experimenter then said “lets take the green brick out and put this yellow one in.” Again the experimenter replaced the lid and asked the participants, “Now what is in the box?” All of the participants replied “a yellow brick.” They were then asked the control question “When I first showed you the box, before we opened it, what was inside then?” Baron-Cohen et al. (1985) emphasised that the control task functions not only as a control for memory factors, but it is also a linguistic control for the wording of the test questions.
After the control task, the following five mental state tasks were administered. In each task, two confirmation questions were asked, one to confirm that the participants did indeed have the initial mental state (original state question) and the other (after the state had been changed) to confirm that he or she now had the new mental state (changed state question). Finally, the participants received the test question, which asked the participants to report his or her initial state. In each case the test question had the same form as the question in the control task. In each case, if a participant failed to answer the question, he or she was presented with a forced choice (e.g., for the control task: “was there a yellow brick or a green brick?”). The order of presentation of the different tasks was randomised.

2. Belief task
Participants were shown a milk carton and asked the confirmation question, “What do you think is inside this?” The box was then opened and the participants were shown that it really contained a small green ball. They were next asked the second confirmation question, “Now what do you think is inside?” Finally they were asked the test question, “When I first asked you, before we opened the carton, what did you think was inside?”

3. Pretend task
Participants were presented with an empty cup and were asked “Can you pretend there’s orange juice in this cup?” The participants were then asked, “What are you pretending is in the cup?” After the participants replied, the experimenter said, “Let’s pour out all the orange juice” and mimed emptying the cup. Next the experimenter asked, “Now can you pretend there’s milk in the cup?” The participants were then asked, “Now what are you pretending is in the cup?” After the participants replied “milk,” the test question was asked, “When I first asked you, before we poured anything out, what did you pretend was in the cup?”

4. Perception tasks
For the first perception task a piece of cardboard standing upright was put in the middle of the table, with only one side visible to the participant. On one side of the
The card was a picture of a banana, and on the other side was a picture of a clock. The participants were first asked what picture he or she could see. The card was then turned around so that the participants could see the other picture. He or she was then asked, “Now what picture can you see?” Finally, the experimenter asked the test question, “When I first asked you, before I turned the card over, what picture did you see?”

For the second perception test the participants saw a picture of Mickey Mouse standing upright and they were asked “How do you see Mickey Mouse?” The experimenter then turned the picture upside down so that Mickey Mouse appeared to be standing on his head. The participants were then asked, “Now how do you see Mickey Mouse?” They were then asked the test question, “When I first asked you, before I turned the picture around, how did you see Mickey Mouse?”

5. Desire task
Participants were shown two boxes, of equal desirability from the outside, and were asked which one they wanted to open. After they had looked inside their first choice, and amused themselves with the item it contained (a yoyo or a spinning top), that box was closed again and they were asked to choose again. The experimenter then immediately asked the test question, “When I first asked you, before we opened any boxes, which box did you want to open?”

6. Imagination task
The experimenter said, “Now I want you to close your eyes and think about a big white horse. Make a picture in your head of a big white horse. Can you see the white horse?” The experimenter next said, “Now close your eyes again, and this time think of a big red balloon. Make a picture in your head of a big red balloon. Can you see the red balloon?” The experimenter then asked “Now what are you thinking of?” Finally the experimenter asked the test question, “When I first asked you to make a picture in your head, what were you thinking of then?”
7. Scoring
Participants were scored as passing a test if they correctly reported their original state on the test question. They were scored as failing if they said that they had originally been in their final state. The number of participants passing each test was then analysed.

3.5 Statistical Analysis
Baron-Cohen (1991) suggested that the mental state tests may provide a method with which to assess the point reached in the development of theory of mind by an individual with autism. The tests were analysed to determine the level reached by each participant. Each participant was assigned a number from one to five indicating the level they had reach on the tests. With the exception of one participant the tests were passed in the same sequence. The data from this participant was excluded from analyses regarding the levels reached on the mental state tests.

The variables used in this investigation represent different levels of measurement, nominal, ordinal and interval. The specific measurement properties of the paired combination of variables determine the statistical test used. The Leiter International Performance Scale and the British Picture Vocabulary Test are assumed to have interval properties. Tests that relate verbal and non-verbal mental ages to nominal properties such as passing or failing the False Belief test are based on a difference of means test (t test). Relationships between characteristics measures on an ordinal scale (e.g., the level reached on the mental state tests) are tested by a nonparametric test (The Mann-Whitney U test). Relationships between characteristics measured on an ordinal scale are tested by nonparametric correlation (Spearman’s rho correlation). Finally, analysis of difference between categorical variables between the data from the current study and the study by Baron-Cohen et al. (1985) are carried out using Fisher’s Exact tests.
4. RESULTS

4.1 Developmental Delay Hypothesis (False Belief Test)

All participants passed the naming question, and no errors were made on the memory or reality questions in both trials. By contrast, 16 of the 20 participants (80%) “failed” the Belief Question on both trials. All of the participants who failed pointed to where the marble really was, rather than to any other location. The four participants who passed, succeeded on both trials. Their mean verbal MA was not significantly higher than the participants who failed (t (18) = 0.79, p = 0.44, two-tailed), either was their mean chronological age (t (18) = 0.35, p = 0.73, two-tailed). Their mean non-verbal MA was significantly higher compared with those who failed the test (t (18) = 3.03, p = 0.01, two-tailed). However, there were other participants of equal or greater non-verbal MA who gave incorrect responses.

In the study by Baron-Cohen et al. (1985) 16 of the 20 children with autism failed the Belief Questions on both trials. It was hypothesised that significantly more adults with autism would pass the Belief Question. As the frequency of participants who passed and failed the Belief Question was the same in both studies the null hypothesis was accepted. The results of this study did not provide evidence to support a developmental delay hypothesis.

4.2 Deviant Versus Normal Development of a Theory of Mind

Of the five mental state tests, the participants found perception easiest (80% passed at both levels 1 and 2) and desire the next easiest mental state to recall (65% passed the desire test). However, unlike the clinically normal and children with a mental handicap in Baron-Cohen’s 1991 study, imagination and pretence were not as easy as perception for adults with autism, and they were more difficult than desire. Belief was the most difficult mental state for the participants in the current study (only 30% passed the belief test). The pattern of results from the adults with autism were strikingly similar to the pattern produced by the autistic children in Baron-Cohen’s (1991) study. Spearman rank correlation was computed to compared the results on the five mental state tests from the children with autism in Baron-Cohen’s (1991) study with the findings from the current study. The results indicate that there was a statistically significant
correlation between the two sets of data \((r = (5) .975, p < .01, \text{one-tailed})\). The data is graphically presented in Figure 1.

Fisher Exact tests were conducted to compare the data on the five mental state tests from the clinically normal children in Baron-Cohen’s (1991) study with the results from the current study. The tests show that significant group differences occurred on the imagination \((p< 0.01\) ), pretence \((p< 0.01\), and belief tests \((p = 0.03\), with the adults with autism performing significantly worse on these tests than the clinically normal children. The data is reported in Table 2 and graphically displayed in Figure 2. It also notable that with the exception of one participant, the mental states tests were passed in the sequence predicted by Baron-Cohen in 1991 (see appendix J).

Analysis of the role of CA and MA in the group of adults with autism revealed that participants who passed the belief test were not significantly older \((t (18) = 0.46, p = 0.66, \text{two-tailed})\), however, they did they have a higher verbal MA \((t (18) = 2.55, p = 0.02, \text{two-tailed})\), and non-verbal MA \((t (18) = 4.03, p < 0.01, \text{two-tailed})\), than the participants who failed this test. MA was therefore a significant factor in accounting for those participants who passed the belief test. However, there were many other participants of equal or greater verbal and non-verbal MAs who did not pass the belief test.

It was hypothesised that Gopnik and Slaughter’s three-stage model of normal development of a theory of mind would be replicated by participants in the present experiment. Specially, representing pretence and imagination would not be more difficult for adults with autism than representing perception. The results do not support this hypothesis, the null hypothesis was therefore accepted. Thus, an increase in chronological age in the participants with autism did not result in a more normal pattern of development of a theory of mind.
Figure 1
Percent of adults and children with autism passing each mental state test

Figure 2
Percent of clinically normal children and adults with autism passing each mental state test
Table 2  
Number of participants in each group passing the mental state tests

<table>
<thead>
<tr>
<th>Groups</th>
<th>n</th>
<th>Perception</th>
<th>Desire</th>
<th>Imagination</th>
<th>Pretence</th>
<th>Belief</th>
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</thead>
<tbody>
<tr>
<td>Current Study</td>
<td>20</td>
<td>18</td>
<td>13</td>
<td>11*</td>
<td>11*</td>
<td>6*</td>
</tr>
</tbody>
</table>

*p < 0.05

4.3 Relationship Between Severity of Autistic Disturbance and Theory of Mind

A Mann Whitney U test was conducted to evaluate whether those participants who demonstrated comprehension of false belief would have lower scores on the Autistic Behaviour Checklist. As hypothesised, participants who passed the False Belief test had an average rank of 8.63, while those that failed had an average rank of 10.97. However, the test was not significant (U = 24.5, p = 0.5). This result supports the null hypothesis.

4.4 Theory of Mind and Social Behaviour

Spearman’s rho correlation coefficient was computed on the level reached on the mental state tests and the age equivalent scores on the Socialisation Domain of the Vineland Adaptive Behaviour Scales. The correlation was statistically significant (r = 0.54, p < 0.01, one-tailed). This result indicates that participants who reached a higher level in the development of his or her theory of mind exhibited more adaptive social behaviour. This results supports the research hypothesis. Analysis of the role of verbal and non-verbal MAs revealed that higher scores on the Socialisation Domain were also significantly correlated with higher verbal (r = 0.51, p = 0.21, two-tailed) and non-verbal MAs (r = 0.55, p = 0.01, two-tailed).

On the “Interpersonal Relationships Sub-domain” within the Socialisation Domain, 45% of participants scored “Below Average” and 55% scored within the “Average Range”. None of the participants scored “Above Average.” A Mann-Whitney U test was conducted to evaluate the hypothesis that participants who scored within the
“Average” range on the Interpersonal Relationship Sub-domain would reach a higher level on the mental state tests compared with participants who scored “Below Average.” The results of the test were not significant (U = 27.00, p = 0.16, one-tailed). There was a significant difference between the level reached on the mental state tests for those participants who were rated as “Above Average” on the Coping Skills Sub-domain compared with participants who were rated as “Average” or “Below Average” (U = 22.5, p = 0.5, one-tailed). Participants who were rated as “Above Average” had higher scores on the mental state tests. There was no significant difference for scores on the mental state tests and ratings on the Play and Leisure Sub-domain (U = 8.5, p = 0.85, one-tailed). There was also no significant relationship between the level reached on the mental state tests or the ability to pass the False Belief test and ratings on the Maladaptive Behaviour Domain.

The final hypothesis explored the relationship between the level reached on the mental state tests and scores on the Theory of Mind Questionnaire. Spearman’s rho correlation coefficient was significant (r = 0.57, p = 0.01, two-tailed). This results supports the validity of this questionnaire.

4.5 Summary of Results

The results show that there was no difference in the percentage of adults with autism who passed the False Belief test compared with the percentage of children with autism who passed the test in the study by Baron-Cohen et al. (1985). The pattern of difficulty posed by the five different mental states was the same for children with autism as it was for adults with autism. No significant relationship was found between the severity of autistic disturbance (as measured by the Autistic Behaviour Checklist) and the ability to pass the False Belief test. There was a significant relationship between ratings on the Socialisation Domain of the Vineland Adaptive Behaviour Scales and higher scores on the mental state test. Those participants who had reached a higher level in the development of his or her theory of mind were rated as exhibiting significantly more adaptive social behaviour compared with those participants who reached a lower level in the development of this mechanism. Within the Socialisation Domain higher scores on the mental state tests were associated with more adaptive Coping Skills. No
significant differences were found on the Play and Leisure and the Interpersonal Relationship Sub-domains.

The results of this study found no significant relationship between ratings of Maladaptive behaviour and scores on the False Belief or mental state tests. There was a significant relationship between the level reached on the mental state tests and scores on the Theory of Mind Questionnaire recently developed by Frith and Happe (1992).

5. DISCUSSION

Only 20 percent of participants passed the False Belief test. “Failure” to pass this test was not due to difficulties understanding and remembering the demands of the test or the narrative since they all answered the Naming, Memory and Reality Questions correctly. The “failure” could also not be attributed to general developmental delay as the children with Down’s syndrome who were able to pass the test in the study by Baron-Cohen et al. (1985) had lower MAs than the participants in the present study. There was no difference in the way adults with autism answered the critical question “Where will Sally look for her marble?” and the way the sample of children with autism in the study by Baron-Cohen et al. (1985) answered the question. The majority of adults and children with autism did not simply point to a wrong location of the marble, but they consistently pointed to the actual location of the marble (i.e, in the box or in the experimenter’s pocket). The results indicate that the participants did not appreciate the difference between their own and the doll’s knowledge.

Baron-Cohen (1989) suggested that in autism there may be a specific delay in the development of a theory of mind. He maintained that the specific developmental delay hypothesis was derived from evidence that “autistic children’s impaired theory of mind is not related to general developmental delay (as the data from Down’s Syndrome subjects show), and secondly from the possibility that some older autistic children may eventually develop a theory of mind at the lowest level, many years after it would normally be present” (p.287). This study attempted to provide research evidence to support this hypothesis. However, the results suggest that adults with autism were no
more likely to pass the False Belief test than children with autism. Thus, the majority of participants did not demonstrate a theory of mind, even at the lowest level.

The repeated measures design of this study enabled a comparative analysis of the relative difficulty posed in representing five different mental states for adults with autism. The easiest mental state for participants was perception, followed by desire. Imagination, pretence, and belief posed the most difficulties. Ninety percent of participants were able to recall their prior perception, at both level 1 and 2, this finding replicates other studies (e.g., Hobson, 1984; Leslie, Frith, 1988). Similarly, the relatively high percentage who understood desire (65%) corroborates previous findings (e.g., Harris, 1990, Baron-Cohen, 1991). It has also been consistently shown that people with autism have difficulties understanding pretence and belief (e.g., Baron-Cohen et al., 1985; Wing, Gould, 1973). Deficits in imagining has only been previously documented by Baron-Cohen (1991).

The data from the five mental state tests were compared with the findings from Baron-Cohen (1991) study. The pattern of difficulties posed by the five mental states for the participants in the current study was different from the pattern found by Baron-Cohen for the clinically normal children and the children with a mental handicap. The main difference was that for adults with autism, representing pretence and imagination was significantly more difficult than representing perception, whereas for participants without autism, the three mental states were equally as easy. This pattern of difficulties for the adults with autism, does not fit the normal three-stage model described by Gopnik and Slaughter (1991).

The pattern of difficulties for the adults was significantly correlated with the pattern of difficulties exhibited by the children with autism in Baron-Cohen (1991) study. This result provides support for Baron-Cohen’s theory that people with autism follow a deviant, but consistent pattern in their development of mental state attribution. The results also suggest that chronological age does not significantly impact on the relative difficulties posed in representing different mental states. The findings support the null
hypothesis which stated that the pattern of results produced by the participants would not fit Gopnik and Slaughter’s three-stage model of normal development of a theory of mind.

Analysis of the role of verbal and non-verbal MAs revealed that participants who passed the False Belief test had significantly higher non-verbal MA, than those participants who “failed” the False Belief test. Those participants who were able to pass the belief mental state test had significantly higher verbal and non-verbal MAs. In the study by Baron-Cohen et al. (1985) and the Baron-Cohen (1991) study MAs did not emerge as a significant factor accounting for those participants who passed the belief and False Belief tests. In this study MAs may have been a confounding variable. However, there were certainly participants of equal or greater MAs who gave incorrect responses to these tests. MA therefore did not emerge as a sufficient factor in accounting for those participants who passed the tests.

On the basis of informal evaluation, Frith (1989) suggested that children who passed the False Belief test generally displayed milder autistic disturbances. Participants who passed the False Belief test in this study did show less autistic disturbance on the Autistic Behaviour Checklist than those participants who “failed” the test. However, the difference did not reach statistical significance. This is the first study to investigate this area using a standardised measure to assess autistic disturbance.

It was hypothesised that higher age equivalent scores on the Socialisation Domain on the Vineland Adaptive Behaviour Scales would be significantly correlated with higher levels reached of the mental state tests. The results supported this hypothesis. Within the Socialisation Domain, the level reached on the mental state tests was significantly associated with Coping Skills. There was no relationship between the level reached on the mental state tests and the Interpersonal Relationships Sub-domain or the Play and Leisure Sub-domain. No relationship was found between scores on the mental state tests or the False Belief test and maladaptive behaviours.
This is the first study to show a relationship between meta-representational development and social adaptation. The results need to be interpreted with caution because higher MAs were associated with the ability to reach a higher level on the mental state tests and they were associated with higher ratings on the Socialisation Domain on the Vineland Adaptive Behaviour Scales.

The final hypothesis explored the relationship between the level reached on the mental state tests and scores on the Theory of Mind Questionnaire developed by Frith and Happe (1992). The results indicated that there was a significant relationship between scores on the Questionnaire and the level reached on the mental state tests. This results supports the validity of this questionnaire.

5.1 Criticisms of the Study
This study was unable to accurately match the non-verbal MAs for participants in the current study and the children with autism in the Baron-Cohen (1991) study. However, as the non-verbal MAs were higher for the adults with autism compared with the children, it seems unlikely that it was a major confounding influence. It was suggested that adults with autism may have develop a theory of mind, at least at the lowest level, because they had been exposed to more social interactions than children. The sample in this study were all living in residential accommodation, this may have affected the results. Finally, caution is needed in interpreting the findings from this study because of the small number of participants involved and because MA emerged as a significant factor in the ability to represent mental states. However, as some of the adults who failed the mental state tests had MAs equal to or greater than those who gave incorrect responses, it is unlikely that MA is a sufficient factor in accounting for the those participants who passed the mental state tests.

6. CONCLUSION
The results of this study support Baron-Cohen et al. (1985) hypothesis that in autism there is a failure to develop a theory of mind. The results also support Baron-Cohen’s (1991) theory that the degree of difficulty posed by various mental states for
individuals with autism differs from the pattern seen in individuals without autism. The data from this study fits with the hypothesis that in autism the sequence of acquisition of mental state concepts follows a deviant pattern of development.

There was no evidence to support Baron-Cohen’s hypothesis that there is a specific delay in the development of theory of mind for people with autism. The findings of this study indicate that chronological age had no affect on the ability to demonstrate a theory of mind. The strongest test of the developmental delay hypothesis would come from a longitudinal study. There was also no evidence to suggest that the sequence of acquisition of mental state concepts reflected a less deviant pattern of development in adults compared with children with autism.

This is the first study to show a relationship between the acquisition of a theory of mind and adaptive social behaviour. Participant who reached a higher level on the mental state tests were rated as showing more adaptive social behaviour. A relationship was not found between the degree of autistic disturbance on the Autistic Behaviour Checklist and meta-representational abilities. The findings from this study support the validity of a the Theory of Mind Questionnaire developed by Frith and Happe (1992).

To conclude, maturity alone does not seem to lead to a demonstration of theory of mind abilities. The question remains as to whether there is a natural ceiling on the development of this mechanism for most people with autism, or whether specific treatments can be developed to help the development of a theory of mind.
7. REFERENCES


8. APPENDICES

Appendix A  Declaration of consent form
Appendix B  Letter informing parents/guardians about the study
Appendix C  Information given to participants
Appendix D  The Theory of Mind Questionnaire (Frith and Happe, 1991)
Appendix E  Verbal and non-verbal mental age scores
Appendix F  Scores on the Socialisation Domain
Appendix G  Age equivalent scores on the Socialisation Domain
Appendix H  Scores on the Maladaptive Behaviour Domain
Appendix I  Scores on the Autistic Behaviour Checklist
Appendix J  Scores on the mental state tests
Appendix K  Scoring sheet for the False Belief and mental state tests
APPENDIX A

INFORMATION FOR THE PARTICIPANTS' GUARDIANS

This study is concerned with investigating autistic adults' ability to attribute beliefs to others, i.e., how much can they appreciate that other people have thoughts and beliefs that are different from their own; this is sometimes referred to as "a theory of mind". This study is also concerned with the association between this ability and a person's social maturity.

Participation will involve attempting some puzzles designed to test whether or not a person can take into account another person's belief, and from this predict their action. The puzzle will take approximately 15-20 minutes to complete. The main care-giver will be asked to complete a questionnaire about the participant's social maturity. The questionnaire consists of 37 questions, and should take approximately 10 minutes to complete.

The more people involved in the study, the more useful the results will be. Participation would therefore be welcomed, although you will be free to withdraw the participant from the study at any time. The investigator will be glad to answer any questions you may have about the study.

DECLARATION OF INFORMED CONSENT

The above information has been explained to me and I give my informed consent for

[Signature]

Signed .................................. Guardian

.................................. Investigator

.................................. Witness

Date ...............................
LETTER INFORMING PARENTS ABOUT THE STUDY

Dear .............

Professor Fraser and myself are currently investigating the ability of adults with autism to attribute beliefs to others, i.e. how much can they appreciate that other people have thoughts and beliefs that are different from their own; this is sometimes referred to as "a theory of mind". It is hoped that this kind of research will further our understanding of autism and allow for the development of more specific training programmes which focus precisely on the deficits commonly found in autism.

Your son/daughter may be asked to take part in this study. Participation will involve attempting some puzzles designed to test whether or not a person can take into account another person's beliefs, and from that, predict their actions. The puzzles will take approximately 15-20 minutes to complete. The main care giver currently involved with your son/daughter will also be asked to complete a brief questionnaire about their level of social functioning.

A presentation outlining the rationale and clinical relevance of the study will be given at ......................... on ............................... You are welcome to attend this presentation. In the meantime should you require more information, I will be glad to answer any questions you might have about the study. I can be contacted on (0222) ......

Yours sincerely

Diane Grainger
Investigator
APPENDIX C

INFORMATION TO BE READ TO PARTICIPANTS

I would like you to do some puzzles with me. There are no right or wrong ways of doing them. By doing the puzzles it will help me to understand you better.

I think you will enjoy doing the puzzles, but if you do not want to, you don’t have to complete them. Here is the first puzzle, would you like to do it with me?
<table>
<thead>
<tr>
<th>Number on Short Form</th>
<th>Theory of Mind</th>
<th>Score 0.1 or 2</th>
<th>No</th>
<th>Complex Social Activity</th>
<th>Score 0.1 or 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 20</td>
<td>Relates experiences in simple terms spontaneously.</td>
<td></td>
<td></td>
<td>C 21</td>
<td>Delivers simple message.</td>
</tr>
<tr>
<td>C 31</td>
<td>Relates experiences in detail when asked.</td>
<td></td>
<td></td>
<td>C 30</td>
<td>States which of two objects not present is bigger.</td>
</tr>
<tr>
<td>C 36</td>
<td>Tells popular story, fairy tale, lengthy joke or television plot.</td>
<td></td>
<td></td>
<td>C 37</td>
<td>Recites letters of alphabet from memory.</td>
</tr>
<tr>
<td>C 46</td>
<td>Expresses ideas in more than one way, without assistance.</td>
<td></td>
<td></td>
<td>C 47</td>
<td>Reads simple stories aloud.</td>
</tr>
<tr>
<td>C 64</td>
<td>Has realistic long-range goals and describes in detail plans to achieve them.</td>
<td></td>
<td></td>
<td>C 63</td>
<td>Reads adult newspaper stories.</td>
</tr>
<tr>
<td>C 65</td>
<td>Writes advanced letters.</td>
<td></td>
<td></td>
<td>C 66</td>
<td>Reads adult newspaper or magazine stories each week.</td>
</tr>
<tr>
<td>S 21</td>
<td>Engages in elaborate make believe activities alone.</td>
<td></td>
<td></td>
<td>S 23</td>
<td>Says 'please' when asking for something.</td>
</tr>
<tr>
<td>S 26</td>
<td>Shares toys or possessions without being told to do so.</td>
<td></td>
<td></td>
<td>S 27</td>
<td>Names one or more favourite television programmes when asked and tells on what days and channels they are shown.</td>
</tr>
<tr>
<td>S 31</td>
<td>Responds verbally and positively to good fortune of others.</td>
<td></td>
<td></td>
<td>S 32</td>
<td>Apologises for unintentional mistakes.</td>
</tr>
<tr>
<td>S 40</td>
<td>Keeps secrets or confidences for more than one day.</td>
<td></td>
<td></td>
<td>S 36</td>
<td>Doesn't talk with food in mouth.</td>
</tr>
<tr>
<td>S 42</td>
<td>Ends conversations appropriately.</td>
<td></td>
<td></td>
<td>S 43</td>
<td>Follows time limits set by caregiver.</td>
</tr>
<tr>
<td>S 44</td>
<td>Refrains from asking questions or making statements about others that might embarrass or hurt them.</td>
<td></td>
<td></td>
<td>S 47</td>
<td>Uses appropriate table manners without being told.</td>
</tr>
<tr>
<td>S 46</td>
<td>Keeps secrets or confidences for as long as appropriate.</td>
<td></td>
<td></td>
<td>S 48</td>
<td>Watches tv/radio for information about an area of interest.</td>
</tr>
<tr>
<td>S 50</td>
<td>Independently weights consequences of actions before making decisions.</td>
<td></td>
<td></td>
<td>S 49</td>
<td>Goes to evening school or faculty events with friends when accompanied by an adult.</td>
</tr>
<tr>
<td>S 53</td>
<td>Initiates conversations of interest to others.</td>
<td></td>
<td></td>
<td>S 54</td>
<td>Has a hobby.</td>
</tr>
<tr>
<td>S 56</td>
<td>Responds to hints or indirect cues in conversation.</td>
<td></td>
<td></td>
<td>S 59</td>
<td>Makes and keeps appointments.</td>
</tr>
<tr>
<td>S 66</td>
<td>Goes on single dates.</td>
<td></td>
<td></td>
<td>S 62</td>
<td>Goes to non-school events with &quot;friends&quot;.</td>
</tr>
</tbody>
</table>
## APPENDIX E

### Verbal and Nonverbal I.Q. Scores

<table>
<thead>
<tr>
<th>Case Number</th>
<th>Verbal Mental Age* (measured in years)</th>
<th>Nonverbal Mental Age** (measured in years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4.0</td>
<td>7.0</td>
</tr>
<tr>
<td>2</td>
<td>6.11</td>
<td>12.0</td>
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<td>3</td>
<td>6.8</td>
<td>11.6</td>
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<td>4</td>
<td>6.8</td>
<td>8.6</td>
</tr>
<tr>
<td>5</td>
<td>4.2</td>
<td>8.6</td>
</tr>
<tr>
<td>6</td>
<td>12.6</td>
<td>13.6</td>
</tr>
<tr>
<td>7</td>
<td>5.11</td>
<td>9.0</td>
</tr>
<tr>
<td>8</td>
<td>8.9</td>
<td>14.3</td>
</tr>
<tr>
<td>9</td>
<td>4.6</td>
<td>7.3</td>
</tr>
<tr>
<td>10</td>
<td>9.5</td>
<td>8.0</td>
</tr>
<tr>
<td>11</td>
<td>5.9</td>
<td>8.0</td>
</tr>
<tr>
<td>12</td>
<td>5.11</td>
<td>9.0</td>
</tr>
<tr>
<td>13</td>
<td>6.8</td>
<td>12.9</td>
</tr>
<tr>
<td>14</td>
<td>5.11</td>
<td>8.0</td>
</tr>
<tr>
<td>15</td>
<td>4.2</td>
<td>9.9</td>
</tr>
<tr>
<td>16</td>
<td>6.8</td>
<td>11.6</td>
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<tr>
<td>17</td>
<td>4.6</td>
<td>7.9</td>
</tr>
<tr>
<td>18</td>
<td>5.11</td>
<td>9.6</td>
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<tr>
<td>19</td>
<td>6.5</td>
<td>10.3</td>
</tr>
<tr>
<td>20</td>
<td>6.8</td>
<td>9.6</td>
</tr>
</tbody>
</table>

* British Picture Vocabulary Test  
** Leiter International Performance Scale
## APPENDIX F

### Vineland Adaptive Behavior Scales

#### Supplementary Norm Group Adaptive Level on the Socialization Domain

<table>
<thead>
<tr>
<th>Case Number</th>
<th>Interpersonal Relationships Adaptive Level</th>
<th>Play and Leisure Adaptive Level</th>
<th>Coping Skills Adaptive Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Below Average</td>
<td>Below Average</td>
<td>Above Average</td>
</tr>
<tr>
<td>2</td>
<td>Average</td>
<td>Average</td>
<td>Above Average</td>
</tr>
<tr>
<td>3</td>
<td>Average</td>
<td>Average</td>
<td>Above Average</td>
</tr>
<tr>
<td>4</td>
<td>Average</td>
<td>Average</td>
<td>Average</td>
</tr>
<tr>
<td>5</td>
<td>Below Average</td>
<td>Average</td>
<td>Average</td>
</tr>
<tr>
<td>6</td>
<td>Average</td>
<td>Average</td>
<td>Above Average</td>
</tr>
<tr>
<td>7</td>
<td>Average</td>
<td>Average</td>
<td>Average</td>
</tr>
<tr>
<td>8</td>
<td>Below Average</td>
<td>Average</td>
<td>Above Average</td>
</tr>
<tr>
<td>9</td>
<td>Below Average</td>
<td>Below Average</td>
<td>Average</td>
</tr>
<tr>
<td>10</td>
<td>Average</td>
<td>Average</td>
<td>Above Average</td>
</tr>
<tr>
<td>11</td>
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<td>Average</td>
<td>Above Average</td>
</tr>
<tr>
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<td>Below Average</td>
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<td>Above Average</td>
</tr>
<tr>
<td>13</td>
<td>Average</td>
<td>Average</td>
<td>Above Average</td>
</tr>
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<td>14</td>
<td>Below Average</td>
<td>Average</td>
<td>Average</td>
</tr>
<tr>
<td>15</td>
<td>Below Average</td>
<td>Average</td>
<td>Above Average</td>
</tr>
<tr>
<td>16</td>
<td>Average</td>
<td>Average</td>
<td>Above Average</td>
</tr>
<tr>
<td>17</td>
<td>Below Average</td>
<td>Below Average</td>
<td>Average</td>
</tr>
<tr>
<td>18</td>
<td>Average</td>
<td>Average</td>
<td>Average</td>
</tr>
<tr>
<td>19</td>
<td>Average</td>
<td>Average</td>
<td>Average</td>
</tr>
<tr>
<td>20</td>
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<td>Average</td>
<td>Average</td>
</tr>
</tbody>
</table>
## APPENDIX G

**Vineland Adaptive Behavior Scales**

### Age Equivalent Scores on the Socialization Domain*

<table>
<thead>
<tr>
<th>Case Number</th>
<th>Interpersonal Relationships</th>
<th>Play and Leisure</th>
<th>Coping Skills</th>
<th>Overall Age Equivalent Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.7</td>
<td>0.3</td>
<td>3.2</td>
<td>1.1</td>
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<tr>
<td>2</td>
<td>2.4</td>
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<td>4.7</td>
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<td>3</td>
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<td>1.7</td>
<td>4.5</td>
<td>2.4</td>
</tr>
<tr>
<td>4</td>
<td>0.10</td>
<td>1.0</td>
<td>2.11</td>
<td>1.5</td>
</tr>
<tr>
<td>5</td>
<td>0.6</td>
<td>0.11</td>
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<td>6</td>
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<td>3.7</td>
<td>2.1</td>
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<td>0.10</td>
<td>1.6</td>
<td>1.1</td>
</tr>
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<td>8</td>
<td>0.5</td>
<td>0.10</td>
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<td>0.11</td>
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<td>0.6</td>
<td>2.0</td>
<td>0.9</td>
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<tr>
<td>10</td>
<td>0.11</td>
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<td>1.3</td>
<td>3.7</td>
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<td>1.5</td>
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<tr>
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<td>20</td>
<td>0.10</td>
<td>1.0</td>
<td>2.11</td>
<td>1.5</td>
</tr>
</tbody>
</table>

(*Age in years and months)
# APPENDIX H

**Vineland Adaptive Behavior Scales**

**Supplementary Norm Group Maladaptive Level and Raw Scores on the Maladaptive Behavior Domain**

<table>
<thead>
<tr>
<th>Case Number</th>
<th>Raw Scores (part one and two)</th>
<th>Maladaptive Level (part one and two)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>23</td>
<td>Intermediate</td>
</tr>
<tr>
<td>2</td>
<td>36</td>
<td>Significant</td>
</tr>
<tr>
<td>3</td>
<td>38</td>
<td>Significant</td>
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APPENDIX I

Age, Sex, Scores on the Autism Behaviour Checklist (ABC) and Scores on the "Theory of Mind" Questionnaire devised by Frith and Happe (1992)

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<th>Case Number</th>
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* A score of 67, or one-half standard deviation below the autistic population mean total score of 77 was selected by the authors of the Checklist as a high probability cut-off point for the classification of autism.

** The authors of the "Theory of Mind" Questionnaire predict that the higher the score on the questionnaire, the higher
### APPENDIX J

Frequency of Passers and Failers on the Mental State Tests

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<th>Case Number</th>
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* Scored out of sequence

P = Pass : F = Fail
Appendix K

False Belief and Mental State Tests
Appendix K
False Belief Test

There are two doll protagonists Sally and Ann. First the experimenter checks that the participants know the name of each of the dolls (Naming question). Sally first places a marble into her basket. Then she leaves the scene, and the marble is transferred by Anne and hidden in her box. Then, when Sally returns, the experimenter asks the participant the critical Belief question: "Where will Sally look for her marble?". If the participant points to the previous location of the marble, then they pass the belief question by appreciating the doll's now false belief. If however, they point to the marble's current location, then they fail the question by not taking into account the doll's belief. These conclusions are warranted if the two control questions are answered correctly: "Where is the marble really?" (Reality question); "Where was the marble in the beginning?" (Memory question).

The control questions are crucial to ensure that the participants has both knowledge of the real current location of the object and an accurate memory of the previous location. The scenario is repeated using a new location for the marble, so that there are three different locations that the participants could point at (basket, box and experimenter's pocket). Correct responses to all three questions for each of the two trials were therefore different.
B First Order Theory Of Mind

Trial Two

"Now we are going to play a game with dolls.
This is Sally (dark hair) and this is Anne.
What is her name, and what is her name"

Sally then picks up the marble and places it inside the box and closes the lid. Make it clear that Anne has seen this happen.

Sally then goes away, under the table out of sight. Emphasized that Sally can neither hear or see what was happening.

Anne then takes the marble out of the box and hides it in the experimenter's pocket.

"Sally is now coming back"

"Where will Sally look for her marble?"

Answer: Box Experimenters Pocket

Reality question: "Where is the marble now?"

Answer: Experimenters Pocket Box

Memory question: "Where was the marble in the beginning?"

Answer: Box Experimenters pocket
Appendix K
Scoring Sheet

Number ..... Name .................. Age ..... Sex ....

Control Task

Participant is presented with a wooden box, the lid is removed, revealing a small green wooded brick inside. The experimenter then replaces the lid and asks "What was inside the box" and the participant replies "A green brick." The experimenter then says "Lets take the green brick out and put this yellow one in." Again the lid is replaced and the participant is then again asked "Now what's in the box." They reply "a yellow brick." They are then asked the control question "When I first showed you the box, before we opened it, what was inside then? (was there a yellow brick or a green brick?)"

Answer: Green Brick Yellow Brick

1 Belief Task

Participant is presented with a milk carton and the experimenter asks, "What do you think is inside this?" Participant replies "Milk." The carton is then opened and the participant is shown that it really contains a small green ball. The experimenter then asks "Now what do you think is inside this?" Participant replies, "A ball." The carton is then closed up again and the participant is then asked "When I first asked you, before we opened the carton, what did you think was inside? (Did you think there was a ball inside, or did you think there was milk inside?)"

Answer: Ball Milk

2 Pretend Task

Participants were presented with an empty cup and asked "Can you pretend there's orange juice in this cup?"(Some prompting may be needed to get the participant to carry this out ie "Show me how you pretend to drink orange juice.)" The participant is then asked "What are you pretending is in the cup?" The participant replies "orange juice," the experimenter then says "let,s pour out all of the orange juice" and mimes emptying the cup and then says, "Now can you pretend there,s milk in the cup?" (Again, prompting may be needed for some participants.) The participant is then asked "Now what are you pretending is in the cup?" When the participant has replied "milk" the test question is asked "When I first asked you, before we poured anything out, what did you pretend to drink? ( Did you pretend to drink orange juice or milk?)"

Answer: Orange Juice Milk
3 Perception Task

a) A piece of cardboard standing upright is placed in the middle of the table, with only one side visible to the participant. On one side of the card is a picture of a ball, and on the other side is a picture of a banana. The participant is first shown the picture of the ball and asked "what picture he/she can see". The participant should reply "a ball." The card is then turned around so that the participant can see the picture of the banana. They are then asked "Now what picture can you see?" The participant should reply "a banana." Finally, the experimenter asks the test question "When I first asked you, before I turned the card over, what picture did you see? (Did you see a ball or a banana?)"

Answer: Ball Banana

b) The participant is shown a picture of Mickey mouse sitting up and is asked "How do you see Mickey Mouse? Sitting up or upside down?" When the participant replies "sitting up", the experimenter then turns the picture upside down so that Mickey mouse appears to be standing on his head. The participant is asked "Now how do you see Mickey Mouse? Sitting up or upside down?" Participant should reply," Mickey Mouse is upside down." They are then asked the test question "When I first asked you, before I turned the picture around, how did you see Mickey mouse then? (Did you see him upside down or sitting up?)"

Answer: Sitting Up Upside Down

4 Desire Task

Participants are shown two boxes, of equal desirability from the outside, and were asked "which one do you want to open". After they had looked inside their first choice, and played with the toy it contains (a yoyo or a spinning top), that box was closed up again and they were asked to choose again. When the participants asks for the alternative box the experimenter immediately asks the test question: "When I first asked you, before we opened any boxes, which box did you want to open?" (Did you want to open this one or this one?)"

Answer  First Box  Second Box
5 Imagination Task

The experimenter says "Now I want you to close your eyes and think about a big white teddy. Make a picture in your head of a big white teddy bear. Can you see the white teddy?" For participants that are unable to imagine a teddy the experimenter asks "What can you see, when you close your eyes?" and then the experimenter should work with the subject's spontaneous image. If they can not form an mental image at all they are scored as failing this condition. For those who succeeded in making a mental image, the experimenter then asks "What are you thinking of?"

When the participant informs the experimenter of his or her current mental image, the experimenter then says "Now close your eyes again, and this time think of a big red balloon. Make a picture in your head of a red balloon, can you see the red balloon?" The experimenter then asks "Now what are you thinking of?" When the participant has informed the experimenter of his or her image, the experimenter then asked the test question "When I first asked you to make a picture in your head, what were you thinking of then? (Did you think of a white teddy or a red balloon?)"

Answer: White Teddy Red Balloon

6 First Order Theory Of Mind

"Now we are going to play a game with dolls. This is Sally (dark hair) and this is Anne. What is her name, and what is her name"

Sally then picks up the marble and places it inside the box and closes the lid. Make it clear that Anne has seen this happen.

Sally then goes away, under the table out of sight. Emphasized that Sally can neither hear or see what was happening. Anne then takes the marble out of the box and hides it in the basket.

"Sally is now coming back"

"Where will Sally look for her marble?"

Answer: Box Basket

Reality question: "Where is the marble now?"

Answer: Basket Box

Memory question: "Where was the marble in the beginning?"

Answer: Box Basket