

CHAPTER 1 - INTRODUCTION

This chapter introduces the subject of the thesis by defining depression, highlighting the extent and significance of its manifestation in today's society and canvassing its causes. The chapter outlines the background of the study undertaken in the thesis and the contribution it aims to make in the treatment of depression.

(i) Definition of depression

In this thesis, as in scientific literature generally, the term "depression" is used to refer to Major Depressive Disorder (MDD) or unipolar depression. The American Psychiatric Association (APA) (American Psychiatric Association, 2004) defines depression as a serious illness which affects mood, behaviour, thought processes and physical health. The disorder is beyond the normal life stresses of unhappiness or grief stemming from the death of a loved one. In time both of these downturns in mood lift but depression without treatment may persist for years.

The National Institute of Mental Health (NIMH) in its publication on depression (2002a) described the disorder as an illness affecting somatic, emotional and cognitive processes. The NIMH and the APA agree that depression is not synonymous with transient sad mood. The NIMH (2002a) adds that depression does not signify personal shortcomings or a condition that can simply be put aside. If it is untreated the symptoms continue unabated and can worsen. The Medline Plus Medical Encyclopaedia (2007) describes depression as feelings of sadness, loss, anger, or frustration which are sufficiently distressing to interfere with day-to-day functioning for a period of longer than two weeks. Depression can be mild, moderate or severe. According to the Diagnostic and Statistical Manual of Mental Disorders Fourth Edition, Text Revision (DSM-IV-TR, 2000) the symptoms of depression include:

- Depressed mood practically every day for much of the day;
- Significantly reduced interest or pleasure in practically all activities almost daily for much of the day;
- Significant change in appetite or weight not due to dieting almost daily;
- Excessive or inadequate sleep practically daily;
- Fatigue or lack of energy practically daily;
- Agitated movement or a slowing down practically daily as reported by others from their observations of the individual;
- Feelings of worthlessness or severe guilt practically daily;
- Reduced capacity in thinking, concentration or decision making practically daily;
- Reoccurring ideas of death or suicide.

For the diagnosis of major depression a minimum of five symptoms need to be present, including at least one of the first two, for at least two weeks. In addition the symptoms must cause significant clinical distress to the individual or impairment in social, occupational or other key areas of his or her day-to-day life.

The NIMH (2002b) outlines different types of depression and suggests the possibility of an inherited biological vulnerability particularly with bipolar disorder, which is outside the scope of this study. However, a genetic predisposition does not necessarily imply that predisposed individuals will develop the disorder because the social environment can influence behaviour as stated for example by Foley et al. (2004). The occurrence of depression in successive generations of a family need not specify inherited characteristics because one's behaviour is shaped by the environment in which one grows.

(ii) The extent of the problem

The context of the problem researched in this thesis lies in the burgeoning increase in depression both globally and nationally. Depression is common, recurrent and disabling (American Psychiatric Association, 1998). It can lead to suicide. The NIMH (1999) stated that longitudinal studies demonstrated that about 2% of individuals treated for depression in a non-inpatient setting would suicide whereas those treated as inpatients, presumably because of the high level of symptom severity, had double this rate. Of individuals with a lifetime history of depression, men have a sevenfold higher suicide rate than women. It is estimated (NIMH, 1999) that 60% of people who commit suicide have had a mood disorder of which depression is the most common. Dorus, Kennedy, Gibbons and Ravi (1987) highlighted the importance of comorbidity of depression with alcoholism. They commented that of those entering treatment for alcoholism about 65% – 85% have major depression. The National Institute of Mental Health Epidemiologic Catchment Area (ECA) Program study (Reiger et al., 1990) confirmed the high proportion of substance abuse amongst depressed individuals by finding that of 16.5% had an alcohol use disorder. Barclay and Lie (2004) estimate that in the US, depression results in over half of psychiatric hospitalisations and about one in ten patients commit suicide.

For individuals aged 15 – 44 depression is (i) the second leading contributor after ischaemic heart disease and stroke in terms of disability-adjusted life years (DALYs), and (ii) the leading global cause of years lost to disability (YLD) (Kohn, Saxena, Levav & Saraceno, 2004). By 2020 the World Health Organisation (WHO) projects depression to be the leading global cause of YLD for all age groups (WHO, 2006). There are 340 million people worldwide with depression (WHO 2005, p.19). WHO (2001) states that primary care providers recognise the problem in less than half of patients with depression who seek attention and that only about 18% of them are given appropriate treatment. The Australian Burden of Disease Study (Mathers, Stevenson & Begg, 1999) found depression to be the top-ranking cause of non-fatal disease burden in Australia, causing 8% of

the total YLD. Mental disorders overall are responsible for almost a third of the non-fatal disease burden.

It is well established (Barclay & Lie, 2004; Kessler et al., 2003; Rakesh, 2003) that depression affects about one in six men and one in four women in their lifetime. In about one in five persons with depression the disorder is chronic and episodes may last two or more years. Youth depression is of disturbing proportions. The US National Survey on Drug Use and Health (2005, p.88-89) found a lifetime prevalence of depression for youth of 14%. About 9% of adolescents (12 to 17 years of age) had major depression in the year before the survey and just over 40% were treated. Depressed adolescents were twice as likely to have used illicit drugs in the month before the survey. This finding was supported by the ECA (Epidemiologic Catchment Area) study (Reiger et al., 1990), which found 18% of depressed individuals had an illicit drug use disorder.

Depression takes time to lift and once freed from the debilitating symptoms the individual faces the possibility of relapse. Kessler et al. (2003), in a reworking of WHO data for the USA and using a survey of 9090 respondents, estimated the mean duration of an episode of depression to be 16 weeks and found substantial role impairment for cases with severe or very severe symptoms. Thornicroft and Sartorius (1993) presented a WHO cross-national study of 439 individuals hospitalised for depression and followed up for 10 years. The study found rates of 36% for relapse and rehospitalisation, 11% for suicide and over 18% for partial recovery only. In a review of a 15-year follow-up study of 380 individuals recovered from depression Mueller et al. (1999) observed an 85% relapse rate. In an early review of research Belsher and Costello (1988) found a relapse rate trend of about 20% two months after recovery, increasing to 40% within a year and stabilising at 50% two years after recovery. Judd (1997) proposed that individuals with MDD were likely to experience on the average in their lifetimes four major depressive episodes lasting 20 weeks each as well as manifest depressive symptoms at other times. The relapse rate is sufficiently

serious for the view to emerge that depression should be treated as a chronic disease such as asthma and osteoporosis (Andrews, 2001; Glass, 1999). The Australian study by Andrews et al. (2004) demonstrated the chronic nature of the disorder. The study found that treatment in accordance with clinical practice guidelines was available to 60% of the population. Just over half or 32% were receiving effective treatment and only 15% of the burden measured in YLD (Years Lived with Disability) was currently relieved. When all those who could access effective treatment receive it, the burden averted would increase by over half, to 23%. If effective treatment is available to all who need it the burden averted would increase to 34%.

The clinical practice guidelines in the study by Andrews et al. (2004) were defined as medication (antidepressants) or Cognitive Behaviour Therapy (CBT). According to the Australian Association for Cognitive and Behaviour Therapy (2007) CBT is a shortterm focused treatment for many psychological disorders. The treatment is a collaborative and individualised approach which by assisting individuals to identify and change unhelpful thoughts and behaviours reduces the distress of their disorder. CBT is an evidence-based treatment which has been practised widely for over 30 years.

The high relapse rate in the studies indicates that once treated an individual should remain vigilant to the possibility of re-experiencing the symptoms of depression. That is, a large proportion of today's clients are likely to live through a series of depressive episodes. This likelihood points to the desirability for treated clients to attend 'top up' or revision sessions annually or more frequently if required. This is not dissimilar to the concept of periodic influenza inoculations or refresher courses in first aid to maintain currency. Paykel et al. (2005) argued that the capacity for CBT to reduce relapse and recurrence of major depression persisted for several years and recommended a booster course every two years. As observed by the authors, clients formerly treated with antidepressants had high rates of relapse and recurrence notwithstanding treatment with

high doses. One reason might be that whereas CBT teaches skills to address symptoms warning of possible relapse, medication is not at the stage where it could implant a patient's cortex with prevention skills.

The long-term psychosocial complications of depression suggest that both the gap and the lag in treatment need to be shortened. Kohn, Saxena, Levav and Saraceno (2004) using 1999 WHO data from member countries found that of the individuals seeking help for depression and anxiety, 40% did so within the first year of onset. The remaining 60% delayed on the average for about eight years. The authors estimated that about 14 million people in the WHO European Region and about 20 million in the Americas were untreated at any one time. The unmet demand for treatment was illustrated by a study by Lo Sasso et al. (2006). Their study showed that a decrease in the employees' share of the payment for mental health treatment in a large organisation led to a 26% increase in the frequency of entering depression treatment. A similar conclusion can be reached from the take up rate of the new Medicare provisions in Australia for psychological treatment (Medicare, 2007). Since introduction of the provisions in November 06 there have been 10 000 rebated visits a month (Medical Research, 2007). There are implications in the findings of the study by Lo Sasso et al. (2006) and the Medicare experience for the perceived high cost of psychologist treatment. A rebate appears necessary in order to encourage especially lower-income earners to seek care when needed. A study by Pingitore, Scheffler, Sentell and West (2002) found an average weekly workload for psychologists of 21.7 hours. This finding further indicates a high session cost.

Depression is not restricted to adults. A survey of Australian children by the Australian Institute of Health and Welfare (2003) found that 4.0% of boys and 4.1% of girls between 12 and 17 years experienced a depressive episode in 1998. This estimate is likely to be low. For example, no statistical data are being collected from psychologists on the type of disorders treated. Rebates paid by Medicare (2007) for visits

referred by GPs to psychologists provides a vehicle for the collection of this data for referred individuals but it has not been used as yet. The number of those who fund their own treatment or belong to a private health fund is not known.

In Australia six million working days are lost annually and the productivity of a further 12 million working days is partially lost because of depression, at a cost of \$3.3b to the economy (beyondblue, 2004). Stewart et al. (2003) concluded from their study that US workers with depression cost employers an estimated \$44 billion per year in lost productive time, an excess of \$31 billion per year compared with peers without depression. Langlieb and Kahn (2005) used a measure that included direct and indirect health care costs related to suicide, increased morbidity, reduced compliance with treatment leading to relapse and hospitalisation, and lost wages due to absence and reduced production. The authors estimated that depression cost the US \$83.1 billion in 2000.

Individuals have become more inclined to seek treatment over the years. Olsson et al. (2002) in a study of 32 000 people in the US found a more than threefold increase in individuals receiving treatment for depression as outpatients, from 7 in every 1000 in 1987 to 23 in every 1000 ten years later. About three quarters were taking antidepressants in 1997, twice the proportion ten years ago. About 60% were receiving psychotherapy in 1997, including those undergoing antidepressant treatments at the same time. The increased numbers taking antidepressants might be contributed to by several factors other than the individual's initiative to seek treatment. They include marketing pressures by drug manufacturers encouraging medical practitioners to prescribe medication in cases of temporary and mild depression where it might not be needed and reluctance by the adherents to the medical model to consider psychotherapy. This issue is taken up later.

(iii) Causes of depression

Price (2004) outlined recent developments in the genetic causes of depression. She concluded that individuals could inherit a susceptibility to depression in the same way as they could inherit physical characteristics and certain other disorders such as schizophrenia and bipolar disorder. She referred to research with twins, which had shown that if one monozygotic twin develops depression the other has a 75% probability of developing the disorder. Where the twins had been reared apart the probability reduces to 67%. With fraternal twins the probability is much lower at 19%. Research proposed the existence of specific genes causing depression in some families and not in others. Crowe (2000) observed after a review of the literature that the identification of a depression gene had been elusive and was a long way away yet.

There are many views on the reasons for the burgeoning increase in depression numbers. Real (2000) considered isolation to be at the root of male depression and saw intimacy as the most lasting antidote. Francis (2006) proposed that the most significant factor was lack of proper nutrition and particularly deficiencies of B-series vitamins and magnesium. There is some evidence for this view. Hintikka, Tolmunen, Tanskanen and Viinamäki (2003) studied the effect of vitamin B12 and folate on patients with major depressive disorder over a six-month treatment period and found that higher vitamin B12 levels, though not folate, were significantly associated with a better outcome. Studies of this nature do not take into account the effects of behaviour change on chemical balances in the body. For example events may have led an individual to experience distress; the distress itself may lead to an increased call on hormones such as endorphins or other chemicals in the body, which in turn reduce their levels.

Perhaps the most acceptable explanation was given by Seligman (2006), which in a sense supported the view outlined earlier by Real (2000). In a seminar he delivered on positive psychology on 16 February 06 in Sydney, Seligman noted a 10-fold increase in depression in wealthy

nations in the last 50 years. He rejected the hypothesis of a biological link to depression and proposed ecological factors. He referred to the Amish, a closely knit group, which has a tenth of the prevalence of depression in the rest of the US. He saw depression as being an outcome of four trends that have grown in the last 50 years:

- the relative size of 'I' compared with 'we', implying that individualism predominates over the group as the dominant philosophy and hence the loss of intimacy;
- the quest for high self-esteem notwithstanding an underlying fragility to negative feedback;
- victimology or laying the blame for one's ills on others. This leads to learned helplessness;
- wealth, which has led to seeking short-cuts and avoidance of effort.

Seligman (2006) contended that depression could be effectively countered by the pursuit of happiness. He suggested counting one's blessings, practising acts of kindness, savouring life's joys, thanking a mentor, learning to forgive, attending to one's body and developing ways to address stress and downturns.

In his approach Seligman (2006) neatly separated the biological from the psychological view of the causes of depression. He saw changes in societal conditions as being responsible for the rise in depression in sharp contrast to the medical model which saw the mechanisms as involving the interplay of neurotransmitter systems in the brain and the confounding nature of the role of genetic predispositions (for example Tolman, 2001, p28).

The pervasiveness of depression in the day-to-day functioning of the individual and in the immediate environment is illustrated through the summary of research presented by *Psychology Today* (1993):

- 50% -75% of families of depressed individuals show significant dysfunction. In about half of these the dysfunctionality continues after the individual's recovery;
- half of the number of women with depression report marital difficulties;
- With treatment depressed workers take 4 to 6 months to recover and return to work;
- 50% of individuals with depression treated with medication relapse within two years, compared with 21% of those treated with CBT;
- children of parents with depression take 66 weeks to recover if they are exposed to divorce, compared with 29 weeks for children who are not exposed.

The implications of the research outlined earlier indicate that depression:

- is burgeoning as a global malaise in today's world (WHO, 2006);
- is affecting more women than men and increasingly young people (Rakesh, 2003; US National Survey on Drug Use and Health, 2005, p.88);
- is a major cause of disability and is forecast to become the leading cause (WHO, 2006);
- pervades the individual's functioning in major life areas (Kessler et al., 2003; *Psychology Today*, 2003);
- can lead to suicide (NIMH, 1999);
- can coexist with substance disorders (Reiger et al., 1990);
- creates significant costs to the economy (beyondblue, 2004);
- has a high relapse rate implying the need for 'refresher' or maintenance treatment (Mueller et al., 1999);
- is a debilitating and life threatening disorder demanding treatment (Kessler et al. 2003);
- can be effectively treated (*Psychology Today*, 2003).

(iv) Statement of the problem and its significance

The previous section leads to the inference that the treatment of depression is an area of burgeoning importance in healthcare. The following factors emerge:

- escalating numbers of individuals who need and are seeking treatment (Andrews et al., 2004);
- cost of depression to the Australian economy estimated at \$3.3b (beyondblue, 2004);
- about two in three individuals in Australia with depression are not treated (Andrews et al., 2004);
- depression is the top-ranking cause of non-fatal disease burden in Australia (Mathers, Stevenson & Begg, 1999);
- as affluence increases depression is hypothesised to rise Seligman (2006);
- depression is treatable though probability of relapse is high (Mueller et al., 1999);
- women and youth are more vulnerable to depression (Rakesh, 2003; US National Survey on Drug Use and Health, 2005, p.88);
- there is an increasing acceptance of psychotherapy as a treatment methodology (Olfson et al., 2002);
- self-responsibility for treatment is growing in importance (Medical Research, 2007; Lo Sosso et al., 2006);
- the relevance of antidepressants is being questioned (Seligman, 2006);
- the nature of the disorder is debilitating (Kessler et al., 2003) and life-threatening (NIMH, 1999);
- psychologists have a low throughput leading to high face-to-face treatment session costs (Medical Research, 2007).

The implication of the factors is that a significant increase in treatment capacity is needed to meet the expanding demand.

(v) the Internet as a treatment modality

Traditional treatment is provided on a face-to-face approach by a therapist to an individual or a group of clients. The Internet, defined as a modality which provides communication and application services internationally for organisations and individuals (Kaplan-Leiserson, 2001), offers the possibility of providing treatment. Childress (1998) observed that the Internet offered professionals significant new opportunities to provide treatment to individuals unable to avail themselves of conventional treatment facilities.

Treatment through the Internet, or online treatment, can be considered as the provision of treatment to a client who is spatially and could also be temporally separated from the provider. The term “e-mental health” and its variants are increasingly being encountered in relation to online treatment. The term describes the use of electronic communication means, mainly the Internet, to improve healthcare through the provision of information, referral to services, client-therapist interaction, therapeutic community support, and self-help interventions (Urbis Keys Young, 2003).

The study in the thesis tests the feasibility of an approach in treating depression which combines face-to-face sessions and an online learning approach or course on CBT skills with email assistance or communication between the provider’s and the client’s computers. Online learning refers to applications and processes such as web-based learning, virtual classrooms, and digital collaboration. Content is delivered through the Internet and by satellite broadcasts, interactive TV and CD-ROMs (Kaplan-Leiserson, 2001). The adjunctive use of the Internet in the provision of treatment was supported by Childress (1998). He stated that the Internet can enrich face-to-face sessions with additional material and encourage the client to explore issues outside of the treatment session.

The use of technology for treatment is supported by Ramage (2002). Writing from an educational viewpoint he concluded after an extensive

literature review of research related to online or Internet-based delivery systems that there was no evidence that demonstrated categorically that technology did not impact on learning. There have been many studies of the efficacy of online treatment including for depression, and these are discussed in the next chapter. One example MoodGYM (Australian National University, 2003) is an online program for the treatment of depression the efficiency of which has been established by research.

In the approach proposed in the thesis, sessions and email help are provided by the same treating professional. Email communication reduces the impersonality inherent in entirely Internet-based treatment and obviates the debilitating loneliness often felt by a client with depression (Korn & Greist, 2004). By using the online course rather than face-to-face sessions to train clients in CBT skills, the approach is hypothesised to maintain client-professional contact throughout treatment while having the potential to reduce costs and improve throughput. Andersson (2006) saw the advantages of online treatment as the ability to provide immediate and continuous advice, cost effectiveness and availability to clients situated remotely from the provider's location. The approach usually involves therapist interaction either via email or supplemented with telephone calls. So far most treatment applications have been based on CBT principles. The main difference from previous self-help studies is that in internet-based self-help treatment all material is provided via web pages (Andersson, 2006). Whilst on the module clients are able to seek face-to-face sessions at any time to address relevant issues. The proviso is that whatever method of delivery is adopted the requirement is to ensure and maintain treatment effectiveness.

The study is based on the premise that the Internet offers a flexible and readily available means of delivering at least the informational and skills training components of healthcare. Individuals with depression are free to work on their module at their best available hour, when they are less fatigued and for as long as they can remain focused. Apart from improving cost effectiveness the Internet course enables clients to repeat

the treatment intervention as many times as they wish in order to gain an adequate understanding or to stave off a relapse in the future. The Internet offers the capability to design interventions in a wide range of disorders including depression to meet the needs of particular groups.

A caution by Pull (2006) is relevant. He reviewed recent studies of online interventions for the treatment of mental disorders and found that most concern the application of CBT to depression and anxiety. He concluded that randomised controlled trials were still scarce and hence evidence of the efficacy of online interventions is provisional. Griffiths and Christensen (2006) emphasised a similar point in relation to interventions for young people and the aged. They reviewed randomised studies of online treatment in a range of disorders including depression, anxiety and posttraumatic stress disorder. They concluded that at this stage online treatment appeared promising as a means of reducing symptoms. There was an overriding need for the mental health professions to continue promoting the view that while psychological disorders affected a large proportion of the population, they did not have to be perceived as debilitating and that efficacious treatment was available in different forms, such as online.

The significance of the present study is that it responds to an area of major clinical importance and adds to the research in an area of paucity. The present study can be seen from another perspective, as providing professionals with another form of treatment delivery that in reality is an extension of themselves, with the potential of reducing costs for clients and increasing throughput. Clinicians would construct their modules based on the way they present knowledge in face-to-face settings and adjust this to reflect the context in which their clients find themselves. Communication with the treatment provider would be by email for submitting assignments and test results, receiving assignments, seeking and receiving help on 'stuck' points and administration such as arranging face-to-face sessions deemed necessary by the client in consultation with the treatment provider. Not all clients would be suited to this approach,

for example those without Internet access or with preference for face-to-face treatment. A response is partly made to the need identified by Pull (2006) for more randomised studies.

(vi) Background to the research questions

The intervention in the present study is based on CBT, which is well known as a treatment approach for depression. The ubiquity of CBT as a treatment method for depression is illustrated by the results of a Google search on 'moderate depression cognitive therapy' on 14 October 07 yielding about 1 310 000 results. The efficacy of CBT in treating depression is well founded on research (Royal College of Psychiatrists, 2005; Bush, 2003; Antonuccio, Danton & DeNelsky, 1995) and is discussed later.

The present study is aimed at the treatment of mild-to-moderate depression. The reasoning for confining the study to this level of severity is that there is some doubt about the efficacy of CBT for more severe depression whereas its value has been more confidently established for mild to moderate levels of the disorder (Ebmeier Donaghey & Steele, 2006; Andersson, 2005; Fochtmann, 2005; NIMH, 2005; Andersson, 2004). The doubt is being addressed. There is already some research that demonstrates the efficacy of CBT for major depression (Chilvers et al., 2001; Antonuccio, Danton & DeNelsky, 1995). However, more severely depressed individuals may need full face-to-face treatment. This factor was suggested by Clarke et al. (2002b) in their conclusion that the negative results of their study of an Internet approach to treating depression might have been due to their sample being more seriously depressed than the intervention was designed to assist. Alternatively the authors proposed that the negative results might have arisen because of the infrequent use of the treatment website by the sample. The two reasons could be related: low concentration and fatigue are symptoms of depression – a severely depressed individual is likely to find difficulty in exerting the effort of concentrating and applying learning skills. The study

by Clarke et al. (2002a) concluded that future research should focus on participants with mild to moderate levels of depression. Probably as CBT continues to develop the stage might be reached when its efficacy for severe depression is established.

A major challenge in the study relates to the effects of depression on functioning. People with depression normally have low concentration, are easily fatigued and irritated and have little interest in activities other than those necessary and unavoidable in their daily life such as personal hygiene, buying food and paying bills. A consideration of the depression (Major Depressive Disorder) criteria in the DSMIV (2000, p.356) supports this view. The question arises whether people who seek face-to-face help would be prepared to undertake part of their treatment on a self-study basis on the Internet with email support and where needed face-to-face sessions to provide remedial training and opportunities to practice skills learnt in the online course. The email support would be in the form of sending and receiving assignments, seeking assistance on 'stuck' points and making administrative arrangements such as for face-to-face sessions. Other means of communication can be used such as the telephone or mobile text messages for administrative matters such as arranging attendance at sessions. However these forms of communication would be incidental to the treatment process. Potential clients need to have a strong resolve to work against their symptoms.

It is proposed that the major motivators for clients to take up online treatment include a significant lowering of costs, the convenience of undertaking the Internet intervention at a time and place suitable for them and the flexibility of going back over the contents as many times as they wish, while ensuring that they are able to maintain progress. A key intrinsic motivator is hypothesised to be the immediate and ready availability of evidence-based treatment coupled with parallel live therapist support to help address the disorder. The support is readily provided by email. For example clients might email their therapist to seek clarification of some topic in the intervention, provide answers to

exercises and depression test results or arrange a meeting. As the use of web cameras spreads, this support can take place face-to-face in the virtual environment.

A key challenge concerns the long-held public concept of psychotherapy as face-to-face individual- or group- treatment (for example Titov, 2007). This concept is shared by the profession itself. Psychologists are trained in and practise face-to-face modes of treatment though some offer psychotherapy by phone (Simon et al., 2004). The issue arises whether clients are likely to consider the proposed intervention as legitimate treatment or as a less effective approach chosen because of lower cost, even though it is restricted to skills training and they are supported by their psychologist. A parallel issue concerns the attitudes of the profession towards this approach because online psychotherapy has yet to gain full acceptance. This was demonstrated in a survey by Whitfield and Williams (2004) of CBT therapists in the UK. The survey found that only 1% of them were using computerised self-help as an alternative to client-treating professional contact. However over 90% saw a future for computerised self-help. Most psychologists surveyed would use computerised treatment as a supplement rather than a replacement for face-to-face treatment. This result is significant because the proposed intervention represents a 'half-way' point between traditional (face-to-face) and online psychotherapy. On this basis it is likely that criticisms are likely to be muted given that the intervention:

- (1) represents an extension of the treating psychologist;
- (2) is integral to the treatment process and;
- (3) the clients are supported by their psychologist through to completion.

The study is set firmly in the realities of day-to-day practice and tests the feasibility of combining an online course with face-to-face treatment by the same provider. In this sense feasibility can be studied by the use of a small sample (N=9). The study is designed to test the viability of the approach, namely intervention plus face-to-face treatment, and determine

whether the savings hypothesised in the research questions are realisable.

(vii) The research questions

The research questions are as follows:

1. Is an intervention which relies on an online course to train the client in cognitive behavioural techniques and on face-to-face sessions to practise the techniques at least as effective as face-to-face counselling in treating clients with mild to moderate depression?
2. If a positive effect is realised from such an intervention, how persistent might this effect be?
3. Is this intervention more likely to retain clients through to completion compared to other interventions?
4. What are the potential savings of this intervention compared to other interventions?

CHAPTER 2 – REVIEW OF THE LITERATURE

This chapter discusses major treatment modalities particularly CBT and also online treatment. Electroconvulsive therapy (ECT), St John's Wort and Interpersonal Therapy (IPT) are briefly presented. Medication is more comprehensively discussed. The discussion on CBT is introduced by an outline of its historical development and current progress. Research is presented on the efficacy of CBT as a treatment modality for depression and its cost effectiveness. Comparisons are made with medication. The present study is described within the context of online treatment. Face-to-face and online studies are detailed against which the results of the present study are compared. The concept of online self-help as a component of treatment is canvassed and ethical issues which arise are addressed.

(i) Measuring depression

Depression is an entity that can be measured and hence the efficaciousness of treatments can be readily evaluated on the basis of the measures. Depression is measured by either self-reporting or clinician-scoring instruments. The effectiveness of interventions in reducing depression is generally measured by these instruments which attempt to assess the statistical significance of change in the intensity of the symptoms before and after the intervention.

The Beck Depression Inventory (BDI) (Beck, 1976) is a self-report test of multiple choice items on depression symptoms such as hopelessness, irritability, fatigue and appetite loss. It is one of the most widely used tests for measuring the severity of depression and is suitable for adults age 17-80. Version II (BDI II) is in current use. Another often-used measure is the Hamilton Depression Rating Scale (HDRS) (Hamilton, 1960). The HDRS is a 17-item scale for use by a clinician and draws information from

different sources including a clinical interview. The scale considers the state of the client over the last few days and should only to be used for those who have been already diagnosed with a depressive illness. A well-known test freely available on the Internet is the Goldberg Depression Scale (GDS) (Goldberg, 2003). This is a self-reporting inventory of 18 items which can be used weekly to track one's mood. This scale is not designed to diagnose depression or replace a professional diagnosis.

There are many treatments available for depression. However only a relatively small number have been tested in clinical trials and found to be effective. The dominant modalities are medication and CBT and these are discussed in detail later in the chapter. Three other depression treatments with clinical trial support are discussed below. They are electroconvulsive therapy (ECT), St John's Wort and Interpersonal therapy (IPT).

(ii) Electroconvulsive Therapy (ECT)

The American Psychiatric Association (APA, 2006) described electroconvulsive therapy (ECT) as a medical procedure consisting of a course of treatment for severe forms of depression. The treatment consists of six to twelve sessions of about five to ten minutes each, usually delivered three times weekly within a month. The patient is administered a general anaesthetic and a muscle relaxant. When these become effective the patient's brain is stimulated through electrodes located precisely on the patient's head and a brief controlled series of electrical pulses are given, which cause a seizure lasting about a minute.

The National Institute for Health and Clinical Excellence (NICE, 2003) following a review of the evidence recommended that ECT should be applied only in cases of severe depression, mania or catatonia. It was best used to obtain rapid and short-term improvement after all other treatment options had been exhausted, or when the patient's life was under threat. It should not be used for relapse prevention or long-term management of depression. The decision to use ECT should be

preceded by a full risk–benefit assessment which included the risks of the anaesthetic, comorbidity, adverse effects on memory function and the risks of not rejecting treatment. The APA (2006) stated that the most recently available NIMH data were for 1980 and they attested to the infrequency of use of the treatment. The data revealed that the provision of ECT was made to three-tenths of one percent of the 8.6 million estimated depressed individuals in the US.

(iii) St John's Wort

The National Center for Complementary and Alternative Medicine (NCCAM) of the United States National Institutes of Health (NCCAM, 2002) commented that extracts of *Hypericum perforatum* (St John's Wort) had been widely used for centuries to treat depression of varying severity and that St. John's Wort was amongst the top-selling herbal remedies in the United States. Research on the effectiveness of St John's Wort has not provided clear indications. Shelton et al. (2001) reported a study on the efficacy and safety of this herb and concluded against its effectiveness. Werneke, Horn and Taylor (2004) reported a meta analysis of 18 studies into St John's Wort and concluded by questioning its effectiveness in the treatment of depression. The authors saw the possibility that the herb might be shown to be ineffective if future trials confirmed the results of their study.

On the other hand a study by Fava et al. (2005) compared the antidepressant efficacy and safety of St John's Wort with both placebo and Fluoxetine, a selective serotonin reuptake inhibitor or SSRI (selective serotonin reuptake inhibitor. Its operation is described in (v)). The study found that St John's Wort was safe, well tolerated, significantly more effective in treating depression than fluoxetine and superior to placebo though not significantly. The implication was that St John's Wort had no actual benefit.

(iv) Interpersonal Theory (IPT)

Research has demonstrated the effectiveness of IPT in treating depression. Martin et al. (2001) in a study of brain imaging of depression patients receiving either IPT or an SSRI found significant limbic blood flow increase only with IPT. Mufson et al. (2004) assessed the effectiveness of IPT for depressed adolescents compared with usual treatment in school mental health clinics and found significant improvements for the experimental group. Reynolds et al. (1999) in a study of elderly patients with recurrent major depression found maintenance treatment with either nortriptyline or IPT or optimally both, is superior to placebo in addressing recurrence. Furthermore, O'Hara, Stewart, Gorman and Wenzel (2000) found IPT efficacious in the treatment for postpartum depression because of symptom reduction and improved social adjustment. The studies referred to indicated that IPT was effective in treatment and in relapse prevention for individuals ranging from adolescents to the aged.

(v) Medication

(a) Historical development and current antidepressants

Antidepressants were discovered accidentally in 1952 (Lieberman, 2003). The drug Iproniazid while being studied as a treatment for tuberculosis was found to have psychoactive effects. Terminally ill patients who took the drug became more mentally and physically active. The drug led to the development of monoamine oxidase inhibitors (MAOIs) and their use to treat depression in the early 1960s. Other antidepressant drugs were developed at about the same time, principally Imipramine which was the first tricyclic antidepressant (TCA).

In the 1970s an understanding evolved concerning the interaction of psychoactive drugs with neural receptors and the resultant changes in neural functioning. Consideration of the role of catecholamine on

emotion and depression led to the hypothesis that reduced levels of certain neurotransmitters were related to the onset of depression. This was the genesis of the serotonin hypothesis, which proposes a link between serotonin deficits and depression. This led to the development of fluoxetine which was marketed as Prozac, the first SSRI (selective serotonin reuptake inhibitor). The advent of SSRIs saw the GP (general practitioner) become the primary professionals in the treatment of depression.

According to the NIMH (2002a) there are several types of antidepressant medications used to treat depressive disorders. These include newer medications chiefly the SSRIs, the tricyclics, and the monoamine oxidase inhibitors (MAOIs). Side effects are common and these are addressed further later. The SSRIs and other newer medications that affect neurotransmitters such as dopamine or norepinephrine generally have fewer side effects than tricyclics (see for example Barbui & Hotopf, 2001). The SSRIs work on the hypothesis that depression is caused by a lack of sufficient serotonin in the brain and they attempt to right the balance (see for example Barclay, 2005; Conner, 2005).

The chemical imbalance hypothesis does not sit well with the British Association for Psychopharmacology guidelines (Anderson, Deakin & Nutt, 2000) which state that a minimum of two weeks is required for mood improvements to appear and the medication needs to be taken for at least six months after remission or twelve months for the elderly to halve the chance of a relapse.

(b) Research on antidepressants

Korn (2003) reviewed research on remission rates following antidepressant therapy and provided data estimating remission rates between 35% and 40% for the more popular SSRIs compared with 24% for placebo. Referring to their own research Robinson et al. (2005) concluded that medication was by far the most popular treatment for

depression provided through general practitioners. Simon (2001) in an editorial in the Journal of the American Medical Association attested to the establishment of the effectiveness of antidepressants by research. Arroll et al. (2005) following a systematic review selected for study 15 randomised placebo-based studies in the treatment of depression. They concluded that the effectiveness of antidepressants had been demonstrated. Ebmeier, Donaghey and Steele (2006) proposed on the basis of their review of recent developments in research into depression that antidepressants are the best option for depressed individuals.

Moncrieff and Cohen (2006) proposed a medical model for the treatment of depression that challenges current thinking. The authors observed that there was little evidence that supported the use of the disease-centred model of drug action as a theoretical base on the functioning of antidepressants. The model assumed that drugs rectified abnormalities in the state of the brain, the therapeutic effects were based on hypothesised disease pathology and there were differences in effects between individuals with the disease and those without. An example concerned the treatment of diabetes by the continuing supply of insulin. The purpose of insulin is to maintain the level of sugar in the bloodstream within normal bounds. The carbohydrates that are consumed when one eats are converted into glucose. Insulin facilitates glucose entry into the bloodstream to provide energy. Where the insulin is not produced in sufficient amount by the pancreas it needs to be supplemented by injection in order to avoid the possibility of blindness and kidney damage (Mayo Clinic, 2007). The hypothesised role of antidepressants is similar. They are taken in order to maintain the supply of serotonin in the brain at a level to avoid the onset of a period of downward mood.

The authors proposed instead a drug-centred model which assumed that drugs create an abnormal state of the brain, that therapeutic effects were coincidental and related to social context and that there were no differences in effect between those with the disease and those without. A similar paradigm concerned the effect of alcohol in reducing social

anxiety. In this paradigm social anxiety did not imply that the brain had an insufficient supply of alcohol, which should be corrected in order to cure the person of this disorder. The reduction of social anxiety after alcohol ingestion was coincidental. That is, medical treatments do not cure the disorder. Rather they provide temporary relief. The effects of antidepressants range widely depending on their chemical composition in their cognitive and behavioural components.

The authors observed that clinical trial results may be similarly explained by drug-related effects and placebo amplification and concluded that there was no evidence that the use of antidepressants led to lasting mood improvement and emotional wellbeing. The implication is that mood is not static and changes to reflect variations in biopsychosocial factors as they occur. Addressing chemical imbalance at one moment in time does not necessarily create the conditions to maintain positive mood beyond that moment. As Kramer (2003) stated, it takes less than an hour to block serotonin transporters after taking an SSRI but depression takes a much longer time to resolve, if at all. On the other hand CBT provides the individual with skills to address these variations as they occur and hence represents a dynamic rather than a static treatment approach.

Ebmeier, Donaghey and Steele (2006) conceded that concerns of suicide associated with antidepressants, risks of side effects and patient choice were as important as effectiveness of treatment. They considered that despite the extensive effort to enlighten the debate on these concerns the public and medical professionals had become affected by them.

The increasing disillusionment with antidepressants is much deeper. Recent studies questioned claims on the effectiveness of antidepressants and proposed that CBT should be trialled with individuals who were antidepressant-resistant (Sonawalla, 2001). In a well-designed study Kirsch et al. (2002) reworked the efficacy data submitted between 1987 and 1999 by pharmaceutical companies to the U.S. Food and Drug Administration seeking approval for the most popular antidepressants,

namely Prozac, Paxil (Aropax in Australia), Zoloft, Effexor, Serzone and Celexa. The study found that about 80% of the response to medication irrespective of dosage was duplicated in the placebo control groups, and the mean difference between drug and placebo effects on the HDRS was not significant.

Moncrief and Kirsch (2005) reviewed the literature on the effectiveness of antidepressants and questioned the support by NICE (2004) for their prescription. They identified several methodological flaws in clinical trials which resulted in the derivation of supportive statistics. On the basis of their review they concluded that:

- recent meta-analyses showed that SSRIs were not clinically superior to placebo;
- there was little evidential support for claims of increased effectiveness of antidepressants in more severe depression;
- the small extent of superiority over placebo might be accounted for the methodology itself;
- there was evidence that antidepressants affect long-term outcomes of depression and suicide.

Part of the criticisms levelled at antidepressants might be due to the effectiveness studies themselves. For example antidepressant trials rely mainly on the honesty of participants to take the drugs as prescribed and some may abandon them without advising trial management. It is also possible that some participants may take up activities conducive to the amelioration of the disorder such as exercise, fish oil and psychotherapy. All these would have a confounding effect on the results emanating from trials.

(c) Medical treatment models

A medical model underpinning the use of antidepressants proposes that depression occurs because of an imbalance in serotonin in the brain. Researchers in the medical field are increasingly criticising the medical

model. Lacasse and Leo (2005) cited claims that the evidence for an "imbalance" in neurotransmitters causing depression was circumstantial and that it was increasingly becoming tenuous. There is a dearth of studies, other than limited findings based on suicide victims, of low levels of serotonin or norepinephrine levels in depressed patients compared with non-depressed individuals. Although serotonin is involved in depression and blocking its reuptake appears to be helpful, this might be symptomatic rather than causal.

Barclay (2005) succinctly summarised the argument by pointing to the inherent flaw in the reasoning by pharmaceutical companies and their supporters, namely that because (1) antidepressants relieve depression and (2) they affect the flow of serotonin, therefore (3) depression is caused by serotonin imbalance. The assumption that depression is caused by a chemical imbalance appears to be overly simplistic. A theory that is emerging concerns the stress-diathesis model (Roberts & Kassel, 1997), which hypothesises that genetics affect the likelihood of depression being caused by stressful life events.

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(vi) Antidepressant side effects

(a) Consumer disquiet

Consumers are voicing their discontent over the side effects of antidepressants. Olfson et al.(2006) reported on their study of data in the household component of the US Medical Expenditure Panel Survey for 1996–2001. They found that 42% of patients on antidepressants discontinued their treatment in the first month and only 27% continued taking them for more than three months. This finding could be interpreted as market rejection of a product that does not live up to its expectations. Side effects can be quite distressing. For example Effexor, one of the most popular, may cause dizziness, insomnia, nervousness, somnolence, dry mouth, sweating, impotence and liver failure (MIMS, 2006). A study by Brunnauer (2006) found that antidepressants adversely affected driving ability. Kennedy et al. (2000) reviewed a number of studies and found that approximately 30% to 40% of antidepressant consumers experienced sexual problems, although there was little data available on frequency of occurrence. Clayton and Montejo (2006) observed in their study that up to 42% of patients on antidepressants were passively waiting for spontaneous remission.

The studies questioning the efficaciousness of antidepressants and highlighting their side effects have added to the disquiet raised by well-publicised legal actions such as the assigning by a jury of 80% of responsibility for a murder-suicide to the use of an antidepressant (Josefson, 2001). The disquiet has been acknowledged by the expression of official concerns such as the recommendation by NICE (2004) that in cases of mild depression psychotherapy should be used instead of antidepressants because of their association with suicide. The recommendation followed the recent US government requirement of warnings to be printed on antidepressants such as Serzone on their unintended effects (Medwatch, 2004). Tiihonen et al.(2006) reported their study which found that in suicidal subjects with a history of using antidepressants, the current use of any antidepressant was related to a markedly increased attempted suicide risk while at the same time, a markedly reduced risk of completed suicide and death.

The conclusion by Simon (2006, p.2722) in canvassing the issue of suicidal risk following antidepressant use is apt:

Suicide is the most feared outcome of psychiatric illness. Among 10,000 children and adolescents who begin taking antidepressants for depression, approximately 6 will die by suicide during the next 6 months, and another 30 will be hospitalized after a serious suicide attempt. For adults, the corresponding numbers are 4 suicide deaths and 10 hospitalizations for suicide attempts. Of those 10,000 children and adolescents, approximately 3000 will stop taking their medication within a few weeks, 4000 will never return for a follow-up visit, and 6000 will not recover from depression during the next 6 months. Although the rates of antidepressant use have increased dramatically among both adults and adolescents during the past 20 years, the disappointing quality and outcomes of depression treatment have changed little. Our treatment of depression is growing wider, but it is often only inches deep.

(b) The influence of the pharmaceutical companies

In Australia television programs such as the Special Broadcasting Service's *Cutting Edge* screened on 5 October 04, add further disquiet by revealing the efforts of drug companies to market their products by "inventing" disorders. For example GlaxoSmithKline equates common shyness with social anxiety disorder in an effort to increase sales of Paxil or Aropax (Carducci, 2005). This is an SSRI antidepressant that is marketed for a host of other mood and anxiety disorders. Another issue of pharmaceutical company marketing dominance was exemplified by Francis (2003) who stated that the researcher who developed Valium later found that the B group of vitamins had the same medical benefits but without the side effects; however this research was only accepted for publication in an obscure European medical journal.

Moynihan, Heath and Henry (2002) discussed the concept of disease mongering or medicalising normality, namely widening the boundaries of treatable illness in order to expand markets for pharmaceutical companies and promoting them to both professionals and clients. The authors comment that the ordinary concept of illness is being replaced by the corporate construct of disease. Sydney's *Daily Telegraph* on 27 June 2005 voiced the public's concern over the seriousness of side-effects of medication including antidepressants. The Global Corruption Report (2006, p.xii) claimed that theft, bribery to have drugs approved and extortion took a considerable proportion of healthcare funding and recommended that pharmaceutical, biotech and medical device companies committed themselves to refraining from bribery and institute a program of comprehensive anti-corruption measures.

The disquiet surrounding the effectiveness of SSRIs was addressed by Melander, Ahlqvist-Rastad, Meijer and Beermann (2003). The authors reviewed 42 placebo-based studies of five SSRIs submitted for approval to Swedish authorities for treating major depression and compare them with published studies. They found more stand-alone publications of studies with significant drug results than studies where the results were

not significant and that many publications reported the more favourable protocol analyses only. The authors concluded that basing a recommendation of a specific SSRI on published data was likely to draw on biased evidence. Als-Nielsen, Chen, Gluud and Kjaergard (2003) explored the association between funding and drug trial conclusions. They found that trials funded by for-profit bodies compared with non profit bodies were significantly more likely to recommend the experimental drug as treatment of choice and that treatment effect or adverse events appeared not to be considered.

A study by Adair and Holmgren (2005) addressed whether access to drug samples influences prescribing behaviour. The study analysed 390 decisions by clinic interns to prescribe drugs and found that those with access to drug samples were less likely to choose unadvertised drugs than those without. The authors concluded that access to drug samples influences prescribing behaviour and as a result increased drug costs for patients. Watkins et al.(2003) from their survey of 1097 GPs in English practices randomly selected from three groups defined as the bottom, middle, and top fifths of prescribing costs, found evidence for the proposition that frequent visits by drug company representatives led to attitudes and behaviour conducive to higher cost prescribing and that GPs who were high cost prescribers were targeted by the representatives.

Dickerson and Rennie (2003) commented on the absence of comprehensive information about clinical trials for new drugs and viewed it as a key ethical issue. They observed that trial participants gave their consent in the belief that they were contributing to medical science. If information gained in the trial was not fully reported the trust among participants, researchers and ethics review organisations was impaired. The trust was further diminished where the manufacturer was profiting from trials, but refused to make information freely available. Mintzes et al. (2003) compared the effect of direct-to-consumer advertising (DTCA) of prescription drugs on practitioner prescribing decisions in the United

States where it was legal and in Canada where it was banned. They concluded that increased advertising led to a rise in requests for advertised drugs and in prescriptions.

Evidence of this nature has led to the publication of guidelines to increase transparency and encourage responsible and ethical reporting of industry sponsored clinical trials. However the guidelines are voluntary and few drug manufacturers have endorsed them (Singh, 2003).

(vii) Cognitive Behaviour Therapy - Philosophical underpinnings

Cognitive behaviour therapy or Cognitive therapy (CT) is defined as a treatment approach in which client and treating professional work together to identify the client's maladaptive beliefs and set about modifying them in the light of the evidence (Beck et al., 1979). CBT is based on the premise that people with depression have cognitive distortions in the way they perceive themselves, society and the future. CBT, designed to be a time-limited therapy, focuses on changing these distortions. Research (for example Segal et al., 2006; Brent et al., 1997) showed that CBT provided quicker response than drugs and led to remission in almost two thirds of cases.

(a) CBT - Theoretical considerations

Individuals construct their own view of themselves in the world by building their understanding and knowledge in the light of their experiences and related reflections. New experiences need to be built on existing experiences and reflections. This process leads to changes to existing knowledge or to the discarding of the new experience. The implications are that individuals are active creators of their own knowledge and this requires questioning, experiment and assessment (Educational Broadcasting Corporation, 2004). In relation to the topic of the study, depressed persons have an understanding of the world based on negativity that acts to create distress and detracts from their ability to function effectively.

Scholarly research requires that studies are underpinned by a paradigm, which is chosen by the researcher on the basis of its appropriateness for the area under study. The following sections outline and justify the paradigm that underpins this particular research.

(b) Paradigms

Guba and Lincoln (1989, p.118) defined a paradigm as consisting of elemental assumptions or axioms which guided researchers through the study of a chosen phenomenon. A paradigm represents the fundamental truths accepted by researchers as valid in relation to the problem under investigation. This is a concept similar to axioms in geometry.

Paradigms are often chosen because they reflect the orientation of the researcher, or the researcher chooses problems which reflect orientation and hence generally lead to the choice of the paradigm with which he or she is familiar.

Denzin and Lincoln (1994, p.99) considered that a paradigm consists of the concepts of ontology, epistemology and methodology. Ontology refers to the assumptions about the nature of reality that a given approach to research makes - whether it is external to the researcher and the participant or it exists in the individual's private reality. Ontology considers issues about what exists, its appearance, its composition and the interaction of different components. Epistemology, as proposed by Frankel, Naslund and Bolumole (2005), concerns the assumptions made about how the world is perceived and the relationship between the researcher and what is known, that is, how the individual understands the world and communicates that understanding as knowledge. The acquisition of knowledge varies with the social context and the type of phenomena studied. No single epistemology is correct or otherwise because how knowledge is collected is influenced both by context and phenomena.

It is proposed CBT is best understood within the framework of Constructivism. Sexton (1997) saw three eras in the evolution of knowing each with its own ontological viewpoint guiding behaviour related to phenomena, challenges and solutions. The premodern era (sixth century BC to the Renaissance) was characterised by dualism, idealism, and rationalism. Knowing was based on faith and religion while prayer, faith and thought were ways to bring about change. The modern era (Renaissance to 1900) emphasised empiricism, scientific methodology, objectivity and validity. These continue their importance today. Sexton (1977, p.7) commented that in the modern ontological perspective objective reality and scientific knowledge are mirror images. The present era, the postmodern/constructivist, is characterised by the genesis rather than the discovery of existing realities. Viability has replaced validity in evaluating claims to knowledge. Both how and what in the construction of knowledge are legitimate issues. In contrast to the neutral observer concept in modernism human participation in knowledge construction is a legitimate concern. That is a phenomenon is viewed within a context and its meaning is relative to that context. Knowledge is based on social, inductive, hermeneutical and qualitative dimensions (Sexton 1997, p.8).

Constructivism according to Magoon (1977, p.652) views knowledge as a multifaceted grouping of referents and meanings which need to be considered by a researcher in studying the way learning occurs. The constructivist or interpretivist paradigm was considered by Lincoln and Guba (1990, p.167) to be the best suited to human study.

Mahoney (2004) saw constructivism as a range of theories which reflect five underlying themes, namely:

- active agency - individuals are active agents in their experiencing of phenomena rather than passive observers of events outside their control;

- order -to a large extent human activity concerns categorising or patterning experiences and involving the emotions in drawing meanings from them;
- self - personal activities are basically recursive and lead to a sense of identity;
- social-symbolic relatedness -individuals are not isolated beings. They live within social frameworks and can only be understood within them;
- lifespan development - order and disorder are lifelong coexisting dialectical entities seeking a dynamic balance which is never achieved.

The five themes reveal the constructivist viewpoint that human experience is based on meaningful action by a self which continuously grows within dynamic and ever developing relationships. This view of constructivism reveals a wide philosophical base. Lin Hsiao (1996) summarised what is meant by constructivism by observing that individuals were active in their own learning because they incorporated into their existing body of knowledge new information which was meaningfully associated and represented. Constructivism points to the fallacy of treatment providers considering clients as passive recipients of information. The learning process needs to place clients in the centre of the learning process and guide them to integrate the new knowledge into their existing schemata. By taking an active role in the treatment process they create order in their new learning experiences, adjust their sense of identity, understand the effects of applying new skills to their functioning in their social environment and build the foundations for ongoing learning. As Solomon (1987, p.64) observed individuals relied on their existing conceptual structures to build personally meaningful new knowledge.

Cobern (1993) observed that doubt represented the essential difference between empiricism and constructivism. The empiricist was concerned to formulate knowledge on the basis of establishing 'objective' evidence that was evidence which was external to the researcher and free of doubt.

The constructivist accepted that knowledge was based on belief and that beliefs were subjected to doubt. Beliefs became knowledge in the light of supporting evidence. There is much empirical research in psychology and other human sciences where the results are provided within statistical parameters, for example the 5% or the 1% confidence limits. In other words empirically formulated knowledge is ultimately based on a belief by the researcher which the results of the study support or reject according to its probability of occurrence. As Cronbach (1975, p.125) stated, "when we give proper weight to local conditions, any generalization is a working hypothesis, not a conclusion." In this sense all knowledge is tentative and this view is illustrated by the many examples in science where a phenomenon is demonstrated by certain evidence which later is disputed by other evidence. All constructivist paradigms share the view of multiplicity in realities and reject the positivist principle of a single external reality of a phenomenon.

(viii) Constructivist paradigms

There are several different constructivist paradigms. Boudouridis (1998) outlines a number of these.

(a) Philosophical constructivism

Philosophical constructivism is a process by which identity is maintained through self-referencing. The cybernetic advances in biology, neurophysiology and cognition give rise to cybernetic constructivism. Educational or psychological constructivism is delineated into personal and social constructivism depending on whether the individual or the group undertakes constructing of the cognitive and memory structures. Boudouridis (1998) added that the theories of Piaget and von Glasersfeld were mainly psychological constructivist while those of Vygotsky were social constructivist. Boudouridis (1998) defined sociological constructivism as the model concerned with public bodies of knowledge, sciences, technologies and their social construction and interpretation in relation to changing social conditions and interests. Radical

constructivism departs from the traditional position of realism as implying that knowledge has to represent an essential reality of a world existing before having been experienced. Instead it takes up the relativist position that knowledge is an actively constructed entity by individuals as they seek to provide meaning to socially accepted and shared ideas.

Raskin (2002) observed that the variability in constructions of reality caused by individual differences in vantage points led to skepticism regarding the extent to which a given construction reflected the external world. The implications are that reality is considered by constructivists to be unattainable. This is the basis of epistemological constructivism – there is an external reality which is beyond the researcher to ascertain except through constructed meanings which themselves are tainted with the researcher's own perspective. That is, a researcher is uncertain of the extent to which his or her constructions reflect external reality but can be certain of the extent to which the constructions are effective.

(b) Hermeneutic constructivism

Hermeneutic constructivism (Raskin, 2002) refutes the existence of a reality independent of the observer and views knowledge as the outcome of the use of language in any given group. That is, there are multiple realities of any one phenomenon, each reflecting the efforts of a group trying to understand the phenomenon through its own language. For example, treating depression in a client from a different language background to the provider adds to the difficulty of each party understanding the vantage point of the other in describing the experience of the disorder - not so much because of translation issues but because language defines the reality of the experience.

Chiari and Nuzzo (1996) discussed the concept of limited realism as an approach to close the gap between realism and idealism. Limited realism accepted the existence of an external reality and that it was possible to have direct knowledge of this reality. However the fallibility of human perception muddies the connection between knowledge and reality.

Chiari and Nuzzo (1996) proposed that cognitive psychology was based on limited realism because it strived to correct illogical or erroneous thinking that distorted reality. The Chiari and Nuzzo proposition applies to CBT. The psychologist teaches the client skills in challenging thoughts that cause distress based on the principles of Aristotelian logic and Socratic questioning. The view of constructivism which is adopted is the one which is considered best for the study.

(c) Personal constructivism

Coburn (1993) referred to the personal constructivist nature of Piagetian learning and commented that knowledge was not implanted on a blank mind but was constructed. The construction of new knowledge was significantly affected by existing knowledge. Learning by construction led to a change in existing knowledge by means of modification, replacement or addition. It might be surmised that constructivism offers an epistemological model in the treatment of a mental disorder such as depression: the treating professional aims to link the skills that need to be learnt by the client and the client's existing store of knowledge. New knowledge is built on existing knowledge. Once it has been incorporated it provides a basis for building new knowledge in the future. Personal constructivism appears to be inherent in the CBT approach where new knowledge (for example different and less distressing ways of perceiving sad events) is not simply assimilated and accommodated.

Misconceptions (irrational thoughts) are deconstructed and rational thoughts are reconstructed as replacements.

Von Glaserfeld (1995, p.137) took the personal constructivist view and emphasised the viability rather than the validity of human perception. He proposed that the world and other people were personal constructs and that people changed their constructions of the world when they failed to offer viable explanations of an event. This principle applies to depression. Individuals continue to function effectively whilst their constructions are viable. They attempt to adjust their constructions to accommodate a change in their circumstances such as a failed relationship. Individuals

who do not perceive the new constructions as viable experience stress. Depression occurs where the accumulated stress exceeds the capacity of the individual to manage its effects on functioning.

As proposed by Kelly (1955, p.8), personal constructivist paradigm focuses on the individual who constructs or processes cognition and memory structures. In Kelly's view, the personal constructivist paradigm considers that individuals create transparent templates which they try to fit over the realities they perceive and view their world. Individuals base their predictions on constructs, which are revealed in time to be either right or wrong. This leads to the revision of constructs and construct systems. Kelly's proposition is significant in that it proposes that the nature of human learning is dynamic and that the individual's existing knowledge is an active component of the learning process.

The personal constructivist paradigm appears especially suited to guide the study because:

- the focus is on the individual. The client with depression is the centre of the treatment process;
- the individual learns logical thought challenging skills with which to decide whether or not a perception of the world fits a relevant template;
- the concept of core beliefs sits comfortably with the notion of templates with which to test reality. Where necessary the client is helped to modify core beliefs where these are creating distress. For example a core belief that condones the excessive use of alcohol is conducive to the development of depression;
- the individual learns to adjust interpretations of the world progressively in the light of further information such as feedback.

ix) CBT and constructivism

The treatment for depression by CBT demonstrates the proposal by Lincoln and Guba (2000, p.167) that the ontology of the constructivist paradigm, namely the inherent belief about the nature of reality, is relativistic and reflects multiple realities. The implication is that the criteria for judging reality or validity are relative and emanate from a community consensus on the nature of reality, usefulness and meaningfulness especially for future action. There is no absolute truth or reality. An individual's activities construct meanings which form a large part of the social phenomena in his or her world and lead to certain behaviour. Meanings are tentative. They are changed when found inadequate, or based on faulty data or act against the best interests of the individual, for example they form or maintain a disorder such as depression. The implications are that CBT is a dynamic process in which the individual is actively engaged in constructing meanings, evaluating their fit against realities and changing them in the light of new or conflicting evidence.

The foundation stone of CBT is rooted in the statement by Epictetus (2000) that "men are disturbed, not by things, but by the principles and notions which they form concerning things". That is, individuals react to events the way they perceive them and not in their reality. This concept is constructivist in nature. Research by DiGiuseppe and Linscott (1993) provided supporting evidence. The researchers undertook a factor-analytic study of responses by CBT and Rational-Emotive therapists to a questionnaire on rational and constructivist philosophies. The study found significantly more agreement by CBT therapists with more constructivist than rationalist philosophies though therapists did not differ on how early in treatment they challenge irrational thinking. The authors contended that their study provides evidence that rationalism and constructivism are not oppositional philosophies and therapists can separately adhere to beliefs of each methodology.

(x) CBT as a process

CBT may be described as a set of techniques based on cognitive and learning theories. Elements of CBT, particularly the application of logic and observational evidence to challenging dysfunctional thinking go back to the contributions of Aristotle (384-322 BCE) and Socrates (469-399 BCE). Aristotle theorised the link between thought, emotion and action. Changing the way an individual thinks about an event, initiates change in behaviour and mood. The concept of actions being based on perceptions rather than external reality is attributed to the Stoic philosopher Epictetus (55-135 AD) and is considered a foundation stone of cognitive theory. Epictetus is often referred to as the first cognitive therapist (Bush, 2003).

CBT as a treatment process assists depressed participants to identify meanings they ascribe to events in their social environment. Participants learn to note the emotions aroused when these meanings come to mind, which serve to maintain a downcast mood. They are trained to challenge the validity of these meanings by applying principles emanating from the philosophical concepts of:

- Epictetus – the individual's perceived reality drives his or her action, which may or may not differ from external reality, that is what is considered to be reality by a community consensus;
- Socrates – critical reasoning, commitment to truth and morality, dialectics (cross-examining assertions in order to highlight contradictions) are key concepts in assisting individuals question and reshape their realities;
- Aristotle – acceptance of the inherent goodness of the individual is the basis of any treatment; the link between thoughts, emotions and action is a key to changing thinking that causes harm to an individual; rules of logic are used to challenge thinking based on faulty premises.

The application of these concepts is facilitated by the constructivist paradigm's ontology, which relies on the understanding of meanings behind individuals' actions. Truth is not absolute but relative to the

individual temporally and environmentally. The participant is assisted to identify meanings which serve to create or maintain a downward mood, that is, they prevent the attainment of a state of wellness. Once the participant identifies meanings the next stage is to analyse and modify them where they are not logical or are potentially harmful. In this way new realities are formed. As different realities are progressively adopted different moods are created. As the barriers to wellness are lifted the participant experiences freedom from debilitating negativity.

The epistemology or expansion and communication of knowledge about the individual's reality, is transactional/subjectivist. Knowledge findings are created during discourse with other individuals through ever evolving reconstructions and vicarious experience. The treatment provider engages in discourse with the participant. The discourse helps the participant to identify experiences which are contributing to depressed mood and to construct and reconstruct meanings and realities which progressively reduce negativity and enhance a realistic outlook.

A key strength of the constructivist paradigm lies in its ability to facilitate the understanding of meanings behind individuals' actions. Meaning relies on context, and any interpretation of action or view must consider the environment in which it occurs (Dey, 1993 cited in Pickard & Dixon, 2004). The constructivist paradigm benefits research questions which seek meanings of particular actions rather than solely statistics. It is particularly useful in the proposed study because depression develops when the individual is consistently giving meanings to his or her world which are distressing and lead to despondency and despair. While the quantitative model utilises statistics to assess mathematically the extent of effectiveness of the intervention the single case studies reveals the experience of the participants and the changes that occur in their own reality as each phase of the treatment is completed. An exploration of the two models is taken up later.

(xi) CBT and Voice

The researcher's voice is that of a 'passionate participant'. The researcher's beliefs reflect the supremacy of upholding the common good and in helping individuals gain power over their world. The researcher needs to be closely involved with participants in order to understand their realities and contribute to the outcomes. The participants are encouraged to speak of truth as they perceive it. Voice is more than taking the opportunity to relate one's experience or gaining emotional relief through ventilation and extends to being aware of emotions which occur during the telling. Voice is not unitary because all voices are incomplete, restricted and biased. A lack of voice is itself worth studying for its implications.

In the proposed study participants have a dual role – they strive to reduce their depression and are also partners in the continuing evolution of the intervention. Their voices represent the richness of individuality and their reflection is essential to assist the intervention develop further. There is a need to avoid the absence of client voice in psychological research. According to Smith (2000) this also occurs frequently in research into delinquency and education. He added that self-report data research failed to address the meaning of school failure and delinquent behaviour to youth.

The lack of voice on the part of clients with depression is likely to reflect their feelings of powerlessness and helplessness to prevent the flood of negative emotions that distress and debilitate them. The treating process should aim at encouraging voice. The client who expresses distress can be aided to reduce its effects by adopting the skills available through CBT.

The role of voice in the constructivist paradigm is to enable a dialectical approach to be taken in finding new meanings and developing new realities. CBT facilitates the achievement of understanding and the reconstruction of realities of individuals constellating around a consensus.

In a dialectical discourse with the psychologist the participant learns to challenge thoughts supporting a negative outlook using Socratic challenging and Aristotelian logic principles. The client is at the centre of the process and the treatment provider tries to understand the individual's construction of personal reality (Pickard & Dixon, 2004). Therapy succeeds when the client becomes adept at looking at distressing events differently and challenging illogical thoughts which serve to maintain depressed mood and prevent the adoption of wellness. The process is judged on the extent to which outcomes can be trusted and are authentic.

In any treatment method the outcome, that is whether or not the depression has lifted, is judged by the participant. CBT encourages the sharing of control between researcher and participant in a collaborative sense, with the common aim of defeating the participant's disorder and returning him or her to a state of wellness. Truth, the ability to confirm results, consistency and dependability are the essential criteria for quality (Healy & Perry, 2001), hence the need for feedback and discourse in the treatment process. The paradigm includes consideration of values and ethics. The mission of CBT is to help individuals achieve a state of wellbeing free of psychological distress and is based on the unconditional acceptance and respect for the individual. As Kaye (2002) states in terms of early childhood education programs, better ways need to be sought to assist the student complete the course and hence become another informed voice. In terms of the present study successful clients form an informed voice and their ideas are valuable contribution in a continuous development of the intervention.

(xii) CBT – earlier developments

The 1960s saw a rise in interest in the study of cognition, a hitherto ignored topic because of its subjectivity. In this period two experienced psychotherapists, psychologist Albert Ellis (1962) and psychiatrist Aaron Beck (1967), noticed the close relationship between thoughts, feelings, moods and actions and proposed that most of their clients' difficulties

appeared to be caused by their thoughts and beliefs about themselves and their surrounds. This was a radical change from the psychoanalytic view that relied on the importance of early childhood experiences in the formation of behaviour. The pioneering work in cognitive theory led to the incorporation of the work of the three ancient Greek philosophers into a practical approach to treating individuals with mental disorders.

Learning may be described as the process by which behaviour is modified or added to a living being's repertory (Bush, 2003). The consideration that much behaviour is learnt led psychologists in the 1950s to research learning theories and utilise them as bases in the development of treatment methods. The two major types of learning theories were classical conditioning, which originated from Pavlov's studies, and behaviour modification which arose from the work of the behaviourists particularly Skinner (1953, 1969). Classical conditioning led to the development of treatment methods referred to as desensitisation. These are particularly useful in the treatment of phobias and involve repeated exposure of the individual to the feared stimulus until it no longer affects behaviour. The exposure is first imaginary and is then followed by repeated encounters with the actual feared situation, eg riding in a lift. Desensitisation is incorporated into CBT and extensive research has established it as an evidence-based and therefore preferred treatment by the practitioners (see for example Rosenbaum & Covino, 2005).

The work by Skinner (1953, 1969, 1974) led to the development of behaviour modification through the use of positive reinforcement. Treatment methods based on behaviour modification have been used extensively to combat a wide range of disorders including depression and anxiety. They are particularly useful in institutional settings to train individuals in personal and social skills where the system of rewards can be adjusted to provide for reinforcement of desired behaviour. These developments led to the formation of CBT theories. Ellis proceeded with Rational Emotive Behaviour Therapy (REBT) and Beck with Cognitive

Therapy.

Beck (1967, 2005), influenced by the developing integration of cognitive and behaviourist psychology at the time, particularly the contributions of Albert Ellis (1962) and George Kelly (Gaines & Shaw, 1964), clarified over 40 years ago the role of cognition in depression and its treatment. He pursued the development of a system of psychopathology and therapy by building an overarching theory that linked to a treatment approach. He researched empirical support for the theory and undertook research studies to test treatment efficacy. The set of principles that were derived were first applied to depression and then to other disorders, more recently schizophrenia.

Although Beck (2005) termed his model cognitive theory or CT, he noted that cognitive behaviour therapy (CBT) had become a synonym. He used both terms interchangeably noting that CT incorporated behavioural components such as goal setting and tasks outside of therapy. In this study the term CBT is used.

A Google search on 'psychoanalysis research' brings just over 2.1 million hits compared with 28.6 million hits for 'Cognitive Behaviour research' (November 07). Wolf (2005) lamented the eclipse of the psychoanalytic influence and the rise of CBT. He blamed the 'hard-nosed' attitude of the health authorities for insisting on evidence-based techniques and fostering a quick-fix mentality.

(xiii) CBT - current developments

An early extension of the work on learning theories was the development of social learning theory. Bandura (1977) proposed that human behaviour was mainly learned by modelling or coding information gained from observing others and then applying this coded information to guide action. Human behaviour is seen in terms of the interactions between cognitive, behavioural and environmental influences.

Different forms of CBT have arisen to meet a variety of treatment needs and to reflect research and theoretical developments. The developments are similar in their basic approach and are collectively known as cognitive behaviour therapies. Dialectic Behaviour Therapy (Linehan, 1993) has been developed primarily for the treatment of borderline personality disorder. This therapy hypothesises that the disorder occurs in an emotionally vulnerable individual, who cannot cope with stress as well as most people, growing in an 'Invalidating Environment'. This environment is defined as one in which there are not adequate opportunities for the individual to understand and control emotions.

Another newer form is mindfulness-based cognitive therapy, (Williams, Teasdale, Segal, & Soulsby, 2000) and mindfulness and acceptance (Hayes et al., 2004). Mindfulness-based cognitive therapy models depart from traditional CBT in that they follow the tenets of behaviour therapy but do not focus on attempting to change dysfunctional thoughts and underlying assumptions in order to change behaviour. They instead rely on attending to momentary experiences in the setting of mind and body change in a passive, non-judgmental and accepting attitude. Treatment begins with training in breathing relaxation and concentration to reduce distractibility and develop meta-cognitive awareness. This process enables the individual to discern between meaningless thoughts and those that reflect truths about the self and the environment. Mindfulness cognitive therapy models draw on meditation techniques, for example Vipassana Mindfulness and Meditation (Mindful Works, 2006).

Another development concerns the expansion of learning theory to include the contributions of cognitive neuroscience in brain structure and functioning. The neural network learning theory (NNLT) is based on the principle that neurons and synapses undertake all psychological operations such as reasoning and mood; they drive, and are driven by, motor activity (Bush, 2003). The synapses or connections between neurons are considered to code and store information. Anytime we learn

something entirely new, or new about an existing topic in our totality of knowledge the synapses change. Hence learning alters our brain structure. Studies of virtual neural networks have simulated learning, memory and certain mental disorders and have the potential to add significantly to our treatment methodologies by illuminating the interplay between brain structure and function.

(xiv) Cost effectiveness of CBT

A model of cost effectiveness for depression was developed by Antonuccio, Thomas and Danton (1997). The model was based on the findings of a literature review which showed that (i) psychotherapy (particularly CBT) yielded outcomes which are at least comparable to medication, (ii) combining medication and psychotherapy did not produce better results than either treatment alone, and (iii) psychotherapy experienced substantially lower dropout rate than medication. The model included costs related to direct treatment, relapse rates, dropouts, lost wages, travel, and society (for example reduced taxes and income potential). A timeframe of two years for the duration of treatment (20 sessions for CBT) was assumed. Estimates used data from peer-reviewed journal publications and government sources. The study compared individual CBT for depression with fluoxetine and six-weekly visits to psychiatrists. The study estimated CBT treatment at \$US23,696 and medication at \$US30,733. The study concluded that CBT was the most cost-effective option available for the treatment of depression and hence the treatment of choice for depression.

In a paper prepared for the Health Care for the Whole Person initiative of the President of the American Psychological Association, Blount et al. (2006) observed that the best opportunity for the US healthcare system to increase cost-effectiveness of care was through enhancement of behavioural health services. They observed that the superiority of CBT over other brief therapies had been achieved because of the attention given to supporting its clinical effectiveness and its adaptability to patient

education. Chiles, Lambert and Hatch (1999) evaluated the impact of a range of psychological interventions on medical services in a review of 91 studies published between 1967 and 1997 using meta-analytic techniques. The evaluation found evidence for a medical cost-offset effect for psychological interventions with average savings at about 20%. About one third of the studies reviewed showed that cost savings remained substantial even after subtracting the cost of psychological treatment.

In a review of literature on the cost-effectiveness of psychological interventions (mainly CBT studies) Hunsley (2002) in a report prepared for the Canadian Psychological Association concluded that there was “clear and compelling evidence” that psychological treatment:

- was effective in the amelioration of many child and adult health impairments;
- could be highly cost-effective and possibly more cost-effective than common medications;
- had the potential to reduce health care costs because successfully treated individuals typically used fewer other health care services. The reduced cost to the health care system could actually be greater than the cost of the psychological treatment, leading to a total cost offset to the system.

Ilardi and Craighead (1994) suggested that most of the treatment effects shown by CBT happened by the fifth session. The skills that clients learn in CBT can safeguard them against relapse and this is also a factor to be considered in assessing cost effectiveness of a treatment modality.

Griffiths and Christensen (2006) reiterated their previous observation (Griffiths, et al., 2004) that clients were increasingly seeking to play a key role in the management of their treatment and that self-help is becoming accepted as a means of treating mental disorders. Psychotherapy

inherently enables clients to manage their treatment rather than abdicate responsibility to a pill.

A significant impediment to the wider use of CBT lies in the shortage of trained therapists (Andersson et al., 2005; Beck, 2005). Medicare data revealed that 7117 individuals were treated by psychologists under Medicare in the first year of operation of the provisions, from July 04 to December 04 (Stokes, 2005). WHO (2006) projections of depression becoming the leading global cause of YLD imply that the number of clients treated for this disorder under Medicare is likely to increase considerably over the next few years particularly given the increased rebate now available for visits to psychologists referred by GPs (Australian Department of Health and Ageing, 2006).

The implications are that there is a need for a greater capacity for the psychological treatment of depression than is currently available. More professionals, more treatment modalities and greater efficiencies in the utilisation of current resources are required. This view was shared by Christensen, Griffiths and Jorm (2004) who foresaw significant changes in health systems in developed nations over the next decade as well as the emergence of self-help and self-responsibility for health as essential new components of national health systems. The proposal in this thesis is for an online course to supplement face-to-face psychotherapy aims to extend current provider capacity by giving more of the responsibility for treatment to the individual client, thereby increasing throughput and lowering costs.

(xv) CBT and depression

The cognitive model of psychopathology (Beck, 2005) assumes that the individual's thinking systematically distorts the processing of information and hence biases the interpretation of experiences. The result is the commission of logical errors in thinking. Biased interpretations are supported by dysfunctional beliefs that stem from an individual's long-

term core beliefs. Core beliefs activated by external events distort information processing and result in the cognitive expression of a mental disorder. CBT in practice aims to identify, monitor and modify negative thinking by actively guiding clients to recognise their own self-defeating patterns of thinking, feeling and behaving. Clients continue the process out-of-session to find evidence conflicting their negative thoughts and beliefs. Treatment emphasises behavioral coping strategies such as undertaking rewarding tasks and returning to activities abandoned because of depression (Coombs, Coleman & Jones, 2002). The work out of the session is of key importance because CBT treatment consists in training individuals in a set of skills which they apply to modify their day-to-day behaviour. This is not unlike a swimming coach training swimmers to improve their performance in the pool after they completed "classroom sessions".

The view on depression established by Beck (2005) following clinical observational research is that distorted interpretations of events are caused by negative thinking of the self, the personal world, and the future. He termed these as the negative cognitive triad. A key component of the theory is that dysfunctional beliefs and assumptions cause proneness to depression, which leads to vulnerability to relevant life events. Beck (2005) observed the accumulation of extensive research on his model since it was proposed (Beck, 1967).

A review by Haaga, Dyck and Ernst (1991) of studies testing the CBT model and the concept of depression as a clinical syndrome supported many aspects of the theory, including increased negative self-cognitions and hopelessness, loss ascribed to depressive syndromes, and recall influenced by mood. The review did not find strong evidence that depressive thinking was especially inaccurate or illogical. This deficit was rectified in the research review by Scher, Ingram and Segal (2005), which found support for the concept of cognitive vulnerability to depression and the relationship among cognitive vulnerability, depression onset, relapse, and recurrence.

In the training analogy the individual needs to 'unlearn' old ways of thinking and learn new patterns. Unless this is done, interference from old behaviour patterns is likely to impede the formation of new patterns by hampering learning and causing regression. This is shown in the results of a study by Segal et al. (2006) in which remitted depressed patients were subjected to temporary dysphoric states. The study found that patients treated with CBT were less vulnerable to relapse than those given antidepressants. That is, they formed learning patterns which enabled them to address triggers to depressive behaviour.

(xvi) CBT and medication

Two common forms of treatment for depression are antidepressants and psychotherapy. Some studies show that their combination is more effective than the use of either one separately. A study by March et al. (2004) found that the combination of fluoxetine (an antidepressant) with CBT offered the most favourable benefit to risk value for adolescents with depression. Pampallona et al. (2004) and Simon et al. (2004) concluded from their respective studies that psychotherapy as well as being a treatment on its own, when combined with drug therapy produced significant improvements to response rates because it reduced dropout numbers. This conclusion was supported by a study by Conradi et al. (2007) demonstrating the enhancement of long-term outcomes by adding psychiatric consultations (medication) or brief CBT to treatment of depression by GPs.

There is some support for this conclusion from brain imaging research reported by Goldapple et al. (2004). In reviewing the results of imaging research the author hypothesised that CBT could be viewed as a top-down approach because it utilised higher level thinking functions to improve mood, attention, memory and information processing; drug therapy could be considered as a bottom-up approach because it worked to change the chemistry in the brainstem, limbic, and subcortical systems.

With long-term treatment it led to secondary cortical changes and eventually to higher level changes in thinking. Valdivia and Rossy (2004) canvassed the literature and concluded that CBT had consistently shown more cost effective and at least comparable effects with antidepressant medications.

The efficaciousness of CBT for moderate to severe depression is indicated by several studies. In a study by Hollon et al. (2005) significantly fewer depressed individuals who had withdrawn from CBT relapsed compared with those who had withdrawn after a course of medication or placebo. The authors concluded that CBT endured beyond the end of treatment and appeared to be as effective as keeping individuals on medication. Westen and Morrison (2001) presented the results of a meta-analysis of high-quality studies published between 1990 and 1998 on the efficacy of manual-based treatment for depression and other disorders that relied on empirically supported therapies. The 12 depression studies revealed significant short-term effects and improvements at follow up. Cahill et al. (2003) reported on a study using measures including the BDI to describe the outcomes of clients with depression treated with CBT and to compare the results of completers with those of non-completers. The study found support for the effectiveness of CBT and the need to be aware that attrition may bias estimates of treatment effectiveness.

In a study comparing CBT and psychodynamic-interpersonal psychotherapy manualised treatments of 8 or 16 sessions Shapiro et al. (1994) found no overall significant evidence of superiority of one approach over another. Both were found to be equally effective independently of the level of the severity of depression or the duration of treatment. Jacobson et al. (1996) tested the theory of change proposed by Beck et al. (1979) to explain the effectiveness of CBT. In the study groups of outpatients were treated with CBT, behavioural activation and automatic thoughts modification. The study found that all three were similarly effective in reducing depression. Jacobson et al. (1991)

compared CBT, Marital Behaviour Therapy and a treatment method using a combination of both in the alleviation of depression in married distressed couples. The study found that the combination treatment is more effective than either alone.

DeRubeis (2005) found no statistical differences between CBT and medication as measured eight and 16 weeks after treatment and both are superior to placebo. The authors concluded that though both methods were similarly effective the extent of effectiveness of CBT depended on a high level of provider skills. A study by Nemeroff et al. (2004) indicated that CBT was superior to medication in the treatment of chronic depression in cases where there had been childhood trauma.

Schatzberg et al. (2005) showed that chronically depressed individuals originally treated by medication benefit from CBT and vice versa. However the dropout rate in the medication group was almost three times as much as for CBT. This research points to the likelihood that CBT more so than medication is efficacious for chronic and complicated depression, and. The lower dropout rate for CBT than for medication may be contributed to by the fact that rather than being the passive recipient of medication the individual is actively engaged in a process which directly addresses day-to-day functioning and readily provides feedback of effort.

Considerable weight on the efficacy of CBT for depression is added by a review by Butler, Chapman, Forman and Beck (2006) of meta-analyses on treatment outcomes in a range of disorders. The authors reviewed 16 methodologically rigorous meta-analyses and focus on effect sizes contrasting outcomes for CBT and control groups. The review found large effect sizes for CBT for unipolar depression and other disorders and the superiority of CBT to antidepressants in the treatment of adult depression. The authors observed that their findings were consistent with other review methodologies supporting treatment effectiveness of CBT.

Hollon, Stewart and Strunk (2006) raised the issue that it was unclear

whether the demonstration by recent studies of the enduring effects of cognitive and behavioural treatment approaches particularly for depression and anxiety disorders, was due to the amelioration of the causes underlying the disorders or to the introduction of compensatory strategies. In either case, in contrast with antidepressants, CBT had the capacity to reduce risk of relapse following termination of treatment. Both can happen. The Epictetus principle teaches clients to see depressing events differently, for example the loss of a job might be validly seen as providing the motivation to find a more satisfying position. Problem solving gives clients a means to address impediments hitherto perceived as intractable or to accept those that cannot be resolved.

(xvii) International expansion of CBT

The status of CBT in the US is well established. In the UK and in Australia it has recently received an impetus at government level.

(a) Impetus of CBT in the UK

In the UK the impetus is on advancing CBT as the first line treatment for depression. NICE (2004) guidelines promote a choice of CBT or drugs for every person with depression and practically every other psychological disorder. The report by the Centre for Economic Performance Mental Health Policy Group of the London School of Economics (2006) canvassed the extent of depression in the UK and quoted evidence that one in six persons would be diagnosed with depression or chronic anxiety disorder, implying that one family in three was affected. The report observed that there were now short, evidence-based psychological therapies, principally CBT that could treat successfully at least a half of those with the disorders. The report summarised research findings which showed that CBT and drugs enjoyed a 50% success rate in the short-term but in the longer run therapy was more long-lasting. NICE (2004) considered CBT to be the preferred treatment for mild depression, optional for moderate depression, and combined with antidepressants for severe depression. There were not

enough treating professionals to implement the NICE guidelines according to the report, which recommended that the government set about to fund an increase of 10 000 therapists over the next seven years. Medication was the only form of treatment widely available. However many people did not wish to take medication because of its side effects or their need to control their own mood. Only one in four sufferers was being treated.

(b) Impetus of CBT in Australia

The National Health and Medical Research Council (NHMRC, 1997) reviewed the literature on the effectiveness of treatment of depression for young people and though it found a paucity of relevant research it recommended CBT as the first line of treatment in its clinical guidelines.

In Australia psychotherapy is a more expensive treatment for the consumer compared with government-subsidised medication though Medicare can reduce the margin considerably. Medicare arrangements (Medicare Australia, 2007) have made CBT a recommended approach available to practically all those who need treatment for depression and a wide range of other psychopathologies.

The Australian Psychological Society hour session rate is \$192 (APS, 2007). Data in a survey by Lindner and Stokes (Inpsych, 2007, p.30) suggest an average fee of \$117 a session. At this charge treatment based on 12 sessions of psychotherapy, which are the maximum allowable under Medicare annually (Medicare Australia, 2007) would be costed at \$1404. Medicare rebates at the rate of \$75.00 a session. That is, the net cost of treatment to the individual would be \$504. This compares with about seven consultation visits to the GP (anecdotal evidence) and a prescription for six months of antidepressants at the non-pensioner PBS rate of \$30.70 (Department of Health and Ageing, 2007). The total for antidepressant treatment is about \$320, assuming that the GP charges an additional fee of \$20 for a consultation. This is about two thirds of the cost of psychotherapy. For pensioners the antidepressant

treatment cost falls below \$30.70 given the lower Pharmaceutical Benefits Scheme (PBS) copayment rate of \$4.90 (Department of Health and Aging, 2007) and probable bulk billing by GPs for this group. However this group may require longer treatment, implying higher medication or psychologist costs.

Both Australia and the UK are ahead in providing CBT widely through their national health systems. In contrast Conner (2005) writing from within a Canadian context observed that psychological interventions were more expensive than medication in the short term, and that the long-term costs and benefits of these treatment approaches were being debated within clinical and economic circles.

(xviii) Challenges in the development of CBT

The goals of treatment should extend beyond symptom reduction and economics. Zimmerman et al. (2006) surveyed 535 psychiatric outpatients with depression about the factors they considered important in remission. The authors concluded that depressed clients wanted more than simply the abatement of symptoms from their treatment. They wanted to gain a positive outlook which includes optimism, vigour and self-confidence. The value of positive mental health rather than simply symptomatic relief has long been emphasised by psychologists (Seligman, 2006).

Depression can possibly resolve by itself over time without treatment. A long-term follow up study of 431 subjects with major depression by Keller et al. (1992) demonstrated that the proportion remaining ill was 92% at one month, 30% at one year and 12% at five years. However leaving the condition untreated is not an option because of the potential for suicide, the significant relapse rate and the deleterious effect of the disorder on the quality of life of the individual and his or her significant others.

The treatment of depression by CBT continues to undergo improvement as its use spreads throughout the mental health therapist community. A study by Jacobson et al. (1996) found that the increased activity or behavioural activation (BA) component of CBT was necessary and sufficient in achieving a positive treatment result and that this had implications for the efforts of the healthcare industry to contain costs. A study by Hopko et al. (2003) confirmed that activation and the resulting exposure to positive results were sufficient to reduce depressive symptoms and increase positive thoughts and feelings. The implication is that behaviour change leads to mood change. Foerster and Hudes (1994) found in a study of an intensive and well designed intervention throughout California that the success of an information campaign in raising substantially knowledge on the importance of eating more fruits and vegetables did not translate into increased consumption. In this case, change in knowledge did not lead to change in behaviour.

Neuhauser and Kreps (2003) reviewed the effectiveness of mass communication in altering behaviour and concluded that many health promotion intervention efforts had poor behavioural outcomes. The authors commented on the effectiveness of tailoring communication to the individual, providing interaction and making the communication dependent on the participation of the receiver. The implications of these research results is that for online depression therapy to succeed the client needs to interact with the program and engage in activities which are compatible with the information provided and relevant to his or her lifestyle, for example, to engage in previously rewarding activities on the way back to a pre-depression lifestyle.

Although CBT functions at the cognitive level, the process does not reduce the importance of emotional considerations. In their factor analytical study Coombs, Coleman and Jones (2002) investigated three factors associated with positive results. The first, Collaborative Emotional Exploration, was significantly related to positive results and referred to client introspectiveness, insight, understanding and confidence of

treatment and emotional catharsis. Therapists had to be non-judgemental, attuned to client feelings, empathic and sensitive, and able to understand client experiences in therapy. Positive bonds between clients and therapists were not necessary. In Factor 2, Educative/Directive Process, therapists actively controlled treatment sessions, offered explicit advice and did not emphasise sufficiently feelings. It did not lead to positive results. Factor 3, Patient Inhibition, was associated with positive outcome. There was a tendency for clients with high levels of painful emotion to have poorer results.

It needs to be considered that CBT has been developed in and for an Anglo-Celt environment – an application to another culture should be tested and if necessary adapted to the values of that culture.

Seligman (1996, p.68) supported CBT as a technique to free individuals from a distressing past and to encourage them to focus on the now and the tomorrow. He added that following the techniques was an effective way, better than antidepressants, in preventing relapse. He considered the Freudian concept of childhood events leading the course of life in adulthood to be worthless.

Whitfield and Williams (2003) surveyed the evidence base for CBT for depression and conclude that it has the strongest research base for effectiveness. The authors commented that there was little guidance on how to deliver CBT in their area of concern, namely in the UK National Health Service. Whitfield and Williams (2003) added that there was little research evidence to support the traditional CBT model of weekly face-to-face appointments and concluded that reducing the number of face-to-face sessions by augmenting treatment with self-help could improve access. The present study points to a viable option of reducing treatment costs and improving the efficiency of the therapeutic process.

The extensiveness of use of CBT is difficult to measure. The Psychiatric News (2006) presented advice by the American Psychiatric Association's

Psychiatric Research Network that the results of a survey undertaken in 1999 suggested that more than 50 percent of psychiatrists used CBT techniques at least some of the time. The Psychiatric News (2006) presented an interview with Aaron Beck on the future of CBT. Beck forecasted an increasingly wider application of CBT for different diagnoses and populations furthered by the current intensive research of psychological components in medical illnesses. Based on his observations that CBT had become the mainstream psychotherapy in many countries Beck considered that this approach had been adequately developed and that it was ready for wider use including in the treatment of severe psychiatric disorders and by other healthcare professionals such as psychologists. The recent expansion of Medicare to incorporate psychology and implicitly supporting CBT is heralding an increased scope for this psychotherapy.

(xix) The intervention in the study

The intervention in this study is based on the assumption that an Internet course component could replace the number of sessions which cover the phase of teaching of CBT skills to the client. Williams and Garland (2002) suggest that psychiatrists could present a simple model of CBT to their clients over 10 to 20 minutes for 12 to 16 sessions. This ranges from 120 to 320 minutes or two to just over five hours or an average of three hours forty minutes. This phase represents about 30% of the annual hours funded by Medicare for an individual for psychological treatment. The assumption translates to cost savings and a resultant increase in provider treatment capacity.

Mallen, Day and Green (2003) observed that while online treatment utilised brief interactions, the lack of nonverbal cues and the limited amount of information normally provided in emails, due for example to limitations in keyboard skills, may actually lead to increased contact between therapist and client and negate any gains in cost effectiveness.

(xx) Self-help

Jorm and Griffiths (2006) proposed the wide dissemination of evidence-based informal self-help strategies because there is considerable subclinical depression. Self-help is considered to be intentional coping (Tucker-Ladd, 2000), namely resolving one's problems by deliberately changing behaviour, feelings, thoughts, or unconscious processes in a controlled way to improve outcomes. Self-help can be provided through books, experiences or an Internet website.

Jorm and Griffiths (2006) observed that self-help approaches were well received by the public; they were easily and inexpensively implemented and had the capacity to assist individuals to avoid developing clinical depression. Online treatment is defined (Mallen & Vogel, 2005) as a modality in which clients and treatment providers are separated geographically and may also be separated temporally. Communication between them occurs through processes including synchronous chat, voice over the Internet protocol (VOIP), web camera or videoconferencing. Asynchronous email is used in situations where they are temporally separated.

Coupled with a small number of face-to-face sessions an online course should provide enduring protection against clinical depression provided that the site remains accessible well beyond the treatment phase. One of the strengths in the present study is that the client has ongoing access to the site.

Andersson (2006) considered that self-help had not yet reached its full potential even though research demonstrated its efficacy in this regard. He hypothesised that as online treatment becomes more common it is likely to reach a wider group of people. Den Boer, Wiersma and Van Den Bosch (2004) summarised self-help literature in a meta-analysis and found results similar to those in traditional face-to-face therapy. In

regards to the current level of use of self-help approaches the authors pondered whether practitioners underestimated the value of client self-acquisition of knowledge and overestimated the importance of the therapeutic relationship.

The hypothesis in the present study is that combining self-help, specifically online interactive intervention with face-to-face sessions is an effective technique in the treatment of depression and has relatively broad support in the healthcare field. There is a variety of Internet interventions which provide, for example:

- treatment with adjunctive support, such as BluePages (The Centre for Mental Health Research, 2007) and MoodGYM (The Centre for Mental Health Research, 2004);
- information on symptoms, treatment methods and general advice such as exercise and healthy diet, as in the National Institute of Mental Health site (2006). Some sites include the capacity to communicate with support communities such as Gray's Wings of Madness (2006);
- interaction built into the program without therapist intervention, similar to an interactive book, for example the site Feel Better by Clarke et al. (2002b);
- an analog of live treatment via emails;
- adjunctive treatment to face-to-face sessions, such as the writer's site. The writer has not been able to locate many other similar sites. Probably, as with the writer's site they may be password-protected to restrict access to clients.

(xxi) The Internet

Online treatment as a procedure has been preceded by online training. The ubiquity and rapid increase in online training can be judged by the almost 13 million hits resulting from a Google search on the words "online training course" in October 07. In an Internet training course, material is

presented in an easy-to-read format in self-contained segments or modules which can be learnt in a self-paced mode. There are usually tests at the end of segments which serve the purpose of assessing the effectiveness of learning and reinforcing the learner. The material is contained in a website and the learner may be referred to other websites.

The Internet has been used in different disciplines to provide training, for example in November 07 a Google search brought over 10 million hits for “online software training course”. The relative qualities of online versus traditional university courses are explored in a study by Warren and Holloman (2005). The study found no significant differences in students' outcomes between face-to-face and online learning in the same subject area. The authors suggested that the results support the equality of online and face to face learning in terms of quality of instruction. Merino and Abel (2003) presented a study in the teaching of accounting fundamentals which concluded that computer-mediated tutorials could replace face-to-face lectures without impacting on learning outcomes.

From a philosophical perspective Ryder and Wilson (1996) discussed the liberation of formal knowledge from cloistered protection before the age of printing and the advent of broad dissemination. In the modern period the pattern of dissemination was from author to audience. In the postmodern world the audience itself has the capacity to disseminate the knowledge further. Trends in education are toward distributed and cooperative learning. The Internet has enabled individuals to represent themselves in the global village and information retrieval has exploded to the point where a simple query can yield a quantity of information beyond the reader's resources to assimilate and comprehend. There is a temptation to think about controlling information in order to reduce mediocrity but ultimately this control is exercised by the individual – if the information is mediocre few are likely to be attracted to read it.

The power of the Internet, like the library, is available only to those who use it. Unlike the library, the Internet does not have librarians but

keepers of given elements of knowledge. The responsibility for organising and classifying knowledge is passed to the user of the knowledge. The intellectual investment in research is freely shared on the Internet as the authors disseminate their findings for peers and others to review. This process enables others to build on the research findings and ultimately adds to the totality of knowledge.

The implications in the statements by Ryder and Wilson (1996) are profound for online treatment. Interventions should encourage providers and participants alike to research different ways of presenting knowledge, alternative approaches in treatment and the opportunities of learning from personal battles of individuals with a similar disorder posted on Internet community sites. The user is responsible for evaluating the quality of sites and rejecting those that he or she considers to be mediocre.

Online CBT treatment and distance education share a number of commonalities. Both involve imparting knowledge to participants without face-to-face interaction. Education in specific skills such as mathematics and computing requires practice of skills learnt. The same can be said for CBT – the participant has to practise skills such as negative thought identification, logical challenging and problem-solving in day-to-day functioning. Distance education was defined by the Kellogg Commission on the Future of State and Land Grant Universities (1999) as referring to the delivery of education over distance outside the classroom, implying a spatial separation between clients and provider. Digital distance education is considered as enabling the delivery of learning where clients and provider are spatially and possibly temporally separated. The observation is made that a large proportion of Internet-based education is integrated with oral and paper-based modes in traditional institutions.

The views apply validly to online treatment – client and provider are separated spatially and temporally. In the present study the online component is coupled with traditional face-to-face treatment. Truelove (1998) referring to agriculture, argued for the consideration of a number

of interrelated factors in selecting distance education media including learners, educator-learner circumstances, subject matter and educator-learner interaction pathways. Similar issues hold for online treatment:

- clients need to be comfortable with using the Internet for learning skills;
- CBT information needs to be accessed and presented in a way which clients can understand and enjoy;
- updating and improvements should be ongoing and responsive to client feedback;
- theory should be integrated with a practical component.

The present study considers these issues and assumes that participants have Internet skills adequate for accessing websites. The information presented is based on the writer's notes which are constantly reviewed in the light of client comments and there is a strong emphasis on applying skills to real life situations confronting the client.

Powell (2000) observed that online training is expanding in organisations because of the inherent savings, flexibility and interactivity. He warned however that the adoption of online training should be done after consideration of factors including the client, the subject matter, the location and timing of training, and the extent of assistance available to the client. These factors are valid for online treatment and have been considered in relation to the present study. The client is an individual with depression who is motivated to improve mood and hence functioning in society. To use the technology the client needs to exercise responsibility and direction over online learning and maintain focus. That is, the client should take charge of the treatment process and view the provider as a resource rather than a manager. In terms of skills the client needs to have sufficient knowledge to access the Internet, be comfortable with email communication and address privacy and online security issues. There is also a need for technical support in case of equipment or software failure.

Powell (2000) considered web-based training to be suited to cognitive skills especially in areas where there is frequent change. In the present study the subject matter, CBT, consists essentially of a set of principles applied to the management of mood and behaviour. Activities normally take the form of daily functioning where no special training is required, such as relaxation, walking and socialising. Web-based training lends itself admirably to the concept of continuous renewal of learning content in the light of client feedback and research developments. The flexibility of timing is especially suited to the clients in the present study because of the concentration difficulties that are inherent in depression itself.

Powell (2000) warned that the developmental costs of online training are substantial and considerable planning and writing efforts are required. The proposition holds for online treatment because an individual's wellbeing is at stake: the client has placed his or her trust in the online intervention to gain relief from the debilitating symptoms of depression. The treatment provider is ethically bound to provide the best possible effort to ensure that the client's trust is justified.

(xxii) Internet as a treatment modality

Griffiths et al. (2006) observed that parallel with the expansion of the Internet there was an increase in the number of health interventions offered online. The authors reported their review of reasons for the delivery of 28 health interventions on the Internet and nine sites evaluated in pilot studies. The interventions ranged over several medical and psychological areas including depression. Four used CBT. The reasons identified for Internet delivery included the Internet's capacity to deliver rich and easily updated information to a large audience at low resource cost and with the opportunity for asynchronous communication; comparatively low health servicing costs and providing help where none might be locally or conveniently available; addressing user social and geographic isolation, timeliness of information eg at a time of crisis,

reduction of perceived stigma in cases of psychological disorders, and increased sense of control by enabling users to undertake the intervention at their own pace.

Griffiths et al. (2006) proposed that Internet interventions needed to guard against unintended effects. For example Internet delivery overcame isolation but in some cases it might not compensate for the absence of face-to-face contact. Intervention cost evaluations needed to include economic as well as social costs to users and their networks. Outcome reports should include reasons for the use of the Internet and compare the intervention with more traditional modes of delivery in order to identify the advantages and disadvantages of online mode of delivery.

There are several well-written self-help depression treatment resources on the Internet. They include:

- Depression Learning Path (Uncommon Knowledge, 2007). This is a downloadable program consisting of 17 written treatment sessions, 17 audio sessions each of which relates to a treatment session and a printable book version of the program. The individual works through each treatment session and then listens to the audio session. The program is sold for \$US97.
- Self-Care Depression Program (Paterson & Bilsker, 2002). The website provides several free downloadable self-help guides to working with depression for adults and teenagers. The individual is advised that the guides, though based on research evidence, are not a substitute for professional care. A manual for care givers is also included. The materials are provided free.
- BluePages (Centre for Mental Health Research (CMHR), 2007) is a site which provides comprehensive information about depression for individuals including symptoms, diagnosis, treatments and online and other resources of depression including relaxation music. The site includes links to a treatment site (MoodGYM) and a bulletin board for sufferers and carers to share the issues

affecting their lives. A search engine over several Australian and international depression sites and screening tests for depression and anxiety are also included.

- Crufad. (Clinical Research Unit for Anxiety and Depression, 2007) is a resource site developed by St Vincent's Hospital Ltd and the University of New South Wales. The site offers help for sufferers, advice on treatment for healthcare professionals and research information. There is a link to a related website which offers education on anxiety and depression management. GPs can prescribe access to the educational programs.
- beyondblue (beyondblue, 2007) is a site funded by the Commonwealth, State and Territory governments to focus on and lead in the effort to increase national capacity to prevent and treat depression. The site informs the reader about the symptoms of depression, its recognition, help available for sufferers and carers, and the location of additional information.

None of these are part of an integrated package consisting of self-learning and face-to-face treatment though a clinician could profitably utilise them to supplement the treatment provided in particular cases.

(xxiii) Online treatment studies – critical analysis

There have been a number of studies where clients undergo computerised CBT with limited access to live therapists. The studies are outlined and critically evaluated below. Their results of some of the studies are used in Chapter 4 to compare with the results of the present study.

(a) Andersson et al. (2005)

Andersson et al. (2005) reported on a randomised control study of Internet self-help for depression. The study was described in articles in Swedish newspapers and individuals interested in participation were

invited to apply through a website. The website included general information and instructions on participation and requested informed consent by email. On the website participants completed a computerised version of the Composite International Diagnostic Interview Short-Form (CIDI-SF) and the Montgomery Asberg Depression Rating Scale (MADRS-S). Participants also provided census-type data and information on medication and contact with healthcare professionals.

The criteria for selection included:

- a probability of at least 0.55 on MADRS-S scores for the diagnosis of major depression;
- MADRS-S score indicating mild to moderate depression
- no psychosis or bipolar disorder;
- no antidepressant medication commenced or changed in dosage in the last month and no history of CBT for depression.

Participants were independently randomised to the treatment or control conditions. Both groups participated in separate moderated discussions. For ethical reasons the control group was offered participation in the intervention at the end of the study. The BDI was the main outcome measure. The material of 89 pages was presented in five modules - introduction; behavioural activation; cognitive restructuring; sleep and physical health; relapse prevention and future goals. The modules ended with a questionnaire. Responses were automatically sent to a therapist who gave feedback by email within 24 hours. Mean time for completion was 10 weeks and 65% completed all modules. The average number of modules completed was 3.7.

Two hours of therapist time was devoted to each participant. The analysis included 85 'intention to treat' participants of whom 36 were in the treatment group and 49 in the control group. The attrition rate from the study was 27%. The analysis of pre- and post-BDI scores showed a significant reduction in mean scores of 7.2 for the treatment group compared with 5.2 in the control group. The corresponding effect size

(Cohen's d) between groups at post-treatment was 0.94. A six-month follow-up found statistically significant improvements between pre-treatment and a six-month follow-up. Improvement was moderated by the number of earlier episodes of depression.

The study resulted in four major findings:

- CBT principles including behavioural activation resulted in reducing depression symptoms post-treatment and at the six-month follow-up;
- participation in an online discussion group only, had no effect on symptoms;
- improvements were demonstrated to persist six months post intervention;
- engagement in self-help reduced the tendency to participate in a discussion group.

The limitations included:

- sole reliance on self-report testing and absence of a structured clinical diagnosis against DSMIV may have led to the exclusion of individuals with depression and the inclusion of some without depression;
- possible confounding of medication with CBT in the results;
- the relatively short nature of the study.

Summary

CBT provided an effective and robust treatment to mild to moderate depression whereas participation in online discussion did not lead to symptom reduction. The augmentation of self-report testing by provider diagnosis should improve the validity of the selection of individuals needing treatment.

(b) Christensen, Griffiths and Jorm (2004)

Christensen, Griffiths and Jorm (2004) reported on a randomised control

study evaluating the efficacy of two online interventions for depressed individuals living in Canberra, Australia. Participants were recruited from the 752 responders to a survey sent to Canberra residents who had access to the Internet and scored 22 or above on the Kessler psychological distress scale indicating clinical distress. They were allocated randomly to BluePages (n = 166), MoodGYM (n = 182) and a control group (n = 178). The outcome measures included change in depression, dysfunctional thoughts and knowledge of treatments including CBT. The mean age of participants was 36.43 years, of whom 150 were men. Participants received guides to their respective websites and weekly assignments. BluePages participants were guided to one of five sections weekly. A revision was held on the sixth week. MoodGYM participants completed five weekly interactive modules and revised them in the sixth week.

Interviewers contacted control group participants weekly to discuss lifestyle factors including education, exercise, physical health and stress. All participants were forwarded post-intervention questionnaires. The main outcome measure was the self report 20- item depression scale from the Center for Epidemiologic Studies.

The intervention was completed by 79% of participants and 83% returned post-intervention questionnaires. MoodGYM participants sent significantly fewer returns than for BluePages. Participants who did not return questionnaires scored higher on the Kessler scale at the pre-assessment stage though their scores on other measures including the depression scale were similar. Dysfunctional thinking reduced significantly for MoodGYM but not for BluePages or control group participants. MoodGYM participants completed on the average half of the 29 exercises.

BluePages participants improved their knowledge of treatments to a significantly greater extent than for the other groups and MoodGYM participants more so than for those in the control group. CBT knowledge,

particularly for completers and for those with depression scale scores at the clinical level (16 and over) improved most for MoodGYM participants. Depression literacy and CBT were shown to be equally effective in symptom reduction as shown by the pre-post effect of 0.9 compared with 0.2 for the control group. The dropout rates for MoodGYM and BluePages of 25% and 15% respectively were deemed acceptable and the acceptability was considered to be partly due to the design of the websites. The study demonstrated the feasibility of the Internet as a community treatment delivery vehicle.

The limitations of the study were the small follow-up timeframe of six weeks, the higher average educational level, the high proportion (64%) who had sought treatment at the time and the possibility that MoodGYM was less acceptable as an intervention.

Summary

The study demonstrated that CBT could be delivered online. Treatment outcomes could be improved by enhancing the attractiveness of the design of the website, incorporating psychoeducation, planning the intervention in line with educational principles and ensuring feedback.

(c) Clark et al. (2002b)

The study by Clark et al. (2002b) concerned an online interactive depression self-paced and self-help skills training program on the use of cognitive restructuring techniques, without input by treatment professionals. The Internet program was evaluated by comparison with usual care in a health maintenance organisation. The study sample was selected from a sampling frame of 430 000 members enrolled in a health maintenance organization. Two groups of potential participants were identified namely the depressed group (n = 6994 adults over 7 cohorts) which had a recorded diagnosis of depression and received traditional medical services in the previous 30 days. This group was gender- and age-matched with a similar sized non- depressed group. Participants in both groups were mailed a study brochure inviting them to participate in

an Internet-based program for sad or depressed individuals and providing access details.

Initially 6% of invitees with Internet access entered membership details on the site. Those accepting to participate and randomised to the program were linked to its home page. The control group participants were linked to an online site providing non interactive health information. All participants were asked to provide census-type data and were free to consult or continue with other forms of treatment. Participants completed online the Center for Epidemiological Studies Depression Scale (CES-D) and were emailed reminders to return to the study site at 4-, 8-, 16-, and 32-weeks after they began to complete the CES-D. They were emailed reminders and provided with a \$5 maximum of email gift Amazon.com certificates. Participants completed an automatically scored embedded CES-D test in the first and last sessions and at follow-up. Completion rate at 32 weeks was 59%. The program did not use video or audio in order to ensure its availability to those without broadband.

Analysis of results found no differences in CES-D scores between control and experimental groups, indicating no treatment effect. However participants entering the study with milder depression showed a small gain. The study proposed that the overall lack of improvement may possibly be attributed to:

- deficiencies in the online material;
- the unattended nature of the approach may have made it less efficacious than person-provided counselling through the same media as demonstrated in other studies;
- the recruitment methods attracted more seriously depressed participants than intended for a low-intensity self-help program;
- insufficient participant use of the intervention;
- high attrition rates, which might have been attributed to the medium itself;
- reliance on a single self-report depression test;

- lack of accumulated knowledge on the best provision of online treatment.

The absence of therapist involvement implies lack of social reinforcement of progress, assistance with 'stuck' points and remedial help. All online interventions discussed to date had some live input. Online material is fundamentally more engaging than book presentation because of its interactive capacity and its ability to engage more of the senses.

Intending participants expect the full use of the medium within the limitation of their connection speeds. If their expectations are not met it is likely that they would not feel motivated enough to continue. Clinical assessment should rely on more than one measure for depression for valid results. This study could have profited from using the HDRS or the Goldberg Depression Scale, both in the public domain, to provide further measures.

Summary

The study demonstrated the need for clinician selection of participants, confining online treatment to those with lower than severe levels of depression, well designed materials, ready availability of intervention and live therapist support.

(d) Marks et al. (2003)

The study by Marks et al. (2003) evaluated a program of computer-aided self-help for clients in a primary care clinic. Patients with depression and anxiety referred by GPs for treatment undertook an Internet-based program (Cope) with interactive voice response (IVR) assistance. Of patients offered CBT 20% refused. There were 29% non completers of the CBT program. Patients were provided with a total of one hour each of face-to-face clinician support compared with a mean of eight for face-to-face CBT treatment. At pre-treatment the BDI mean and standard deviation were 27.4 and 9.0 respectively. At post treatment the values were 16.2 and 7.1, yielding an effect size of 1.2. Patients took a mean of 58 days on the intervention with a standard deviation of 49 days, taking a

total of about four and a half hours to complete requirements. The Patient Global Impression of Improvement revealed that 60% of patients felt they improved. Slight improvement was noted by 36%.

The study demonstrated the viability of computerised self-help in the treatment of depression. The strengths in this study were its large effect size and its economic use of resources. The authors considered patient improvement to be no different to that seen in face-to-face and other computer-based treatment studies. The limitations in the study were that it was not randomised nor did it include a control group. Any improvement might not have been wholly due to the intervention. There was also no follow up assessment of patients to test the robustness of the intervention.

The authors proposed that computerised CBT systems are 'clinician extenders', not 'clinician replacers'. The study suggested a model of stepped care. The first step consisted of the client undertaking computer-aided CBT self-help with some form of provider assistance if required. The final step concerned entire face-to-face treatment. The first steps in self-help care can be considered to be bibliotherapy followed by group therapy and computer-aided or online by itself as with MoodGYM. The authors indicated that computer-aided CBT could be integrated into a clinician practice, as in the writer's study. Scogin, Hanson and Welch (2003) supported this view and proposed a stepped model in which mild depression was treated by bibliotherapy with weekly phone calls, moderate depression by pharmacotherapy and psychotherapy which can be delivered online, and severe depression by collaboration between the GP and the psychologist or psychiatrist.

Summary

The study demonstrated the effectiveness of self-help computerised treatment particularly as an adjunct to a clinician. The similarity of results between face-to-face and online treatments was demonstrated. The concept of stepped care emerged with the type of treatment to be

provided being determined by the severity of the symptoms, ranging from bibliotherapy to a team effort between GP and the specialist.

(e) Mihalopoulos et al. (2005)

This was an Australian study of online treatment. The research was a cost-effectiveness evaluation based on the Australian Assessing Cost-Effectiveness in Mental Health (ACE-MH (Assessing Cost-Effectiveness in Mental Health) economic model of the Panic Online study and the Primary Care Evidence Based Psychological Interventions (PEP) study. The ACE-MH model enabled the calculation of disability-adjusted life-years (DALYs). Only the Panic Online study is discussed. This study is a randomised trial of Internet-based CBT treatment assisted by either a psychologist or GP. Panic Online assisted by a psychologist consisted of 12 sessions each lasting 45 minutes during which the psychologist responded to participant emails. The costs included an initial session by a GP and IT facilities to undertake the intervention. Panic Online assisted by a GP was similar except that it consisted of six consultations with a GP. The costs were based on Australian population estimates.

The study found the mean costs of the Panic Online intervention with a psychologist to be \$3.8 million and \$2.8 million with a GP. The average health benefit related to Panic Online was about 870 DALYs. The incremental cost-effectiveness ratio of the intervention with a psychologist was \$4300 per DALY averted and \$3200 per DALY with a GP. The study concluded that Panic Online had the potential to be a very cost-effective intervention. The study acknowledged limitations particularly key assumptions in the modeling, for example the availability of the intervention to all those eligible, the sustained availability of trained GPs, the acceptability of the intervention to clients of a range of cultural and socioeconomic backgrounds. The numbers of psychologists using CBT and GPs who are supportive of psychotherapy are unknown quantities. The positives in the research were the widening of the availability of CBT to rural dwellers without face-to-face treatment access to a psychologist.

The model revealed that Panic Online was costlier treatment than current practice particularly when private psychologists were the providers. Given that equity is a significant problem in the provision of CBT in Australia this is a significant factor. The impact is lessened by the enhanced Medicare Provisions (Medicare, 2004, 2007) of which the study did not appear to be aware probably because of chronological reasons. The model does not take into account the relapse prevention effect of CBT and hence the reduction in costs achieved when future interventions are averted.

Summary

The study demonstrated the cost effectiveness of online treatment coordinated with live therapist support. The study highlighted the important implications of online treatment for equity, by making therapy available to city and rural dwellers.

(f) Wright et al. (2005)

Wright et al. (2005) reported on a waitlist control group study which compares the efficacy of computer-assisted CBT with face-to-face CBT. Equal numbers (N=15) of participants free of antidepressant medication were recruited through advertisements and referrals and allocated to the three groups. Selection criteria included absence of suicidal ideation, psychoses or other serious disorders, diagnostic interviewing for non-severe depression and completion of tests including the BDI. The experimental conditions consisted of eight-week treatments of nine sessions each. In the computer-assisted intervention therapist time after the first session was halved to 25 minutes with participants devoting the remaining session to the computerised program. The software helped participants learn and reinforce core CBT skills through interactive self-help exercises within a multimedia setting. Participants were assessed by independent raters before treatment, after four weeks and eight weeks, and three and six months following completion of treatment. Completers were defined as those who attended six or more sessions.

The dropout rate was 13%. Assessment measures included the BDI and the HDRS.

The study found no significant differences on these two measures between either modes of treatment (effect size 0.10) both of which were superior to the control group (effect size 1.14 for computerised and 1.04 for traditional interventions). Gains were maintained on both measures at both the three- and the six-month posttreatment testing. In the computer-assisted intervention participants were found to have learnt the skills early in the process and to have retained the knowledge of CBT concepts. The study concluded that computer-assisted CBT has the potential to reduce costs significantly from the current range of eight to twenty sessions and improve the availability of CBT.

The authors proposed that:

- the association of computerised CBT with earlier improvement than for traditional treatment may be due to factors including the use of multimedia facilities and the constancy of presentation. That is the computerised treatment program 'does not have a bad day';
- computerised CBT was well accepted by participants as demonstrated by the low dropout rate;
- further study was deemed to be necessary in order to establish the effectiveness of computerised CBT in severe depression, primary care and community settings and also to identify more appropriate lengths of treatment;
- computerised CBT promised to reduce treatment time and costs, and also spread availability to more segments of the population.

The relatively higher efficiency of computerised CBT may be at least partly due to the multimedia presentational capacity which improves learning by engaging more of the senses, the ability of the participant to backtrack and persevere with material to overcome a 'stuck point' and the inherent feedback that is available in the process. The acceptability of

computerised CBT has an element of self-selection because it is unlikely to attract those who are not computer-literate or have a dislike for computerised processes. More studies are required in a variety of settings to establish parameters for the use of computerised CBT such as those suggested by the study and they should also include different cultural groups, rural as against city settings and individuals at the lower ends of intellectual capacity.

Summary

The study demonstrated the similarity in outcomes between face-to-face and computerised treatment and hence indicated the latter's cost effectiveness advantage. Lower costs enhanced the wider availability of treatment and hence equity. The inherent multimedia capabilities of computerised treatment appeared to improve the effectiveness of treatment.

(xxiv) Implications of detailed studies for the present study

The studies detailed above reveal several significant implications for the present study. They may be summarised as follows:

1. Selection process

- recognise that availability is limited to those with Internet access and with appropriate English language skills though widens access to those unable to attend face-to-face treatment (Mihalopoulos et al., 2005);
- select participants from those with mild and moderate depression (Andersson et al., 2005) and steer away the more severely depressed to other treatment modalities; (Clark et al., 2002b);
- exclude individuals with psychoses (Andersson et al., (2005)).

2. Assessment

- use more than one measure of depression (Marks et al., 2003, Clark et al., 2002b);

- supplement self-report instruments with diagnostic interviews (Andersson et al., 2005).
3. Focus of online course
- use CBT given that it is suitable for delivery through the Internet (Christensen, Griffiths and Jorm, 2004);
 - include psychoeducation;
 - consider course as part of stepped care for depression, that is as a 'clinician extender' and not a 'clinician replacer' (Marks et al., 2003).
4. Design principles:
- build in live therapist input and create a supportive relationship with the participant, (Clark et al., 2002b);
 - present learning material in self-contained modules with a test at the end with feedback (Andersson et al., 2005; Christensen, Griffiths & Jorm, 2004);
 - use multimedia, self-help exercises (Wright et al., 2005);
 - include feedback (Wright et al., 2005; Christensen, Griffiths & Jorm, 2004);
 - enhance participant acceptability and reduce dropout rates by making full use of visual and audio capabilities though within dial-up capabilities (Clarke et al., 2002b);
5. Evaluation of course effectiveness
- compare results against both online and face-to-face studies (Clark et al., 2002b);
 - integration of online and face-to-face treatment should produce results similar to traditional treatment at lower costs (Wright et al, 2005).

(xxv) Computing skills and literacy skills

The use of the Internet for treatment is an evolving area. Ethical issues have yet to be agreed and addressed, as with traditional face-to-face treatment. Current face-to-face treatment guidelines need to be observed

even though they may be inadequate in terms of online counselling (Mallen, Vogel & Rochlen, 2005; Urbis Key Young, 2003). An important ethical issue concerns confidentiality. Communicating by email is effective and convenient though both provider and client need to exercise adequate safeguards. Encryption is not easy to use and not foolproof from professional hackers. Respondents in the present study lived in family environments, used passwords and refrained from writing confidential material, which they saved for face-to-face sessions. Ethical issues are taken up later.

Basic to the potential of the Internet for treatment are literacy skills issues. Norman and Skinner (2000) discussed literacy skill areas across which consumers need to have moderate mastery in order to benefit from engaging in eHealth. The first area was traditional literacy namely reading text, understanding written material, and speaking and writing coherently. The authors observed that since two thirds of Internet content was in English (Global Reach, 2004) knowledge of this language was advantageous to the consumer.

The second area, information, refers to awareness of the organisation, retrieval and use of knowledge. Implied in this area is the ability to conceptualise the Internet as a library of over eight billion resources and to use search engines for retrieval. Media literacy enables individuals to locate information within a socio-political framework, for example the shaping of the message by the media which convey it. Health literacy enables the individual to interact with health sites and engage in self-care or derive information relevant to the care of others. Knowledge of health terms and contexts are necessary skills. Computer literacy requires quality access and current technology. The consumer needs to have the ability to adapt to new software and hardware developments in order to access information at least on the more sophisticated sites. Scientific literacy implies an understanding of health research findings and developments - their advantages and limitations in applicability.

The literacies could form part of selection criteria for entry to online treatment to ensure that those who engage are able to maximise their benefits. In the intervention in the present study for example, all participants have skills in literacy to at least secondary education level, 'surf' the Internet, use Google, assess the quality of information and are attracted to using new technology which facilitates their online access.

The site 'Critical Issue: Using Technology to Enhance Engaged Learning for At-Risk Students' (1997) discussed difficulties in implementing information technology in schools and considered that a major impediment is the inadequacy of teachers' information technology skills. Teachers needed to have more than merely the skills to access specific software such as word processing. They needed time to experiment with the technology in order to appreciate its potential and applicability in their professional fields. They and their students needed to be guided through the glamour of the technology into the curriculum.

Internet approaches suffer from a high rate of attrition. Tate and Zabinski (2004) quoted a rate of 50% in studies in their review. However there was little indication whether or not those who abandoned an Internet approach did so because of frustration or improvement to the extent that they did not need to continue with treatment.

Notwithstanding that there has not been enough research yet in the efficacy of computerised healthcare there is an increasing use of this medium for treatment. In the US it is currently being fostered through the national eHI (eHealth Initiative, 2006). This is an independent non-profit organisation which has been set up to encourage improvement in the quality, safety and efficiency of computerised healthcare. The initiative is a rapidly growing coalition of practitioners, communities and other stakeholders seeking to increase the use of electronic healthcare information by encouraging and addressing structural change issues such as altering the base of reimbursing services from volume to outcomes in order to improve healthcare.

(xxvi) Equity and social justice

Proposals to establish an Internet site in healthcare or in any other field except possibly in information technology are likely to trigger the objection that only those connected to the cyberspace have the opportunity to benefit. The objection, although valid, is diminishing in significance. Australian Internet usage statistics (Internet World Stats, 2007) revealed that 70.4% of the population had access in March 07. Broadband statistics by the Organisation for Economic Co-operation and Development (OECD, 2006) showed that 13.8% of Australians had broadband access as at end December 05, more than double since a year earlier. The 2005 figure was just above the average of 13.6 for OECD countries. The ACCC estimated that the number of broadband users in Australia as at 31 March 06 was 3.1 million.

The issue of who has access, or more particularly who has not, is becoming increasingly important. Hoffman and Novak (1998) used the term "digital divide" first coined by Lloyd Morrisett, the former president of the Markle Foundation, to highlight differences between those with and those without access to the Internet. The authors highlighted differences such as whereas 80% of private college first-year students used email regularly, only 41% of students attending black public colleges did so. Whites were much more likely than African Americans to have a home computer and slightly more likely to use a personal computer (PC) at work. Whites were much more likely to have ever used the Internet at home. As expected irrespective of racial grouping as income increased so did the likelihood of owning a home computer. PC access was significant because it was the main mechanism for accessing the Internet.

The situation in Australia is similar with respect to Aboriginals. Caslon Analytics (2004) provided IT usage data taken in the week before the 2001 census. Of the non-indigenous population 44% owned a PC

compared with 18% of the indigenous population; 29% compared with 9% had home Internet use; 39% compared with 16% use the Internet. There were insignificant differences in gender usage of PCs in the non-Indigenous and the Indigenous populations. However whereas 75% of non-indigenous youth had a computer at home, only 29% of indigenous youth did so. Of relevance to mental health in outback Australia only 3% of indigenous persons in very remote areas use a PC at home and 1% accesses the Internet.

Harvey (2004) pointed to the ever widening gap in the US between African and other Americans. African Americans were projected to total 60 million or 15.4% of the US population by 2050. If their rate of Internet access did not change, 58 million or 96% of them would not be online at that time. There are similar implications for healthcare in Australia because low Internet access translates into the deprivation of a population group from a source of treatment. The older generation (Gibbons, 2005) is another population group of whom few are likely to have immediate access to computers and the Internet.

Older individuals (aged 61-80 years) report that they are less confident in computer use (Marquié, Jourdan-Boddaert & Huet, 2002). They show lower performance than do individuals aged 18-39 years in accessing an online library database (Mead et al., 2000). A research by Echt, Morrell and Park, (1998) threw additional light by finding that individuals between 60-74 years showed fewer performance and motor control errors than those aged 75-89 years. These are negatives for keyboard and mouse use. However speech-driven inputs, such as Dragon Naturally Speaking software and are becoming more accurate (Nuance, 2007). The research supports the view by Gibbons (2005) that older adults are less likely to take up the Internet and that this factor impedes the availability of online counselling to a group which is less mobile and more likely to appreciate the convenience of home access to treatment.

Taylor (2002) saw online counselling as especially suitable for children, who could undertake counselling without parental control, giving them greater autonomy and control. However there is a host of ethical challenges needing to be addressed. Firstly there is the question of parental trust – parents need to be satisfied of the online counsellor's professionalism and integrity, and equally importantly that their child would not be persuaded to embrace different values to those they want their child to hold. Secondly the issue of confidentiality arises. It might be difficult for some parents for a host of reasons other than curiosity to desist checking their child's emails and refrain from criticising them with their child. Thirdly parents or other third persons in reading the child client's email might take the meaning of some of the messages out of context and interfere with or terminate the treatment process. Fourthly there are practicalities such as the ability of the child to communicate thoughts clearly in writing. Notwithstanding these difficulties the process can be made safer and smoother by (1) establishing a coalition of parents, child and treatment provider and (2) agreeing on limits of confidentiality and other key issues.

There is another view. Campbell and Nolfi (2005) reported on the results of a program to teach aged adults to use the Internet for accessing healthcare information. The authors concluded that although seniors may be willing to access general health information on the Internet they depended on their physician for healthcare decisions. Demographic and situational variables may be influential in identifying the seniors who were likely to access healthcare on the Internet and the scenarios in which they might have done so. Notwithstanding findings of this nature Gibbons (2005) enjoined Internet treatment providers not to overlook older adults as a matter of social justice.

Evidence indicates that women are more likely to access the Internet for treatment on depression. In a large Canadian study with 786 participants (Patten 2002) women outnumbered men by a ratio of 10 to 1. Women were more likely to report work and childcare responsibilities. In an

evaluation of two Australian depression sites namely, MoodGYM and BluePages (Christensen et al., 2004), 71% of the 525 participants were women. A gender study of face-to-face depression treatment by Cottone, Drucker and Javier (2002) found that women were more likely to progress beyond assessment and also complete three months of therapy. Men are more likely to withdraw from therapy after the initial intake assessment. The study added that longer treatment did not translate into a greater reduction of symptoms.

There are important implications in this research. Women, who are more susceptible to depression, appear more ready to embrace Internet treatment. However their willingness to stay in treatment does not lead to greater improvement. The conclusion may be reached that approaches need to be developed to address more adequately factors specific to women's and men's depression and also to youth, given that as stated in the Introduction the disorder seems to be increasing its presence in young people. Developing ways to engage these groups more effectively are likely to help redress a major limitation of Internet approaches, namely the ease with which participants can withdraw from them (Tate & Zabinski 2004).

Summarising the research, it is indicated that an Internet intervention is more likely to be accessed by individuals, more so women, who are non indigenous city dwellers of lower than retirement age. Groups with demonstrated needs such as the aged are less likely to benefit. Although the aged as a group may be less inclined to access the Internet for treatment nonetheless online interventions should be designed in a way that is attractive to seniors. On a more pragmatic level Zack (2004) commended the use of videoconferencing and synchronous chat as having special advantages in the treatment process. The first is considered as likely more suitable for treating the aged being closer to a traditional face-to-face approach and not requiring typing. In fact the technological improvement in web cameras and microphones together

with their low cost, point to the enrichment of online treatment by enabling the use of sight and sound in addition to the written word.

(xxvii) Considerations in developing an online healthcare site

Professionals are increasingly focusing their attention on the Internet as a vehicle for delivery of treatment. Wantland et al. (2004) cited a 12-fold increase in MEDLINE citations for “Web-based therapies,” from 13 in 1996 to 152 in 2003, totalling 569 over the seven-year interval. A query in PubMed, a subset of Medline, in October 07 found 958 references for “Web-based therapy”.

Wantland et al. (2004) considered that the utilisation and effectiveness of Internet interventions to achieve behavioural change had not been adequately researched. The authors undertook a meta-analysis of 22 studies in a range of different areas requiring knowledge gains and behaviour change including increased exercise time, weight loss maintenance and asthma control. The study evaluated effect size comparisons in the Internet interventions compared to other interventions and demonstrated an improvement in outcomes for individuals using the Internet.

In their review of self-administered treatments McKendree-Smith, Floyd and Scogin (2003) concluded that these could become an important part of an individual’s depression management program, and could also provide an opportunity for treatment for those unable to undergo mainstream therapies. The authors echoed the acknowledgment by Clarke et al. (2002b) of the rapid increase of Internet psychological interventions particularly those offering some of the basic skills training traditionally given in face-to-face treatment, principally CBT. Fenichel (2005) reviewed online treatment research and found that participants perceived several benefits such as increased autonomy, improvement in decision-making and relationships, and exercising responsibility for self-help and interpersonal engagement.

The description of CBT by Beck et al. (1979) as a client-professional collaboration which seeks to identify dysfunctional beliefs, gather supporting data and then modify them in the light of the data implies a process of feedback and reinforcement of behaviour in a predetermined direction. Face-to-face sessions augment reinforcement in a self-help intervention by adding praise by the professional to the feedback obtained through for example completing an exercise on logically challenging negative automatic thoughts.

The principles of stimulus, behaviour and reinforcement through feedback or social approval (Skinner, 1969) are inherent in CBT, which is itself a development of learning theory. The processes in gaining higher expertise in an area of knowledge such as mathematics or improving one's mood through CBT are essentially similar in that they entail behaviour change in a predetermined direction.

CBT has been termed psychoeducational by many writers (Goldberg, 2005; Montgomery, 2002) indicating its close relationship with training. In the early sessions CBT tends to be didactic because clients need to learn the link between thoughts, behaviors and emotions and to use techniques such as diarising and thought challenging (Floyd, 2003). Clients are given homework to reinforce skills learnt during the session and to generalise learning to apply in day-to-day functioning. Self-help interventions including bibliotherapy, online reading or an interactive process can be used to augment learning.

Self-help books, models and films have been used for many years in training individuals in a wide range of skills. A Google search in October 2007 for self-help books yielded over 45 million hits. Newer techniques, such as virtual reality programs have been introduced in the treatment of phobias (Tate & Zabinski, 2003). Luo (2005) observed that most computerised treatment programs used a cognitive model, since a therapy structured in nature can be better programmed.

McKendree-Smith, Floyd and Scogin (2003) commented that a well designed self-help program presented a standardised intervention that “doesn’t have bad days”; unlike any “live” treating professional. The price as the absence of a “live” interaction and its emotional warmth – this negative however is minimised where the computerised treatment is interspersed with live sessions. A concern raised by the authors was the possibility of a greater likelihood of negative outcomes in self-administered treatments with no clinician contact. The authors reflect on the need for extensive research on self-learning interventions; they are not aware, for example, of any published effectiveness studies of bibliotherapy in relation to individuals solely relying on this approach for treatment. They are also not aware of any research indications as to the type of problem a self-help intervention is better able to focus. The authors hypothesise that effectiveness would be demonstrated where client variables such as motivation, resourcefulness, and conscientiousness are strongly present.

Floyd (2003) reviewed research and considered that the effectiveness of self-help books has been indicated. In a meta-analysis of 40 self-help studies examining 61 treatments which used control groups, Gould and Clum (1993) found an overall treatment effect size for self-help interventions in a variety of problems including depression of 0.76 at post treatment and an effect size of 0.53 at follow-up. These effect sizes may be interpreted as large - 76th and 70th percentile standing respectively (Becker 2000). A survey by Ainsworth (2000) tapped into client variables and found that over 90% of clients were satisfied with the help provided by their online counsellor.

(xxviii) Expanding the availability of CBT through other modalities

Sharp (2002) observed that the need to expand the availability of effective treatments such as CBT had led to the development of techniques including bibliotherapy and more recently computer-based

therapies. He added that there was insufficient evidence as yet whether these treatments were effective in a wide range of disorders or could be appropriately individualised. In contrast, online treatment using facilities such as email and downloaded material could be more closely tailored to meet the needs of individuals with a range of complicated or co-morbid problems. CBT as a process can be effectively delivered online because it is well structured and it can include existing and established resources such as self-help books and manuals.

Whitfield and Williams (2003) reviewed the results of four meta-analyses of control-group studies on the use of bibliotherapy. They concluded that some materials were effective and patients, especially those wanting to take charge of their own treatment, generally accepted them. They saw self-help approaches as effective in delivering treatment alone or as adjuncts to other forms of therapy. Their advantages included immediate availability, low cost, self-management and avoidance of the embarrassment that could be felt in attending formal therapy. Disadvantages for individuals included the unsuitability of some materials, possible dislike for self-help approaches, inadequate educational level and differences in the cultural background of the material. Unsuitable self-help materials for example might exacerbate depression and anxiety because of the concentration difficulties inherent in these disorders. Care needed to be exercised in promoting self-help materials because some individuals could feel 'palmed off' to a book. Drop-out rates could be high, ranging across studies from 7% to 50%. Where self-help is an adjunct the number of sessions of treatment could be reduced.

The study by Whitfield and Williams (2003) does not raise other disadvantages, including the absence of:

- help in overcoming a 'stuck point';
- external assessment of progress;
- social reinforcement of assessment results;
- feedback on correct application of techniques.

On the other hand, email communication available in online treatment can provide assistance rapidly and effectively. For example the treatment provider may point to other sites on the Internet which can clarify issues for the individual.

Floyd et al. (2006) examined the stability of treatment gains of 23 older participants after receiving either cognitive bibliotherapy or individual cognitive psychotherapy for depression two years earlier. The results showed no significant differences between the treatments other than significantly more recurrences of depression for bibliotherapy participants during the follow-up period. Clarke et al. (2002b) compared the use of bibliotherapy and videotapes in treating depression with online treatment. The authors acknowledged the value of self-help books and videotapes but also see several drawbacks such as difficulties in accurately monitoring client progress, the static nature of the materials and the lack of multimedia such as graphics, sound and video.

These criticisms appear to be effectively addressed by online interventions. A study reported in the *UNE News and Events* (12 October 2005) saw several advantages of self-help books compared with face-to-face treatment including their affordability, convenience, ready acquisition and, provided they were written by experienced scientist-practitioners, their expert authorship. The disadvantages included the absence of (1) specificity of the treatment in relation to the individual's unique needs and (2) ongoing professional support principally to assist clients address 'stuck' points.

On the other hand there is the difficulty if not the impossibility in other than online interventions of ensuring that all users are up-to-date with improvements made to the materials – costs, timing and distribution are major hurdles. The absence of individualised treatment and professional support for example in overcoming 'stuck' points are also deficits in 'static websites', which appear to be little more than a portrayal of the written

word on the screen. Examples of these sites are Undoing Depression (O'Connor, 2004) and Depression Learning Path (2007). The second is essentially a vehicle for the downloading of a treatment text. The use of multimedia, which is one component that sets the Internet apart from other forms of treatment delivery, needs to be planned deliberately in order to blend with and compliment the written word. As Clarke et al. (2002b) conclude multimedia can make online self-help more effective in imparting skills. By its very nature a well-designed multimedia approach engages more than one of the senses in conveying self-help skills and hence improves learning.

In some ways online treatment partly heralds a return to programmed learning by imparting skills in ways that engage the learner and imbue a sense of responsibility for one's own learning. Programmed learning is an ideal model of instruction (Ellison, 2001); it is interactive because it enables the learner to respond to viewing and assimilating information from text and other media, and to receive performance feedback. Programmed learning is adaptive because it can be designed to accommodate learner individual characteristics, such as existing knowledge and pace of learning. The model informs and is most consistently applied in computer-assisted instruction (CAI). The continuing development of CAI has been enhanced by the multimedia capabilities of the PC and the Internet, which enable the reinforcement of learning through the use of sight and sound coupled with the ability to score user tests and hence record performance and provide feedback.

(xxix) Self-help in combination with face-to-face treatment

Self-help, whether computer- or book-based, coupled with traditional therapy is being perceived as an approach with the potential to maximise the advantages of both treatment modalities. Christensen, Griffiths, Mackinnon and Brittliffe (2006) supported this view by observing that effective online depression treatment programs usually provided a phone or email component. Conversely websites without participant contact

have lower completion rates and poorer results. Given the current developing state of knowledge in online interventions there is a need to draw on research on self-help areas such as bibliotherapy coupled with face-to-face sessions.

The discussion by Floyd (2003) of reasons for using bibliotherapy as an adjunct to face-to-face CBT applies validly to Internet-based interventions though interactivity, multimedia and communication are provided by online treatment and not by bibliotherapy. The reasons include acceleration of learning, enrichment, enhancing the value of sessions by concentrating on applying rather than teaching skills, addressing deficiencies, improving treatment efficiency by remaining within or close to rebate limits imposed by health insurances, and importantly emphasising the client's sense of responsibility for his or her treatment.

Floyd (2003) drew attention to several challenges: (i) the potential of offending clients by entrusting their treatment to self-help rather than a 'live therapist', (ii) the possibility that clients may not have the necessary reading ability, (iii) the resistance to homework and the symptoms of depression itself, particularly low concentration and thought confusion. There is also the possibility of worsening symptoms because of the demoralisation felt by a client who is not able to cope with the intervention without help. Where these problems were likely to be significant Floyd (2003) suggested that clients were more likely to benefit from complete face-to-face treatment. As their condition improved, self-help interventions could become more usable.

Hegarty (2005) commenting on the Australian medical scene observed that general practitioners were often confronted by mild depression in their patients. There were no clear guidelines on whether or not, or how, it should be treated nor was there much evidence for using antidepressants in mild depression. Hegarty (2005) recommended face-to-face ventilation combined with self-help strategies, such as CBT, as the most effective management strategy for patients with persistent

depression. Whether GPs have enough time for ventilation for all their depressed clients is not addressed nor is the potential to improve depression treatment by referring eligible patients to psychologists through the Medicare allied healthcare initiative (Medicare Australia, 2007). The rebate is provided for face-to-face therapy by psychologists.

The writer's hypothesis is lent support by the observation by McKendree-Smith, Floyd and Scogin (2003) that self-administered treatments in combination with psychotherapy or pharmacotherapy deserve researching. The authors are aware from survey data that many therapists use self-help (bibliotherapy) as part of treatment regimens but the extent to which this contributes to the outcomes is not known. Griffiths and Christensen (2005) agree with this view by observing that the relative effectiveness of Internet programs guided by a live therapist has yet to be adequately researched.

A study in response to this observation is by Wright et al. (2005). The study tested the efficacy of computer-assisted CBT supported by a 'live' therapist against face-to-face CBT and a wait list control group of individuals with nonpsychotic major depressive disorder. The study found that computer-assisted CBT with 'live' support was more efficacious than face-to-face CBT and that both forms of CBT were superior to a wait list control group. The study concluded that computer-assisted treatment with 'live' support has the ability to reduce costs and improve access to individuals with depression.

(xxx) Online treatment

Clarke et al. (2002b) commented that as yet there was no accumulated clinical knowledge on techniques required for the effective provision of online treatment and that the trail is being blazed. They (and the writer) have shaped their sites with existing material. There is some support for the effectiveness of this approach. Napolitano et al. (2003) studied the transfer of empirically supported print-based materials for physical activity

promotion to an online format and compared results with a wait-list control group. Participants in the online program increased physical activity behavior after one month and after three months.

The concept of online psychological treatment can gain significantly by studying what education has done in the field of self-learning and thus avoid “reinventing the wheel”. Learning without human face-to-face or indirect support for example to resolve ‘stuck’ points can be challenging and much more so where the learner is labouring under the distressing and pervasive symptoms of a mental disorder such as depression. It appears that this lesson is being learnt. Clarke et al. (2002b) observed that more recently guided self-help interventions integrated online skills training with professional support to overcome ‘stuck’ points by telephone or email. Integrating online with face-to-face treatment where there are opportunities for the client to receive social reinforcement as well as practise skills in behaviour change and address specific issues is a logical follow-on.

Basic to these considerations is the need for guidelines to help clients and therapists assess the relative effectiveness of online treatment for a given problem. Stofle (2001) accepted the maxim of coupling intensity of treatment with intensity of problems. He saw practical difficulties in the application of the maxim including the availability and affordability of required treatment and the wishes of the individual. Stofle (2001) proposed guidelines which support the use of online treatment where for example:

- suicidal ideation is either not existent or passive;
- interpersonal relationships are not intense or unstable;
- social participation is not limited to family and few close friends;
- chronic disordered thinking is not managed by medication;
- the individual is able to manage the expression of emotions.

The need for these guidelines might be considerably reduced where the client has access to a live therapist for remedial training, assistance to overcome specific 'stuck' points and to practise skills learnt in the course. In relation to suicidal ideation, Lifeline and other similar organisations have shown their effectiveness – coupled with face-to-face sessions this effectiveness should be maximised. A helpful and trusting client-therapist relationship built over face-to-face and online sessions can do much to help a client address the intensity or instability in his or her environment and encourage wider social participation.

Several positives are emerging as experience with online treatment gathers. Clarke et al. (2002b) in describing their depression site, which according to them is the first to offer treatment as distinct from information, perceived that Internet sites may attract some of the half of the number of individuals living with depression who did not seek antidepressant or face-to-face psychological treatment for their disorder. The authors suggested barriers to seeking treatment such as insufficient insurance cover and treatment limits. Tate and Zabinski (2004) added time constraints, lack of geographically convenient facilities and shame as impediments.

An impediment is the traditional male notion of imperviousness to psychological pain. An apt example is the resistance to treatment by individuals at the end of a rewarding stage in their lives, as graphically revealed in an interview on Sydney's *Channel 7* (2006). In the program celebrity agent Max Markson said in regards to the depression felt by sportsmen at the decline of their careers:

"There's a macho part of [not wanting to talk about your problems] because you are invincible... you're a boxer, rugby league player and you've achieved and you're a hero so therefore it's not right that maybe you cry or that you are sad."

Online interventions provide a novel solution to many of these impediments (Tate & Zabinski, 2004), particularly "online-only"

interventions. For example assessing a client's symptoms may be more accurate when done by an online program because the absence of face-to-face interaction may reduce the pressure on the client to provide socially desirable responses (Skarderud, 2003). The ability to read and respond to emails at any time enables the client and the treating professional to think through what to say (Winzelberg, 1997).

Tate and Zabinski (2004) reviewed interventions with little or no treating professional contact, with asynchronous and synchronous communication with providers (email and chatroom), and those used as adjuncts to face-to-face treatment. The review found that the highest efficacy related to interventions which use the Internet to undertake and submit behavioural homework, obtain peer support, and receive education, feedback, and therapist support by email or chatroom communications. Fenichel et al. (2005) in their review of online clinical work observed that the clinician engaged in face-to-face treatment could gain a deeper understanding and information about a client by introducing an online component. Clients could be asked to email a journal, advise of their concerns whenever they are being strongly experienced, and be invited to share additional experiences or concerns which spring to mind between sessions. Fenichel et al. (2005) do not discuss the need to navigate the attendant ethical concerns are successfully navigated such as email security, creating unrealistic expectations and extending the therapist's resources beyond their capacity. These issues are taken up later.

Tate and Zabinski (2004) recommended the use of computer-based modes to deliver a component of treatment, as in the present study, which in turn reduces face-to-face contact and hence costs. Whitfield and Williams (2004) commented that there was little research on the effectiveness of computerised CBT as an adjunct to face-to-face therapy rather than as a stand-alone method. There are a few studies however which demonstrate the efficaciousness of computer-augmented CBT in the treatment of disorders, for example panic disorder (Newman et al., 1997), bulimia (Norton, 2003), acrophobia (Emmelkamp et al., 2002) and

depression (Wright et al., 2004). Pull (2006) reviewed the current status of Internet interventions for mental disorders and commented that though there were insufficient numbers of controlled studies at this stage to evaluate effectiveness there was provisional evidence of their potential to be a viable delivery approach or a component of traditional face-to-face treatment.

Barr Taylor and Luce (2003) foresaw that treatment components adjunctive to face-to-face psychotherapy sessions as in the present study might become one of the most powerful uses of the Internet. Tate and Zabinski (2004) agreed and saw adjunctive computer-based approaches delivering part of the treatment, thereby reducing face-to-face time with treating professionals. Newman, Kenardy, Herman and Taylor (1997) used palmtop computers to supplement a panic disorder CBT treatment of four sessions and compared the results with the standard treatment of 12 sessions. The study demonstrated the similarity of the two treatments in effectiveness and the substantially lower per client cost of delivery of the computerised intervention. Conceivably the computerised intervention could just as easily have been provided on the Internet and the clients if necessary could have downloaded the webpages on their PC, laptop or palmtop. That is, the hardware does not appear to be the key factor in the success of the treatment but rather the nature of the material available to the client out of sessions.

Tate and Zabinski (2004) saw several advantages in emails in adjunctive online treatments provided ethical issues are addressed. The advantages included providing the client with therapist contact assuming this did not become onerous, enhancing client responsibility to take charge of treatment through having to complete assignments and mood monitoring tables, and maximising the availability of face-to-face session time for addressing individual issues.

(xxxi) Ethical issues and practicalities

Urbis Key Young (2003) in their review of telecounselling and web counselling services in Australia considered the existence of a number of professional, ethical, legal and technological challenges which could limit the effectiveness of online treatment. They saw a need to research web counselling and provide education, training and supervision of online therapists to ensure their competence and the emotional and physical wellbeing of clients.

Fenichel et al. (2005) proposed that online treatment had broken three basic premises of traditional therapy namely visible contact, talking and synchronous ("real time") communication. The authors added that online clinicians often moved between online and face-to-face modalities in response to demands of the therapeutic process. For example a client with hearing difficulties may prefer communicating by email or on a chat line with the therapist. A client who cannot muster the emotional strength to inform the therapist of a distressing event such as an assault may find it easier to do so by email.

Fenichel et. al. (2005) in the report prepared for the Clinical Case Study Group of the International Society for Mental Health Online (ISMHO) saw the benefits of email communication as including the ability to (1) send and receive messages at any time; (2) reflect while composing them and avoid inhibitions; (3) maintain automatically a record of communications for reference. Emails, as well as being an efficient way of monitoring mood change and homework, can help determine the need or otherwise for face-to-face sessions.

Potential risks are seen as including breach of confidentiality at either the client's or the therapist's computers particularly where these are shared by other individuals. In relation to security issues the use of protected directories, return acknowledgements and passwords are effective bars to confidentiality breaches, except for human error and individuals with expertise and motivation to breach privacy.

Fenichel et al. (2005) discussed the objection that emails could not convey the emotional richness of face-to-face communication. In response they point to the richness of human experience conveyed in plays, poems and stories, and to the recent innovation of emoticons in email communication (see for example the *Incredimail* website).

In their review of self-administered depression treatments McKendree-Smith, Floyd & and Scogin (2003) hypothesised that the impact of self-help therapy on the well-being of consumers, though difficult to assess, must be enormous given that the demand which had led to the establishment of a cottage industry. The authors canvassed the importance of ethical issues in self-administered treatment programs and, depending on their type, identified a wide range of stakeholders such as authors, publishers, clinicians, researchers, and professional associations. The authors added that researchers were ethically obliged to maintain some contact with the participants to address any deterioration in their symptoms which might for example risk suicide. Author treatment providers needed to shape their materials on evidence-based approaches and included self-assessment as an integral component of their programs. Empirical testing should boost a client's confidence in the efficacy of the self-help program.

In line with the views by McKendree-Smith, Floyd and Scogin (2003) self-help programs and face-to-face interventions should include diagnosis. Well utilised self-tests such as the Goldberg Depression Scale (GDS) (1993) are in the public domain and can be linked to a treatment website, subject to any copyright conditions. The tests can be also be used to assess progress and provide feedback to the client. Where test scores indicate a level of severity beyond the capacity of the self-help program clients should be advised for example, to consult their general practitioner (GP) to arrange a more appropriate treatment. Coupling an Internet intervention with face-to-face treatment obviates this difficulty.

Tate and Zabinski (2004) provided a number of recommendations to guide online clinical practice though they saw the need for extending large-scale, rigorous research. They considered that online treatments were not universally suitable nor could they replace face-to-face therapy. These treatments could be more effective with less severe symptoms and where clients were motivated to work on their own and were at ease with the Internet, as in the present study. Fenichel (2005) proposed that generally, severe pathology and risky behaviours might not be suitable for online treatment. Luo (2005) added further factors such as severe depression and anxiety, which may interfere with the ability to focus on the material. Other factors given were age, personality, adaptability and practicalities including poor eyesight, reading skills and computer competence. Until more research illuminates the field online treatment should focus on less severely depressed participants.

The authors propose that clients should be encouraged to review other sites and seek their therapist's opinion in evaluating their worth. Treating professionals should evaluate sites before recommending them to clients because of the widely varying quality of online health information and also to ensure compatibility with treatment plans. A study by Griffiths et al. (2005) is relevant to site evaluation. The authors described the development of a computer algorithm, the Automatic Quality Assessment procedure (AQA), which automatically ranked depression websites in relation to the evidence-based quality of their treatment information. The AQA could therefore be used as one mechanism for evaluating a site suggested by a client or found by the therapist.

In regards to the many online disorder support groups such as depression communities Tate and Zabinski (2004) suggested that therapists should encourage their clients to join these. There are some difficulties which need to be addressed. Firstly what is discussed is spontaneous and may or may not benefit the client. Secondly

participants may give false names and information even though communication might be synchronous and enriched by a web camera. Feldman (2000) in discussing the Munchausen syndrome in which people act out a fake behaviour in order to gain attention or some other psychological benefit, warned support group members to take care in basing their own healthcare decisions on unsubstantiated information gained through individual members. When one of these was suspected of the Munchausen syndrome Feldman (2000) recommended that one or more other members question the author of the suspected posts with empathy, in private and persistently.

The danger of the Munchausen syndrome is that depressed clients might not have the clarity of thought to assess the underlying motivation of the participant advising them or seeking communication with them. Another reason was proposed by Powell, McCarthy and Eysenbach (2003). They found in their study that there was a high prevalence of major depression among participants in Internet depression communities probably similar to the non virtual world. Many of them sought help online rather than receive appropriate treatment. The result is that a client's condition may deteriorate rather than improve. The authors concluded that their findings did not portray the Internet as harmful nor that information reduced the trust in "live practitioners". The study agreed with the findings by Kraut et al. (2002) that the Internet did not breed social isolation. Many users felt free to reveal their depression for the first time in the virtual rather than the 'live' community. Online communities may provide support on disorders that individuals feel inhibited discussing in their own social environment (White & Dorman, 2001). A role these communities could play is to provide participants with authoritative information preferably by referring to expert sites, social support, and encouragement to find a suitable therapist and negotiate treatment as soon as possible.

The National Board for Certified Counsellors (NBCC) proposed a number of ethical principles in relation to email counselling. The online counsellor

should explain to online clients the bounds of offline contact, the counsellor's frequency of checking emails, alternatives to communication in case of Internet or computer downtime, addressing potential misunderstandings in the absence of visual clues and the desirability of using encryption or at least acknowledgement by the client of the potential hazards of unsecured online communication. The online counsellor should also inform online clients the extent to which session data are being preserved. Furthermore given the ease with which emails can be forwarded to third persons, counsellors need to work to safeguard the confidentiality of the counselling relationship.

The principles for online treatment proposed by the ISMHO (2006) echo those of the NBCC (2005) by highlighting the importance of informing clients on privacy, risks and benefits of online treatment, and safeguards as well as ensuring that the client has sufficient online and writing skills. However in line with the view of Fenichel et al. (2005), given password protection and other security techniques, online counselling is no more unsafe than face-to-face treatment. Fenichel et al. (2005) canvassed the issue of informed consent as a basic requirement for online and face-to-face therapists. Online therapists should inform clients of qualifications and registrations with professional bodies, and advise on limits and risks of online treatment. Fenichel et al. (2005) raise the debate of establishing identity as a key requirement in treatment. They counter objections by referring to the success of online crisis support in the UK (Samaritans) and Israel (Sahar).

A further example is the telephone-accessed Lifeline Australia. Arising out of the differences between face-to-face and online counselling is the need for therapist training. The authors warn budding online therapists that this is not an easy path to follow. Website presentation, as with email communication, requires skills to ensure that it is clearly understood within the client's cultural and personal perspectives, it conveys warmth, concern and where appropriate humour and furthers the therapeutic process. These requirements take time and several rewriting efforts to

ensure they are met.

Fenichel et al. (2005) raised a number of ethical considerations of a practical nature. Differences in time zones were seen as a restriction to chat line communication particularly where the distances separating therapists and clients were seen to be significant. There was also the issue that therapists might not have been eligible to practice outside of the jurisdiction in which they were licensed. A further issue was that therapists should confine their practise within the bounds of their expertise. This included considerations of culture and society. These can be restrictive factors notwithstanding the pervasiveness of the global village in lifestyles, attitudes and behaviour.

(xxxii) The future of online healthcare

The rapid expansion of Internet availability (OECD, 2006) is likely to see an expansion of online healthcare. A major challenge would be whether users can acquire the sophistication needed to choose an evidence-based effective intervention that is driven by an experienced and qualified provider. Online associations such as the ISMHO which recommends counsellor members provide one of the answers.

Technology such as mobile text and video messaging expands the horizons of online healthcare. The ability to respond quickly and directly to the individual and leave a record of the message is an effective and convenient means of communication. The technology of video messaging is available and is rapidly spreading.

Andersson (2006) concluded in his review of CBT on the Internet, that there was a need to define directions now that online treatment had demonstrated its promise. He saw many issues which needed addressing, such as differential access to the Internet, security of computers, and the ease with which practitioners accepted the value of self-help. Andersson (2006) saw Internet-based treatment as one of

many ways to use information technology in healthcare, and it was best seen as a complement rather than as a replacement of other approaches. In this context the present study makes a contribution by integrating online with face-to-face treatment.

The significance of any differences between face-to-face and online treatment in relation to the proportion of participants who complete their intervention has not been clearly established. On average online treatment studies reveal that interventions are completed by almost four in every five participants. The completer ratio is similar to face-to-face sessions (Lustman et al., 85%; Goudsmit et al. 2001, 72%; Halmi et al., 2005 78%; Agras et al., 2000 75%). A study by Christensen, Griffiths, MacKinnon and Brittliffe (2006) aptly concluded that brief CBT-based interventions were less effective than more extended studies but the latter suffered from higher attrition rates. A salient feature of online studies was their cost effectiveness. Savings in treatment costs measured in saved provider time compared with face-to-face as proposed in the fourth research question should be realisable.

(xxxiii) Methodological considerations

Methodology concerns the gaining of knowledge about phenomena and guides the choice of methods with which to collect data and the procedures, concepts and rules to be followed in determining how the data are to be gathered (Frankel, Naslund & Bolumole, 2005).

Methodology draws on ontology and epistemology in determining the kind of model to be used and they are both compatible with the research questions. For example in the present research a single case study design is used to provide an in-depth insight into how depression affects the individual's functioning while tests measure the extent of symptoms at given stages during the intervention. The responses to the research questions draw on information provided by both models.

This section briefly outlines the two major research methodologies in social science and the philosophical positions underpinning them. A discussion follows on the methodological approach in this study and its use of a mixed methodology.

(a) Quantitative methodology

According to Lincoln & Guba (2000) the basic beliefs of the quantitative paradigm (used interchangeably with positivist in the present study) are that there is an external (objective) and single reality that can be studied with methods similar to those used in the natural sciences. The methods seek to establish general laws through statistical treatment of causal relationships between variables. The laws explain regularities and enable predictions from independent to dependent variables (Näslund, 2002). Adding to knowledge about the world through testing propositions is an intrinsically valuable aim. Verified propositions become facts or laws.

Before the advent of conscience in research for example as reflected by the workings of ethics committees, deception was used whenever it was demanded by the experimental design. A prime example would be the Milgram experiments on obedience, which took place from 1961 to 1985 (see for example New Life Community Church, 2005). Control rests with the researcher and participants are often termed subjects, a term which denotes the passive nature of their involvement. Their views on the nature of the experiment and its directions are not sought unless required by the study.

Four criteria are used in evaluating the worth of positivist studies (Denzin & Lincoln, 1994, p.100 cited in Näslund, 2002): internal validity (how closely findings approximate the phenomenon studied), external validity (the generalisability of results), reliability (consistency or the replication of findings in different populations) and objectivity (neutrality or freedom from bias). Knowledge is built through accretions of generalisations and cause-effect linkages. The researcher is not an advocate. The

researcher's voice is that of a disinterested or technical adviser to the power structure of the environment in which the research takes place. Reflexivity is avoided because it may disturb objectivity. The researcher's role is central to the research activity and textual representations (reports) tend to be structured. In this study an analysis of the results of data was undertaken gathering according to structured procedures and formulated the conclusions.

(b) Qualitative methodology

Boeree (2005) considered that qualitative methods attempted to capture the essentiality of life. That is, as it is experienced. In contrast quantitative methods required the researcher to derive a hypothesis from a given theory and expect it to be held up. Variables were defined operationally, that is in terms of what it was intended to manipulate and measure. Other variables were controlled statistically with a large enough sample size and a statistical test to determine the significance of the results. In contrast, qualitative research studied the phenomenon in its fullness and from different perspectives. All the senses were available for use and the phenomenon "speaks for itself". The researcher was an active observer and listener.

Yin (1994) stated that in analysing case study evidence there was a need for an effective analytic strategy and proposed two strategies. The first relied on the study's theoretical propositions and analysed the evidence underpinning those propositions. The second technique concerned the development of a case description, which acted as a framework for organizing the case study. Tellis (1997) mentioned additional analysis techniques including pattern-matching which compared empirical with predicted patterns, using the original aim of the study to identify relevant causal links, categorical aggregation and direct interpretation of events. The writer has relied on the last technique in order to more effectively give the participant voice and tap into his or her reality.

Myers (2006) considered that case study research was the most common method of the qualitative interpretivist paradigm used in information

systems. He agreed with Yin (2002) that case studies were empirical inquiries of a current event within its real-life context when the bounds between the event and the content are unclear. In order to help ensure the quality of the case study, Yin (1994) proposed that the analysis drew from all relevant evidence, that all major rival interpretations were included, the most significant aspect of the case study was considered and that the researcher drew on expert or prior knowledge.

Tellis (1997) saw the case study methodology as meeting the three tenets of the qualitative interpretivist paradigm: describing, understanding, and explaining. He noted that the foundation of case study research in the US was closely associated with the Sociology Department of the University of Chicago, namely the Chicago School. In the early 1900s there were many studies undertaken on issues including immigration, poverty and unemployment. The use of methods based on the qualitative paradigm methodology declined as empiricism came to the fore until the 1960s when researchers began to voice their concerns at the limitations of quantitative methodologies. From then on there was resurgence in the interest in qualitative studies until the present time when both paradigms methodologies are considered as complementary.

(c) Mixed Method Methodologies

The study is conceptualised within a constructivist/interpretivist paradigm and employs a mixed methods methodology. Williams (1999) defined a mixed-method approach as the purposeful combination of different techniques which enabled observation and collection of quantitative and qualitative information and also its structure, analysis and evaluation. Qualitative research enhances a study because it provides information directly from the individual's perceptual reality. No amount of observation or tests can provide the richness in detail that comes from the individual's perceptions. Quantitative research adds value by enabling an estimation of the extent of persistence and pervasiveness of the phenomena under study. Neither form of research can replace the other. Both are needed to provide a rounded view of the outcomes. Although these

methodologies derive from different paradigms it is proposed that, in line with the views by Williams (1999), the outcomes of one supplement the other. The result is a 'living' knowledge that could not have been provided by either methodology alone.

Mixing methodologies is not universally accepted. For example Guba and Lincoln (2001) warned that using methodologies from different paradigms in the same study might lead to nonsensical conclusions. On the other hand the proposition by Barker (1993, p.150) that paradigms exist to serve research rather than constrain it, is attractive. Mixing of methods provides for diversity which enables understanding of the complexity of the world and an appreciation of the multiplicity of perceptions. Barker warned against 'paradigm paralysis' which became possible when paradigms were too closely held and did not account for the likelihood of different perspectives on similar issues. He supported paradigm pliancy as the best approach in times of rapid change. If a paradigm did not work in any given case then it to be challenged.

Williams (1999) rejected the view by Guba and Lincoln (2001) that methodologies should not be mixed. He took a dialectical position by arguing that philosophical paradigms existed independently and the integrity of their different underlying philosophies needed to be maintained. They could not be combined because they were logically independent. Williams (1999) saw paradigms as representing ideal approaches located at the endpoints of methodological continua which needed to be adapted to cater for the reality in which evaluation situations rarely corresponded with theoretical endpoints. Mixing methods did not cause one aspect of the study to interfere with the other because they were separate entities that complemented each other.

Rossmann and Wilson (1985) proposed that qualitative and quantitative data may be combined by initiation, corroboration and elaboration. Initiation referred to commencing a study by qualitative methods in order to learn about a phenomenon and following up by a quantitative analysis.

Corroboration referred to bringing quantitative and qualitative data together to assess the extent of convergence in the findings. In elaboration qualitative data are used to expand on the quantitative findings in an effort to triangulate or identify contradictions.

(d) Qualitative methods - case study design

Tellis (1997) saw two key characteristics of case study methodology namely the embodiment of participant views and the focus on the entirety of observation, reconstruction, and analysis. Case studies were situated within defined bounds.

In response to the often heard criticism that the case study's dependence on a single case disabled the provision of a generalised conclusion Yin (1994) proposed that increasing the size of the sample did not necessarily enhance generalisability. The aim of research was to establish parameters. The research was undertaken on the situation which presented itself in the case. Hence even one case could have been acceptable, provided it met the parameters. Generalisability whether from one case or multiple cases, was made to the underlying theory and not to the population in the study. Yin (1994) added that multiple cases strengthened results because they enhanced confidence in the robustness of the theory.

Case studies are extensively used in law to establish precedents to guide future judgments in similar situations and in medicine where they give an understanding of the progress of a given disease or treatment procedure such as recovery from an operation. In anthropology case studies illustrate the functioning of individuals in given cultures and social situations. In education programs such as business studies they are used to enhance learning by situating the application of principles in life-like scenarios. In government they are used to describe and evaluate the usefulness of social programs. Case study evaluations by including quantitative and qualitative data can cater for both process and outcomes. In these and other discipline areas quantitative techniques by

themselves would be unlikely to bring to the fore some of the key information needing discovery.

Myers (2006) considered that qualitative paradigm-based research methods such as the case study allowed the study of individuals in their sociocultural contexts and provided a living richness of human data that could not be given by quantitative measurement alone. Briand, Bunse and Daly (2001) speaking from a software engineering viewpoint, considered that both quantitative and qualitative research paradigms methods were needed in order to address the challenges created by the human-intensive nature of software development as well as establish experimental validity. In this way the combination of research methods compensates for weaknesses in individual methods and enables a greater understanding of research results.

Amaratunga, Baldry, Sashar and Newton (2002) noted from a built environment research perspective that qualitative methods enabled the development of a holistic view of a study whereas quantitative analyses more appropriately assessed the behavioural or descriptive components of the study. The authors added that while qualitative methods enabled unexpected developments in the study to be taken into account, quantitative analyses indicated the extent of their existence.

(xxxiv) Validity

The assessment of validity of research is a major issue of concern. Schwandt (1990, p.259) essentially rejected the notion of validity criteria by commenting that there was no agreed view of the nature of scientific enquiry and hence no foundation of knowledge that was undisputed.

Gerber, Green and Kaplan (2003) argued that the external validity of an experiment depended on whether (i) participants were similarly influenced by the treatment as their parent population in order to generalise the results, (ii) the treatments in the experiment and the population

corresponded, (iii) the response measured in the study corresponded to the population variable being studied, and (iii) the effects were measured statistically.

Guba and Lincoln (1989) proposed four sets of foundational criteria for evaluating the quality of qualitative research which mirror the empiricist criteria of internal validity, external validity, reliability and objectivity, namely credibility, dependability, confirmability and transferability. The Enterprise Development Impact Assessment Information Service (2002) provides a checklist with which to assess for these factors in case studies. Transferability can only be assessed in future studies using the same techniques.

Shadish, Cook and Campbell (2002) considered four threats to the validity of conclusions from quasi-experimental designs. They were:

- statistical conclusion validity. Independent and dependent variables might not be related, that is, the null hypothesis might have been erroneously rejected or the alternative hypothesis erroneously accepted. This might occur in experiments where parametric statistics are being used and the underlying distribution is not normal. In the present study normality is statistically tested and found to apply within confidence limits;
- internal validity. The independent and dependent variables might not be causally related, for example spurious correlations. In the present study the before-after difference in depression measures might be at least partly due to the novelty or other inherent quality of working online;
- construct validity. The measured variable and the concept variable might not necessarily be sufficiently similar to assume that the first validly reflects the second. For example the BDI might not be a valid measure of the extent of depression suffered by particular participants because it is a self-reported measure open to individual perceptual differences;

- external validity. For example inferences might not apply with other participants or treatment providers.

(xxxv) The algorithmic basis of the study – a note

Anderson (1987) defined mental algorithms as abstract specifications of the steps taken by mental procedures and implementation issues as the speed and reliability of these procedures. The two terms were independent. He compared the first term to a computer program and data structures, and the second to the extent to which the program ran efficiently because of hardware and how it had been written. He argued that psychology has concentrated on implementation issues. He distinguished between mental procedures that enabled the individual to adapt behaviour and the mechanisms by which procedures and knowledge were implemented. He proposed that research should focus on the algorithmic level because of its inherent greater opportunity for theoretical progress given that it was not adequately researched and it was theoretically more tractable, more interesting, accounted for much of the variance in human behaviour and concerned essential human nature issues. Optimising an algorithm, eg making it simpler, can lead to much greater time savings than optimising its implementation. He distinguished between short-term and declarative memory and considered that there had been considerable study of retrieval rates, short-term memory capacity, study time effectiveness, retention curves and other related entities. Algorithmic questions were the more interesting. How this knowledge was organised to allow effective performance to occur in new task environments had not been studied sufficiently. The interesting epistemological questions were at this algorithmic level.

Anderson's argument implies that an intervention needs to be simple, well presented and easily understood in order to ensure 'real-time' applicability across a wide range of situations. Consequently educational principles such as clear presentation utilising many senses with ample

feedback should guide the construction of the online course. The more easily principles are grasped the more effectively (speed and accuracy) they are likely to be applied in a range of different situations.

(xxxvi) Single case study designs

Single case study designs according to Aldridge (1991) aim to formalise clinical stories. The main criterion is that the intervention should become effective within a relatively short space of time and if discontinued any improvement should be reversed. The designs are based on the clinical process namely the disorder is assessed and diagnosed, treated, monitored for extent of progress and the result evaluated. They improve case history methodology because they include comparative data in two or more phases such as pre- and post-intervention. The designs are close to the day-to-day clinical work and enable the practitioner to undertake research with his or her clients. This adds meaning to the concept of 'scientist practitioner'.

Similarly Long (2006) observed that the aim of single case studies was to gauge the behaviour being studied (depression in the current study) before treatment and over time, for example during, after or beyond treatment. The validity is doubtful because the practitioner's expectations may have unduly affected the client, the disorder might have remitted by itself or the initial assessment might have been taken at a time when the client was unduly affected and extreme values resulted in the measurement. The experimental approach addresses these challenges through randomisation and blind assessment.

Yin (1994) took up the criticisms levelled at single case study designs for their lack of sufficient numbers for statistically adequate research. He argued that case studies should aim to establish the parameters, which should then be applied to subsequent research. Hence even one case can be acceptable provided it meets the parameters.

Lie (2006) considered that single case studies applied experimental method principles to one or more subjects in order to assess cause and effect and that data could be collected and analysed by a variety of methods. Essentially the single case design can be applied to one or several participants and adheres to a standard protocol consisting of a number of observations and interventions. The treatment conditions are compared for the same individual rather than different groups and external validity is established through replication rather than sampling. As Aldridge (1991) observed the client becomes his or her own control and source of data, that is, progress was determined by the individual's constitution.

The advantages (Lie, 2006; Aldridge, 1991) are seen as:

- obviating the need for recruiting a sufficient number of homogenous subjects for a statistically valid group study and analysing large groups of data. The implied low cost makes this kind of research feasible for the practitioner;
- avoiding the need to address ethical challenges in assigning individuals to control or experimental groups;
- unlike large group studies they highlight rather than mask individual differences;
- the capacity to involve the client in the research;
- results can be more easily translated to daily clinical practice than those of large group studies;
- relevant by both client and practitioner.

The disadvantages were considered to be doubtful generalisability, lack of rigor in control and the need for replication in order to accumulate further evidence. Generalisability may be partly addressed through several practitioners collaborating in holding similar studies. (Lie 2006; Long 2006).

(xxxvii) Sampling

The study sample was purposively rather than randomly chosen. In a classic article Walker (1910) speaking from a theory of knowledge view did not see why purposive selection should lead to error. He compared it to a habit, in that it helped perception and conception by highlighting relevant points and excluding those not relevant. In this way he considered purposive sampling to be of the highest significance in the acquisition of truth. He added that intellectual functions in isolation did not lead away from the path of truth. He considered that abstraction was trustworthy because it was reflected in reality, as was judgement given that the link between cause and effect was directly determined by facts. Similarly he considered inference to be trustworthy because it entailed making explicit what was already contained implicitly in the premises, as in the application of a general law to any given case.

Trochim (2002) argued that because non-probability sampling did not involve random selection, this did not mean that it could not be taken as representative of the underlying population. However it could not depend upon the rationale of probability theory in inferring from sample to population. Trochim (2002) observed that purposive sampling methods were more common because the researcher could plan the sampling process. Trochim (2002) further argued that the typical university study which used students did so mainly for convenience. In clinical practice, Trochim continued, available clients were used, as in the present study. Clinical drug studies called for volunteers. There was therefore no evidence of their representation of their underlying population. Purposive sampling entailed choosing a sample which included one or more chosen predefined groups. This point was addressed by Barbour (2001) who considered that qualitative research rather than seek to embody statistical representativeness in a population under study should aim to highlight inherent diversity. Barbour (2001) observed that purposive sampling provides a degree of control to research rather than a weakening because of selection biases within pre-existing groups such as individuals with

clinical symptoms. In the present study for example the selection criteria outline the predefined groups.

Pott et al. (1988) considered that deliberate selection of certain sample units was often undertaken to reflect the typicality of the population being sampled. The authors viewed the main advantage of purposive selection to be the relative ease with which sample units could be selected. This was offset to some extent by the selection being undertaken not on the basis of representativeness but on ready availability. In the present study the population base consists of individuals with depression – the sample chosen shares this criterion with the population but may not share for example similarity in proportions of gender, age, culture and so on.

Working from a financial perspective the International Monetary Fund (IMF) (2005) expressed similar views to Pott (1988). The IMF considered virtually impossible to select efficient samples because rarely were there accurate estimates of population variances, sampling frames reveal deficiencies and response rates were unpredictable.

(xxxviii) Triangulation

Das (1983), echoing the view by Williams (1999), considered that quantitative and qualitative approaches were not opposing or divergent, but attended to different aspects of the same study. Das added that the underlying dynamics of the phenomenon and the researcher's aims appeared to be decisive in the design and undertaking of the study. Meeto and Temple (2003) observed the paradigm chosen determined the measures used to establish validity. A positivist view of research held no epistemological difficulty with combining findings from qualitative and quantitative methods to complement each other and provide a better account of reality. Any divergence of findings needed to be reconciled. Yin (1994) considered that the emphasis on using both qualitative and quantitative methods to study the same phenomenon had been boosted by the growing interest in 'triangulation' in research.

Triangulation hypothesises that the weaknesses in one method would be compensated by the strengths of the other. Fitzpatrick and Boulton (1994) defined triangulation as the use of the greatest possible range of sources to support statements. Methods of triangulation included different researchers, re-checking statements with participants, and the most commonly used triangulation of method. The authors stated that triangulation concerns searching for patterns of convergence that substantiated an encompassing interpretation and whenever possible quantitative evidence should have been sought to assess the qualitative statements. They warned however the similarity of findings from different methods did not of itself demonstrate the validity of a study. Tellis (1997) listed several sources of evidence in case studies including documents, archival records, interviews, direct observation, participant-observation and physical artifacts. All these served to triangulate evidence.

On the other hand complementarity of methods does not imply that different methods need to result in similar findings. The capacity of different methods to work together should not be automatically accepted. It needs to be shown. Triangulation is valuable in understanding results and drawing inferences and conclusions. In the present study for example the results from the statistical analyses indicate the significance of the extent to which depression symptoms have abated. The case studies reveal what the abatement of the symptoms means to the individual participant.

(xxxix) A note on parametric and non parametric statistics

Parametric statistics (Garson, 2004) assume the data:

- follow the Gaussian (normal) distribution;
- can be measured at interval levels;
- are homogeneous in variance when two different samples are compared.

On the other hand non parametric statistics do not make these assumptions. Conventionally parametric statistics are regarded as more sensitive to data variations than their non parametric counterparts and wherever possible the former are preferred. Cohen (1969, p.266) however argued that in most cases parametric assumptions could be moderately violated and not significantly affect the results of a study. Jaccard and Wan (1996, p.4) were of a similar view and argued that significant variations from interval measurement do not appear to affect Type I errors (assuming a relationship where none exists) and Type II errors (rejecting a relationship where one exists) greatly. Vickers (2005) in considering the relative power of parametric and non parametric statistics in before-after studies (such as the present study) found that that the superiority of the latter was not clearly established when the data departed from normality but depended on the underlying distributions and the size of the treatment effect compared to the baseline.

There are opposing views. Wilson (1971) stated that in fitting data to a model only the weakest inferences could be made where data measurement was ordinal rather than interval. Garson (2004) concluded that inferences should be qualified in a study based on parametric statistics if the values of an ordinal variable markedly departed from normality.

(mx) Validity and reliability of testing instruments

(a) The HDRS and the BDI

The main instruments for measuring levels of depression were the HDRS (1960) and the BDI version II (1996). The 21-item HDRS was used. This is a clinician-administered instrument in which the clinician reads each question to the participant and scores the answer given in terms of the responses provided in the instrument. The HDRS includes assessments on depressed mood, insomnia, loss of weight and insight. The BDI was used. This is a participant-completed instrument of 21 questions covering

areas including sadness, pessimism, past failure, concentration difficulty and irritability.

The BDI and the HDRS have been extensively utilised in research as measures of depression. The extensiveness was indicated by a Google search in November 07 on “Beck Depression Inventory” which yielded 235 000 results and on the “Hamilton Depression Rating Scale” which showed 130 000 results. Their respective validities, long established, are demonstrated in Tables I-III. The use of these two instruments obviates the need to develop and validate a measure for this study. A particular benefit in using the BDI is that it enables comparison of results with other studies using the same measure. The HDRS is used as a clinical assessment instrument and hence becomes invaluable in standardising clinical interviews at major phases in the study.

There are several studies reported on the validity and reliability of the BDI and the HDRS which are the main measures in the study. Some studies on the reliability of the HDRS are presented below.

Table I. Studies on the reliability of the Hamilton Depression Rating Scale

Study	Internal reliability*	Interrater reliability*	Retest reliability*
Akdemir et al. 2001	0.75*	0.87*	0.85
Fuglam et al. 1996	0.86	0.81	
Kobak et al. 1999	0.91		0.98
Puncheri et al. 2002		0.90	
Reynolds & Kobak 1995	0.92		0.96

* correlation coefficients

In the table the studies presented reveal that the levels of internal, interrater and retest reliabilities are high. There are several aspects of validity of rating scales such as the Hamilton depression scale including content, convergent, discriminant, factorial, and predictive validity. Content validity is calculated by assessing scale items to determine closeness with known features of a disorder. Convergent validity is

considered adequate when a scale shows a correlation of at least 0.50 with other measures of the same disorder (Bagby et al., 2004).

Convergent validity is selected to demonstrate the validity of the HDRS because it has long been accepted as the gold standard in diagnosing depression (Bagby et al., 2004) and many studies have compared the HDRS and the BDI. The table below lists a number of studies demonstrating convergent validity.

Table II. Convergent validity of the Hamilton Depression Rating Scale

Study	BDI *	Clinical Global Impression Scale*	Carroll Rating Scale for Depression*
Akdemir et al. 2001	0.48	0.56	
Feinberg 1981		0.77	0.75
Kobak et al. 1999	0.89		
Senra Rivera et al. 2000 (Time 1)			0.70
Senra Rivera et al. 2000 (Time 2)			0.92

* correlation coefficients

A close relationship is shown between the HDRS and two other instruments including the BDI implying that they tap into essentially the same phenomenon, that is, depression.

The following table outlines the results of validity and reliability studies of the BDI. Test results are correlated with other depression measures to provide measures of convergent validity and reliability is calculated by means of testing and retesting individuals after a time interval. The BDI is revealed as a valid and reliable measure of depression given that the studies show that it correlates well with other measures and is internally consistent.

Table III. Validity and reliability studies of the BDI.

Study	Measure	Measure
Sprinkle et al. 2002	Correlation with SCID-I * $r=0.83$	test-retest $r=0.96$
Levin et al. 1988	Internal consistency (Cronbach) $\alpha=0.88$	
Foundoulakis, et al. 2003		test-retest $r=0.95$
Vitale et al. 2002	Internal consistency (Cronbach) $\alpha=0.88$	
Beck et al. 1988	Clinician ratings $r = .70$	

* Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I)

(b) A note on the BDI cut-off score

Westen and Morrison (2001) raised an important issue in their metastudy of research on the treatment of depression. The metastudy found 74% of participants were completers and that 54% were deemed to have improved across the 12 depression studies. Criteria for improvement varied across studies, for example in one study (Pilkonis, Heape, Ruddy & Serrao, 1991) a cut-off score of 9 on the BDI and 6 on the Hamilton signified absence of clinical-level symptoms, that is improvement. For the intent-to-treat group (those agreeing to undertake the treatment and either completing or not completing it), the study revealed improvement rates of 37% for depression.

At termination of treatment the mean score for completers was 8.68 (SD = 6.49) on the HRSD and 10.98 (SD = 8.60) on the BDI. Westen and Morrison (2001) argued that though the scores signified a substantial improvement, the large standard deviations revealed that the treatment response was volatile and that not all completers could be assumed to be sufficiently free of symptoms to be at subclinical levels of depression. The authors commented that both means were higher than the cut-offs used by researchers in assessing the existence or otherwise of clinically significant depression. For example, Pilkonis, Heape, Ruddy and Serrao (1991) recommended HRSD scores below 6 and BDI scores below 9 as indicative of recovery.

Bouchard et al. (1996) in line with their view that norms of nonclinical rather than of clinical samples should be used to determine whether or not an individual can be deemed to be free of symptoms, proposed a cutoff of 7.86 for the BDI to assess whether an intervention has achieved a clinically significant result. Beck et al. (1996, p.11) proposed a minimal to mild depression cut-off of 11 and added that if the purpose of a study was to detect the maximum number of depressed individuals then the cut-off should be lowered to reduce the false negatives.

(c) Goldberg Depression Test (GDS)

The GDS, freely available online, was chosen to provide participants and the writer with an immediate score on the extent of existing symptoms at given times throughout the Internet course. The mood monitor was utilised because it gave a global assessment of participant overall distress and supplemented the Goldberg results. Both of these measures were similar in concept to knowledge tests at the end of educational texts and served to provide feedback to the individual on progress.

The table following presents validity studies for the GDS. The validity of the GDS is shown through its correlations with other measures of depression including the HDRS which is used in the present study. Hence both essentially measure the same phenomenon.

Table IV. Validity studies for the Goldberg Depression Scale

Study	Measure
Holme et al. 2001	Correlation with HDRS: 0.74
Jorm & Mackinnon, 1998	Correlation with Psychogeriatric Assessment Scale: 0.67

(xmi) Relevance of the literature review to the research questions

The literature review provides an extensive background to the research questions. Overall a mixed-method approach was chosen because quantitative and qualitative research findings complement each other and provide a more rounded appreciation of the phenomenon. Single case study methodology was chosen because the research used a before- and

after- design. The BDI and the HDRS were chosen as the measuring instruments for study outcomes in view of their established validity and reliability. The GDS was chosen for participant-initiated feedback because of its ease of access and concurrent validity with the HDRS.

In relation to individual research questions the literature review provides support as follows:

Research question 1. Is an intervention which relies on an online course to train the client in cognitive behavioural techniques and on face-to-face sessions to practise the techniques at least as effective as face-to-face counselling in treating clients with mild to moderate depression?

- CBT has been established as an evidence-based approach in the treatment of depression (Andersson, 2006; Hunsley, 2002; Butler, Chapman, Forman & Beck, 2006; Whitfield & Williams, 2003);
- Internet-based interventions have been shown to be effective treatment approaches particularly for participants with mild to moderate rather than severe depression (Christensen, Griffiths & Jorm, 2004; Wright et al., 2005);
- Computerised CBT systems extend and do not replace face-to-face treatment (Marks et al., 2003; Childress, 1998)

Research question 2. If a positive effect is realised from such an intervention, how persistent might this effect be?

- CBT has been demonstrated to be effective in relapse prevention and results persist beyond completion of treatment (Andersson, 2006; Antonuccio, Thomas and Danton, 1997; Westen and Morrison, 2001; Napolitano et al., 2003);

Research question 3. Is this intervention more likely to retain clients through to completion compared to other interventions?

- conditions for online treatment are that participants meet criteria for online access such as adequate levels of IT skills and the availability of suitable equipment and software;
- completion rates for online and face-to-face treatment are similar (Clark et al., 2002b; Lustman et al., 1998; Goudsmit et al., 2001 72%; Halmi et al., 2005 78%; Agras et al., 2000 75%)

Research question 4. What are the potential savings of this intervention compared to other interventions?

- online treatment coordinated with face-to-face support is cost effective (Mihalopoulos et al., 2005; Antonuccio, Thomas and Danton, 1997; Chiles, Lambert & Hatch, 1999; Newman, Kenardy, Herman & Taylor, 1997);

In summary the research reveals that a modality which integrates face-to-face and online treatment can be expected to be successful.

Chapter 3 outlines the research methodology employed to address the research questions.