CHAPTER 3 - METHODOLOGY

(i) Introduction

The review of the literature in Chapter 2 provides direction to the analysis of the study, which has given rise to the following research questions namely:

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?

This chapter outlines the methodological considerations in the analysis used to address these research questions and seeks to justify the chosen approach. The next chapter provides the analysis of the results and addresses the research questions.

The present study was undertaken within the writer's normal practice and with referred, day-to-day clients. It was a feasibility study requiring further studies to establish the effectiveness of the proposed combination of online and face-to-face treatment of depression by the same practitioner. Measurements of depression were taken before, during and after treatment and also three months later. Clients participated well because they understood and saw the relevance of the experiment to their own needs. The results of the study are directly applicable to clinical practice and represent a valid example of an integration of treatment and research.

In the study, founded on a constructivist/interpretivist paradigm, quantitative and qualitative methodologies were used to reflect different perspectives. Tools based on those derived from quantitative methodology served to assess the efficaciousness of treatment from an external and statistically demonstrable perspective. Case studies, derived from qualitative interpretivist methodology, revealed a picture of changes in the inner reality of participants as they progressed through their treatment.

The quantitative component of the study lent itself more to experimental than observational research because it relied on the application of an intervention and measurement of before and after states.

The quantitative experiment was based on the comparative change design, which is a quasi-experimental design. The design utilised before- and after-intervention measures to assess change in outcome factors and compared this change between treatment and non-random comparison groups. The independent variable itself was not manipulated. Absence of randomisation made this design vulnerable to alternative explanations because of the possible effect of prior differences between groups. That is, the difference between pre- and post-intervention might have been partly or entirely due to confounding factors rather than the intervention itself. Confounding factors included the underlying motivation to undertake the study and the attraction of the novelty of online treatment. It should be noted that random allocation by itself does not guarantee the validity of estimates of causal variables. (Garson, 2003, Shadish, Cook & Campbell, 2002, Heffner, 2005).

(ii) Participants

(a) Selection methodology criteria

Participants needed to meet the following criteria:

- suffer from symptoms of depression;
- have the capacity to access the Internet in private;

- have no currently active psychosis;
- not be receiving any treatment for their depression;
- be able to devote minimum 2 hours/week to the course;
- be willing to practise course advice and skills daily.

The criteria in sample selection aim to mirror qualitatively the population which will most likely yield results directly related to the proposed treatment. Unless participants suffer from depression there would be little purpose in their participation given that the study is to test a treatment approach. Unless they can access the Internet they would not be able to undertake the online course. This does not imply that they must have a computer exclusively dedicated to their use. In the study one participant undertook the course in the writer's reception office. Any current psychosis is highly likely to interfere with treatment and confound the results. Receiving no other form of treatment assures as far as possible that any improvement in mood has come about because of participation in the intervention, that is confounding is minimised. The devotion of time and willingness to practise are essential to any CBT intervention because of the need to learn and apply certain skills.

Individuals with mild to moderate depression were referred to the writer for treatment by their general practitioners or other psychologists. The writer saw each referred client individually and offered the opportunity to participate in an experimental treatment procedure which consisted of a mix of an online course on CBT skills and face-to-face treatment. Interested persons were advised that the treatment would be of no cost to the participants. The participants would undertake the course on their own and contact the writer by email approximately weekly. If they felt the necessity for face-to-face sessions to address particular difficulties in the course or any other issues interfering with their capacity to pursue their treatment they could freely arrange attendance with the writer.

The election of participants to have a face-to-face session may have a confounding effect on the treatment effectiveness of online methods.

However the effect is hypothesised to be small because the sessions were meant to help individuals overcome obstacles to their online learning rather than replace the online modules with traditional treatment.

(b) Participant characteristics

The level of depression was assessed by the self-reporting BDI and by the clinical interview-based HDRS. Participants were selected on the basis that BDI scores showed depression at the mild to moderate levels namely below the BDI score of 29 and above 13 (Beck, 1996). In total nine participants were chosen.

All participants spoke English fluently. One participant was a Middle-East non-resident awaiting protection visa approval. He was unemployed and supported by his brother. All were at professional/managerial occupational levels. Six participants completed all phases of treatment.

The three participants who left the course completed some modules and attended one or more sessions. Of those who withdrew one stated that her depression had lifted when she married, another that she improved after completing part of the course and the third that he was undertaking the course on his own and applying skills in his day-to-day functioning.

Gender and educational levels for completers are outlined in Table V and for non completers in Table VI:

Table V. Completers - ethnicity, gender, educational level, age

Participant	Ethnicity	Gender	Highest education	Age
Aaron	Anglo-Celt	M	Year 12	47
Bill	Anglo-Celt	M	Tertiary (15)	28
Cathy	Asian	F	Tertiary (15)	26
Dee	Anglo-Celt	F	Year 10	31
Eric	Mid East	M	Year 12	26
Fred	Mid East	M	Tertiary (15)	35
Average	Mode Anglo-Celt	Mode Male	13.16	32.17

Table VI. Non completers - ethnicity, gender, educational levels, age

Participant	Ethnicity	Gender	Highest education	Age
Glenda	Anglo-Celt	F	Tertiary (15)	28
Harry	Anglo-Celt	M	Year 12	55
Ilsa	Anglo-Celt	F	Year 10	35
Average	Mode Anglo-Celt	Mode Female	12.08 (years)	32.67 (years)

An analysis of the information in Tables V and VI revealed that all non-completers were of Anglo-Celtic background (two female and one male) of whom one was tertiary-educated (15 years schooling). Completers represented both genders, ranged in age from 26 to 47 and were from three different ethnic backgrounds. Their educational level varied from lower secondary to tertiary. All participants had depression at the upper half of the moderate level as measured by the BDI, except for Glenda whose depression was at the lowest end of the moderate level.

Table VII shows no statistically significant differences between age, gender, ethnicity and education between completers and non completers.

Table VII. Significance of ethnicity, gender, educational levels, age between completers and non completers

Group	Ethnicity	Gender	Average years education	Average age
Completers 6	Anglo-Celt 3	Male 4	13.16	32.17
Non completers 3	Anglo-Celt 3	Male 1	12.08	32.67
chi squares	chi sq =0.56 ns	chi sq =0.056 ns	*t test* =0.52 ns	*t test* =0.98 ns

(iii) Procedures

(a) Study design

The study design is outlined below and illustrated in Figure 1. An individual session was held for each participant, which began with the testing of the level of depression with the BDI and the HDRS. After the level of depression was confirmed as within the bounds of the study (mild to moderate) an explanation of the treatment program was provided. The participant was informed that he or she would first undertake the online

course, beginning with the first module and then continuing to advance module by module. There were 14 modules. The modules presented the knowledge to be imparted and provided further material for enrichment purposes through links to other sites. Relaxation sites including games, humour and music were also linked in order to reward the participant's efforts with enjoyable activities. Participants were encouraged to visit the sites and enjoy the offerings. At the end of six modules there were exercises requiring the application of the knowledge imparted in the module to practical day-to-day situations in the life of the participant. For example the exercise at the end of the third module required the participant to write examples on the application of the concept of looking at things differently. Seven modules required the completion of the Goldberg depression test which was situated in a linked site, in order to give the participant feedback on the current level of depression and hence level of progress being made. Nine modules provided the participant with a simple mood monitor for additional feedback.

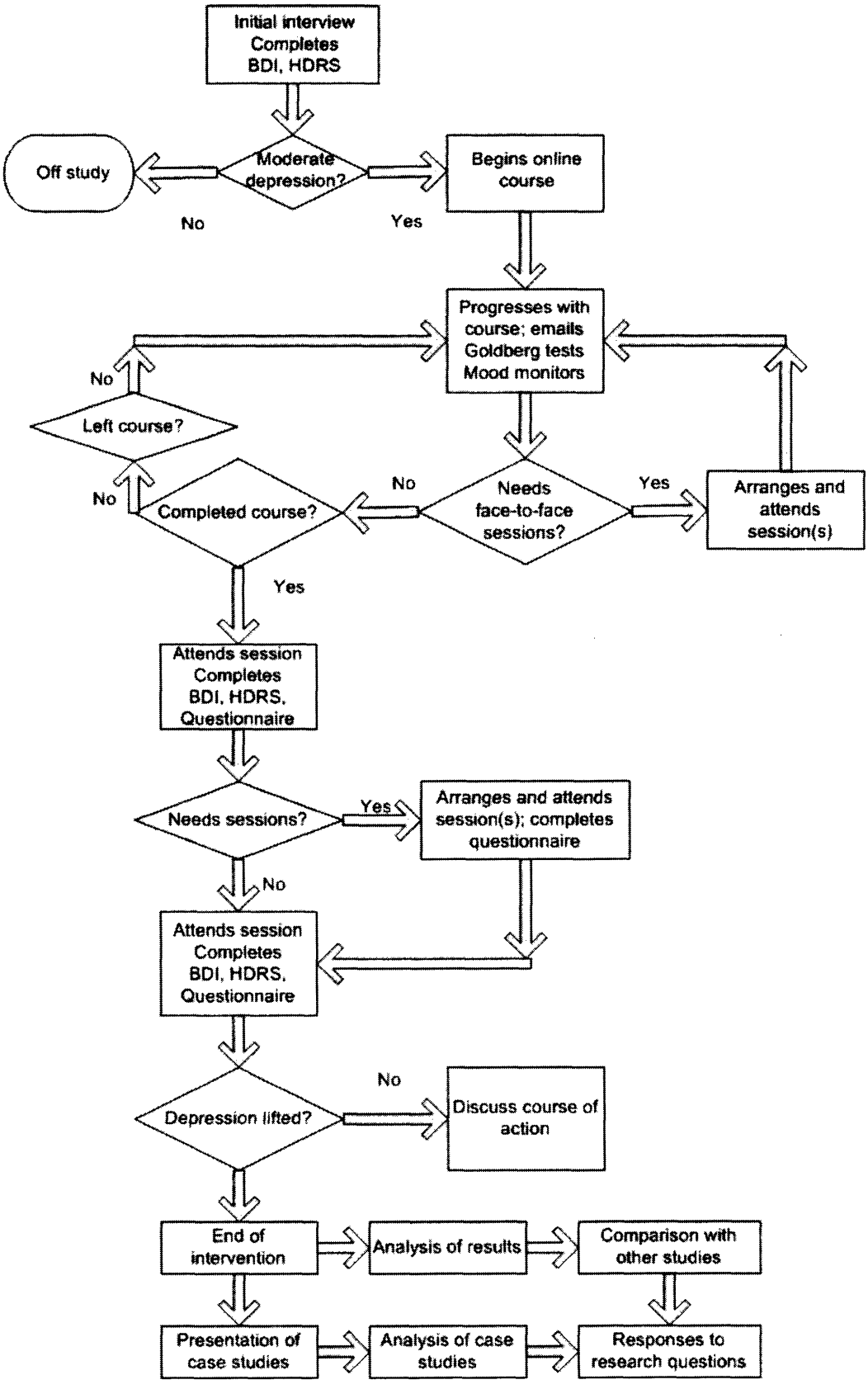
Participants were informed that the course was individualised to the extent that there were no timetable requiring adherence and that the website could be accessed at any time. They would move from module to module at their own pace. They were invited to communicate any difficulties or other issues they wished by email and to arrange for face-to-face sessions to address 'stuck points' or where their depression deteriorated to the extent that their ability to apply the skills learnt became impaired. No limit was imposed on the number of sessions that a participant could have because of the individualised nature of the course itself. Participants were advised that following completion of the online training course they would attend a session to complete the BDI and the HDRS. If the BDI or the HDRS indicated that depression continued at clinical levels participants would be invited to undertake face-to-face sessions. After the sessions and also three months after completion of the sessions they would be tested with the BDI and the HDRS. If depression continued the participant and the writer would discuss alternative actions.

(b) Ethical practice

The intending participants were assured that they were unlikely to experience risks, inconvenience or discomfort. At worst, their depression might not get any better or it may worsen, in which case they were to consult the writer who would then refer them to their respective GPs to arrange for alternative treatment outside the study. If treatment itself raised distress or other issues and participants felt the need for counselling outside the project, they could contact the telephone counselling service or visit the local community health centre. Intending participants were advised of the likely length of the project of between 4 and 6 weeks, that the project was entirely voluntary and they were free to leave at any time. One-on-one treatment would take another 6 to 9 weekly hourly sessions. A recall would take place three months later. The total length of time of the intervention was expected to be about six months. Individual participation was estimated at between 11 and 16 weeks.

Intending participants were assured that they could not be identified through their test results or other information provided. The data would be held in a locked cabinet and in password-protected computer storage. No access would be allowed to anyone other than the writer or his thesis supervisors and five years after the project all data would be destroyed. Intending participants were advised that the project had been approved by the Human Research Ethics Committee of the University of New England (Approval No HE05/192 valid to 26/09/2006)
Ethical issues are embodied in the document required to be signed by intending participants. No concern was expressed by any participant at any stage. A copy is presented in Appendix (i).

Figure 1. Study design


Initial interview
Completes
BDI, HDRS
Moderate depression?
Off study
No
Yes
Begins online course
Progresses with course; emails
Goldberg tests
Mood monitors
No
Left course?
No
Completed course?
No
Needs face-to-face sessions?
Yes
Arranges and attends session(s)
Yes
Attends session
Completes
BDI, HDRS,
Questionnaire
Needs sessions?
Yes
Arranges and attends session(s); completes questionnaire
No
Attends session
Completes
BDI, HDRS,
Questionnaire
Depression lifted?
No
Discuss course of action
End of intervention
Analysis of results
Comparison with other studies
Presentation of case studies
Analysis of case studies
Responses to research questions

(iv) Instruments

Quantitative research in the study utilises psychological tests, rating scales and Likert questionnaires to gather data. A caution applies. The sample in the study is too small to allow for statistically sound comparisons to be made with other studies. Comparisons need to be interpreted with caution and any implications which follow should be seen in this light. That is, the results of the study point to the merit of further research using control groups and larger samples, rather than establish the efficacy of the treatment approach used in the study.

(a) The BDI and the HDRS

The BDI and the HDRS were applied at four stages, namely at the start and the end of the course, at the end of the sessions and at follow up. The writer chose a cut-off of 9 in the BDI because in his experience clients with lower scores rarely sought treatment, stated that they felt depressed or showed symptoms of clinical depression. Seven administrations of the Goldberg Depression Scale and nine completions of a mood monitor averaged over the previous three days at morning noon and evening (10=best mood, 0=lowest) throughout the course provided participants and the writer with feedback on their progress. Participants' views of the course and its usefulness were assessed by Likert Scales on three occasions: on completion of the course, following the sessions and three months later. The questionnaires are presented in Appendix (ii).

The research questions were tested against similar results in five studies of face-to-face CBT treatment of depression using the BDI as a measure. One was a metastudy of twelve depression studies of which nine had been chosen on the basis that they used CBT and provided data which permitted comparison with the present study. All studies were selected because they included a wide variety of CBT approaches enabling the present study to be compared with a range of different treatments and methods. For example some studies used manualised treatment, namely

the procedures to be followed were described in a way which facilitated their application in particular cases not unlike a technical manual.

Data from the depression measures were analysed by means of tests of the difference between means and distributions of scores of the participant group at different stages of the intervention and between the participant group and similar groups in other studies.

The caution stated earlier needs to be reiterated and expanded. Apart from the small sample in the study there are many other variables involved. For example the comparison studies did not indicate the level of experience of the therapists nor how they applied CBT during the treatment process. There was also little information on whether or not participants had prior experience in being treated with CBT. All these issues imply that the present study rather than establish the efficacy of online treatment with face-to-face support, points to the need for further research using control groups and larger size samples.

(b) Likert scale questionnaires

The Likert method was adopted for the participant questionnaires because it is universally used, questions are easy to answer and analysis is speedy. The questionnaires were analysed to identify participant views on the online course – presentation, the usefulness of skills taught and the ability to transfer skills to day-to-day functioning.

Quantitative data were obtained by questionnaires composed of 5-point Likert Scales. Completers responded to questionnaires (Appendix (ii)) during the evaluation of each phase, namely the course, the post-course sessions and the follow up. At the end of the course two different questionnaires were used. The first collected completers' views on the course itself – quality of communication, enrichment material, exercises, evaluation, level of challenge and perceived availability of their psychologist. The second questionnaire concerned the extent to which tasks taught through the course were transferred to the individual's day-

to-day functioning. This questionnaire was repeated at the end of the post-course sessions and the follow-up. The questionnaires were completed face-to-face or over the phone in the case where the client could not attend. Clients were invited to expand on their responses and provide any other information they wished on the intervention.

In the present study emails and different completed tests and questionnaires were considered documents. Tests informed on the extent of the disorder, progress in getting better and post-treatment resilience. Emails indicated progress with the course and also provided the participant with a ready and convenient means to communicate on the course with the writer. Questionnaires gave participants the opportunity to inform the study on the short-term and long-term effectiveness of the application of skills learnt in the course in addressing depression. The interviews at the three different stages (pre-course, post-course and follow up) were open ended and participants were given full scope to comment on the effects of their disorders on day-to-day functioning, the usefulness of areas taught in the course and their overall views and ideas on the course. Triangulation was demonstrated where test scores, questionnaires and interviews consistently provided the same message.

The writer, as the treatment provider, is a participant in the events being studied. He is responsible for the selection of treatments, the assessor of their effectiveness as well as the evaluator of the impact of his own work on his own clients with no independent data analysis. This does affect the validity of the study and it needs to be borne in mind that the study tests the feasibility of a combined face-to-face and online course intervention in the treatment of depression. Any wider application of the approach should be established by larger scale studies appropriately designed with control conditions.

(c) Case Study data sources

The case study method was used to trace the lifting of depression of individual participants as they progressed with the intervention. A single case study design was chosen because it enabled the writer to share however imperfectly the participant's private world as he or she struggled through depression and on to a state of wellbeing. The richness of material provided in the case studies cannot be gained through reflecting on discrete test scores.

The single case studies were used to trace the lifting of depression of individual participants as they progressed with the intervention. These were informed by individual interviews, emails, calls and Likert questionnaires. The initial interview provided information on:

- life history – family, work, future plans;
- history of depression and events that serve to maintain it
- history of any treatment to date;
- attraction to undertake the intervention particularly the online component;
- Internet capabilities – verification that the participant has online access.

The midcourse emails and calls provided information on progress measures, course exercises and any issues relevant to the course. Mid-course sessions informed on 'stuck points' which impeded progress, setbacks to improvements and flagging motivation to pursue with treatment.

The end-course interviews informed on:

- Participant perception of the extent to which depression had been defeated since beginning the course;
- any remaining clinical issues which required addressing;
- the component of the course which proved to be the most helpful;
- changes in behaviour, that resulted from the course, for example the incorporation of thought challenging in daily behaviour.

The post-course sessions addressed clinical issues and generally aimed to free the individual from depression.

The post-three month interviews informed on:

- robustness of the treatment, that is the ability of the individual to maintain a depression-free state in the intervening period;
- any relapses and how they were addressed;
- behaviour changes and their incorporation into the individual's d aily functioning.

(v) Program

(a) The research environment

The research environment consists of the methods of participant - writer communication and the online course.

The email was the common mode of communication for participants on the online course. Participants notified their mood monitor, test scores and exercise results by email to the writer. Emails were used as a general form of communication between the individual participant and the writer. Participants notified difficulties encountered in the course, mood relapses, questions and observations by email. The writer ensured that he responded as quickly as possible and within a few hours. There are many reasons for aiming to ensure a rapid response. They include:

- maximisation of reinforcement to the participant by reducing the time interval between question and response;
- resolution of impediments to progress;
- validation of the individual's concerns;
- the strengthening of a caring environment.

In a face-to-face environment these aspects would be provided virtually instantaneously. In online treatment of the kind in the study they need to be established through emails.

Other modes of communication included face-to-face at the briefing stage of the course during which participants were given user name and password access to the website with the online course (www.consultantpsychologist.com/treatment, username: client, password: module). Further face-to-face communication took place in any treatment sessions provided and in the evaluation sessions at the end of the online course, the sessions and at the follow-up.

(b) The online course

The online course is based on CBT. The mode of presentation of the CBT concepts is hypothesised to differ between practitioners. The mode also differs between a practitioner and any one particular client because no two clients can be expected to have identical issues underlying their respective depressions or learning capacities. The presentation may change over time as the treatment providers reflect over their approach, consider client suggestions and incorporate new material learnt through professional development and other learning activities.

The course consists of a series of modules and is constructed on the basis of the writer's CBT notes which he uses for face-to-face treatment of depressed clients as modified over years of practice. The completion of one course module leads to the beginning of another. Modules consist of webpages to be read. Certain modules end with exercises for submission to the writer. The webpages refer the participant to other sites with enrichment material on the contents of the module, games and humour. The information forwarded by the participants includes mood monitor scores for morning, midday and evening for each day averaged for the last three days and scores attained by them on the Goldberg Depression Scale. There may be a practice effect due to the requirement to complete the Goldberg a number of times, however the participant is

motivated to complete the test realistically given that its main purpose is to provide feedback. In any case the mood monitor provides an independent measure of assessing the current level of depression should the Goldberg score be overly optimistic. Participants access the test on an Internet site (http://mood-monitor.perbang.dk/index.php?aid=35) which is referred to at the end of seven of the modules. The scores give the participant and the writer feedback on any mood changes and the extent of depression symptoms which exist at that time; that is both measures provide independently an estimate of treatment progress and hence reinforcement.

The course modules are:

- an introduction and explanation of procedures – the first Goldberg test result to be emailed to the writer;
- looking at things differently - a discussion on Epictetus;
- practising looking at things differently, exercises on the application of the Epictetus principle (people react to events the way they interpret them), mood monitor scores and Goldberg test results to be completed for submission to the writer;
- formation and management of stress – knowledge test, mood monitor score to be submitted to the writer;
- stress symptoms and their relationship to the survival system;
- continuation of presentation of stress symptoms; their relationship to the survival system; completion of exercise based on personal experience of a recent stressful situation, mood monitor score and Goldberg test result for submission;
- relaxation (I) - breathing relaxation;
- relaxation (II)- PMR (progressive muscle relaxation), other forms of relaxation, diet;
- basic meditation technique, test on experiences in the application of meditation, mood monitor score and Goldberg test result for submission;

- introduction to CBT- Socratic questioning, Aristotelian logic, behavioural exposure, test on the CBT model based on recall of recent experience of depressed mood and associated thoughts and behaviour, mood monitor score for submission;
- CBT key concepts – core beliefs, conditional rules, automatic thoughts, linking thoughts mood and behaviour, exercise on the experience of application of CBT through exposure by returning to a place avoided since becoming depressed, mood monitor test score and Goldberg test result for submission;
- CBT tools (I): finding automatic thoughts, identifying irrational beliefs, discussing two of the rules of Aristotelian logic; exercise similar to the one earlier on application of CBT principles through exposure to a second behavioural experience and mood monitor score for submission;
- CBT tools (II): discussing remaining rules of logic;
- analysing thoughts – common negative thoughts of depressed individuals; exercise on analysing negative depressive thoughts, mood monitor score and Goldberg test result for submission;
- strategy summary.

(c) An illustration of a course module

The third module "Practising looking at things differently" is discussed to illustrate the course. The module itself is in Appendix (iii) and should be referred to for a better understanding of the following discussion. (The full course can be accessed on www.consultantpsychologist.com/treatment username "client" password "module").

The module provides examples and practice on the Epictetus principle, namely "people react to events the way they interpret them and not how they are". The module begins with four everyday examples of the principle. The examples are to emphasise the practicability of the concept and its application to day-to-day functioning of the individual. The client is led to see the link between thought and mood by the examples and is

given ample opportunity to practise the skill of looking at things differently through the use of illusions and by an assignment for submission to the writer. The assignment requires the presentation of four different examples of looking at things differently which reflect changes in mood. The illusions or ambiguous drawings are on two different sites which are hyperlinked to the module. The writer has found through experience that clients react positively to ambiguous drawings and can transfer the application of the skill of looking at things differently to their own day-to-day life. The assignment itself requires the completion of the mood monitor and the submission of Goldberg test results.

Depression is characterised by low concentration and fatigue. These symptoms are addressed by inviting the client immediately after completing the assignment and the mood monitor to:

- Reflect on a waterfall scene. The client is asked to imagine that it is a warm summer's day and that he or she has some spare time. The client takes a trip to the bush, comes to the waterfall and tries to imagine how relaxing it is;
- Listen to two well-known Scott Joplin tunes, Bethena and The Entertainer whilst reflecting on the waterfall scene. Both tunes should have a wide appeal amongst the different age groups. The tunes are hyperlinked to sites with additional tunes which might further attract the client. They provide a pleasant interlude which is itself of therapeutic value;
- Play at a game site. The site was chosen because the games are simple to master and playing them provides pleasure;

On completion of the module the client is encouraged to go for a walk to the park or the shops, talk to a friend on the phone, work on a hobby or get on to some of the tasks that are waiting attention. In this way the cognitive and the somatic components of depression are addressed. The client is then ready to begin the next module.

CHAPTER 4 – FINDINGS

The previous chapter discussed the methodology of the study which involved a mixed methods approach incorporating quantitative surveys and qualitative case studies. This chapter aims to provide answers to the research questions posed in this study, namely:

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?

There are three sections in the chapter. The first section draws on data from quantitative and qualitative study components to address the questions. The second section presents the case studies which provide a descriptive background to the quantitative results, that is, they reveal changes to an individual's functioning as depression lifts. The third section evaluates the individual components of the intervention.

Normality of the BDI, HDRS, mood monitor averages and Goldberg scores was first tested. The W/S test was used. This test estimates the significance of the difference between a frequency distribution based on a particular sample and a normal or Gaussian distribution (Kanji, 2001, p.65). The results reveal that the ratio of standard deviation to range varies from 2.3 to 3.0 and in all cases lies within the upper and the lower boundaries of the 0.025 level of significance. The null hypothesis, that the underlying distribution is normal, is accepted. This result enables the valid use of parametric statistics.

(i) The findings of the present study

Nine participants, six men and three women, were chosen in the present study. The participants underwent an initial interview during which their depression was assessed by the BDI and the HDRS. They were informed that the treatment approach consisted of a mix of an Internet course and face-to-face sessions. The course included periodic assignments and depression test assessments which had to be reported to the writer by email. Face-to-face sessions could be arranged by the participants with the writer on the basis of their needing remedial help or if it was clear that the course was not benefiting them. Following the end of the course face-to-face sessions could also be arranged by participants to practise the application of skills learnt during the online component of the intervention. Assessment sessions were included at the end of the course, the end of face-to-face treatment where this continued after the course, and three months after the end of treatment. The assessments included the BDI and the HDRS as well as Likert scale questionnaires measuring participant satisfaction with the course and treatment as a whole.

Six participants, four men and two women ranging in age from 26 to 47 with a mean of 32.2 years and a standard deviation of 8 years, completed the course. The other three completed part of the treatment and managed to overcome their depression with the aid of principles learnt through the course. Participants took from 26 days to 153 days to complete the course, with an average of 86.5 and a standard deviation of 44.8. They needed from 2 to 10 sessions each, averaging 4.7 with a standard deviation of 3.2. Some of the endpoint assessments were undertaken by phone.

The following table summarises participant performance. The difference between pre and post treatment in the BDI is significant, indicating the success of the intervention in assisting participants to reduce levels of their depression. Further details are provided in subsequent tables.

Table VIII. Summary results of current study

Statistic	Pre-treatment	Post-treatment (course and sessions)	Follow up	Significance
No. participants in study	9	6	6	
BDI Mean, (Std Deviation)	25.8 (10.27)	5.0 (3.2)	4.8 (1.5)	*t-test* pre/post treatment: $p<.01$
% with BDI<9 *	0	83	100	

* considered in the literature as signifying the cut-off for subclinical depression. See the note on the BDI cut-off score in Chapter 3 (xvii).

(ii) Comparison studies

The results from the present study are compared with similar results from face-to-face and online studies in order to demonstrate relative effectiveness. The comparison studies were chosen on the following basis:

- the intervention aimed to treat depression either solely or with other psychopathologies;
- the treatment method was based on CBT;
- the study was reported in English language mainstream journals;
- control groups were used;
- the main measure for the face-to-face comparison studies was the BDI. (at the time of writing insufficient online interventions were found which used the HDRS);
- the study included follow-up;
- for the online studies the material was presented in modules.

The salient features of the comparison studies are summarised in the table following.

Table IX. Key features of chosen studies

Study authors	Description
(i) face-to-face studies	
Cahill et al. (2003)	BDI scores were collected at each session (1) to describe the outcomes of clients who received CBT for depression, and (2) to compare client outcomes for completers and non completers. The study supported the effectiveness of CBT.
Westen & Morrison (2001)	A meta-analysis component of 12 studies on the efficacy of manualized evidence-based (CBT) psychotherapies for depression found that treatments yielded significant short-term effects (on the BDI) which continued at follow-up.
Shapiro et al. (1994)	Depressed clients completed manualized treatment (CBT or IPT). In the study the BDI showed an advantage for CBT though both methods were effective, irrespective of the severity of depression or the duration of treatment and follow up.
Jacobson et al.(1996)	The study set out to test effectiveness of behavioral activation and teaching of skills to modify automatic thoughts (AT) as components of CBT. The study found that these components were as effective in reducing depression as the full CBT treatment both at the termination and the follow up stages.
Jacobson et al.(1991)	The study compared CBT and marital therapy (BMT), and a treatment combining BMT and CT in the alleviation of wives' depression and the enhancement of marital satisfaction. CBT was more effective than BMT for depression in maritally non-distressed couples, whereas for maritally distressed couples the two treatments were equally effective.
(ii) online studies	
Andersson et al. (2004)	Participants were assessed for depression on the website and independently randomised to the treatment or control conditions. The material was presented in modules which ended with a questionnaire. Responses were automatically sent to a therapist who gave feedback by email. There was a significant reduction in mean scores of the treatment group but not the control group. Statistically significant improvements were found between pre-treatment and follow-up.
Christensen et al. (2004)	This was a randomised control study evaluating the efficacy of two online interventions (BluePages, MoodGYM) for depressed individuals. Participants were recruited from survey responders assessed as clinically depressed. They were allocated randomly to BluePages, MoodGYM and a control group. The experimental groups showed improvements over the control group.
Clark et al. (2002)	The intervention consisted of 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 experimental group was gender- and age-matched with a similar sized non-depressed group.
Marks et al. (2003)	The study evaluated a program of computer-aided self-help for clients in a primary care clinic. Patients undertook an online CBT program (Cope) with interactive

	voice response assistance. There were significant improvements for experimental group participants.
Wright et al. (2005)	This was a waitlist control group study which compared the efficacy of computer-assisted CBT with face-to-face CBT. The study found no significant differences on these two measures between either modes of treatment both of which were superior to the control group

In summary the key features illustrate the effectiveness of CBT in face-to-face or self-study formats in reducing depression. An examination of the research questions follows.

(iii) 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?

Relative effectiveness was assessed by comparing the present study and the comparison studies in relation to (i) rates of treatment success, (ii) times taken to complete the intervention and (iii) numbers of sessions provided through the intervention.

The following table presents data for several measures for pre-treatment, post-treatment and follow-up for the present study and the comparison studies and enables comparisons to be made. All of the comparison studies have been discussed in Chapter 2.

In the table the two Jacobson studies and the Cahill study use essentially CBT as the methodology in face-to-face treatment. The Westen and Morrison (2001) and the Shapiro et al. (1994) studies utilise manualised treatments in a face-to-face presentation mode. In manualised treatments the provider follows prescribed directions in delivering therapy, a similar process as teachers' lesson guides. Manualised treatment aims to standardise presentations in order to improve quality particularly for less experienced providers. The present study is based on an Internet-delivered course aided by face-to-face sessions where required.

Table X. Pre-treatment, post-treatment and follow-up

Study	Cahill et al. (2003)	Westen & Morrison (2001)	Shapiro et al. (1994)	Jacobson et al.(1996)	Jacobson et al.(1991)	Present study
No. began treatment	58	336 (9 CBT studies)	150	56	8	9
Pre-treat BDI mean (SD) =	28.38, (10.27)		24.5 (6.34)	29.8 (6.3)	29.3 (7.6)	25.8 (2.5)
Average no of sessions per participant	11.6		8	20	20	3.83
No completing	35	237 (est)	117	50	7	6
% completing	60	71	78	89	87	67
Post-treat BDI mean (SD) =	10.30 (10.22)	10.14 (7.15)	9.48 (7.72)	10.1 (9.6)	7.4 (6.7)	5.0 (3.2)
Post-treat % with BDI < 9	48.9	55 est	44.0	45.0 est	29.6 est	83
Post-treat Effect size	1.76 est	2.2 est	1.77 est	2.48 est	3.27 est	7.57
Follow-up no of months			3	6		3
Follow-up n=			115	47		6
Follow-up BDI mean =(SD)		7.8 (8.2) (all depression studies)	10.15 (8.69)	10.3 (8.6)		4.8 (1.5)
Follow-up % with BDI < 9		50.1 est	46	42 est		100
Follow-up term		18 months – 2 years	3 months	6 months		3 months
Follow-up Effect size			0.49	2.65 est		438
t-test means pre/ post-treat			t=17.04 p<.01	t=12.33 p<.01	t=5.93 p<.01	t=13.54 p<.01
t-test means post/ follow-up			t = 0.60 p>.05 ns	t = 0.11 p>.05 ns		t = 0.12 p>.05 ns

Notes

1. Entries with "est" are estimated from other data provided in the study.
2. Numbers with BDI <9 are estimated by assessing areas under the normal curve using the means and standard deviations provided.
3. The Shapiro et al. (1994) study does not provide separate BDI data for CBT and interpersonal therapy. Combined data are presented in the table because that study finds no significant differences between the two methods.

4. Blank cells indicate that no comparable data was given in the study.

The table presents pre-, post- and follow-up measures for the present study and the comparison a range of comparable studies which enable comparison of outcomes. The comparison is made difficult because a sufficient number of studies which use the same measures and parameters were not found. Reliance had to be made on studies using some of the same measures to those in the present study. The table indicates that the mean BDI score of participants at pre-test varies within a band of less than 6 points clustered around the upper cut-off of the moderate category of 20-28 (Beck, 1991). On completion of treatment the mean moves to below the mild lower cut-off of 14. T-tests between pre-treatment and post-treatment means for the three comparison studies and the present study find the differences significant indicating the effectiveness of the treatments (17.04, 12.33, 5.93, 13.54, $p<.01$).

The *t*-tests of the difference in proportions of completers with BDI<9 at post-treatment in the present study and in the comparison studies combined in a group (by multiplying for each comparative study the proportion of those with BDI<9 by the number of participants, totalling these numbers and finding the percentage of the totals with BDI<9 against the overall total number of participants) reveal that the difference is statistically significant ($t=6.89$, $p<.01$). This leads to the conclusion that the present study has a significantly higher proportion of completers with subclinical depression at post-treatment than for the combined comparison studies.

(a) Time taken to complete treatment

Assessing effectiveness requires taking into consideration the length of time to complete the intervention in order to minimise any contamination effects that may arise. For example an individual might have had an unduly positive or negative life event occur, which independently affects mood such as a marriage or death in the family. In the present study one

of the non completers (Ilsa) married just after she began on the course. On return from her honeymoon she did not continue with the course because she felt that marriage had markedly improved her life and resolved her depression. The following compares times taken to complete the interventions in this study and in the comparison studies.

Table XI. Average number of days per participant to complete face-to-face interventions

Shapiro et al. (1994)	56
Jacobson et al. (1996)	140
Jacobson et al. (1991)	140
Mean (SD)	112 (48)
Present study	88

The mean number of days for completion of the comparison studies is 112 with a standard deviation of 48. The mean of 80 days for the present study is similar. It lies within the range of the mean plus one standard deviation.

The time taken to complete the intervention in comparison with other online treatment studies is one indicator of its relative standing amongst peers. Data for the present study reveals that the course takes no longer to complete than most of the other Internet interventions. In the present study the mean length of time for completion of the course and sessions is 88 days. The following table indicates the days taken on average to complete treatment in the Internet studies including the present study.

Table XII. Mean number of days to complete Internet interventions

Andersson et al. (2005)	70
Christensen et al. (2004)	42
Clark et al. (2002b)	224
Marks et al. (2003)	65
Mean, SD of studies	100, 83
Present study (course plus sessions)	88

The table indicates that the mean number of days for completion of the four comparison Internet studies is 100 with a standard deviation of 83. The present study took 88 days to complete. This difference is not statistically significant. It lies within the range of the mean and one standard deviation.

(b) Support

Support was made available to participants through sessions, email and on very few occasions by phone, principally to enquire as to lack of progress. The number of sessions delivered is a key factor in assessing effectiveness. An intervention that achieves subclinical BDI scores in 20 sessions is defined to be less effective than one achieving similar results in fewer sessions.

The following table outlines the support provided to participants. The support consisted of responses to emailed exercises, and emails and calls generated or responded to by participants and the writer as the treatment professional on topics such as comments amplifying mood at the time. The time estimated for each task is included in order to highlight the support provided in relative terms. The table indicates that close to an hour was devoted on the average for every participant.

Table XIII Support: number of tasks and estimated time devoted to emails and calls to participants

Support	Completers		Non completers		Total	
	Tasks	Time (est)	Tasks	Time (est)	Total tasks	Total time (% total time) (est)
Emailed exercises and mood monitor scores (9 per participant) and Goldberg scores attended to by the writer (7 per participant)	54	6.30 hrs (7 mins each)	6	0.50 hrs	60	7.00 hrs (74.3%)
Emails by participant or responded to by the writer	8	0.80 hrs (6 mins each)	7	0.70 hrs	15	1.5 hrs (15.9%)
Calls by participant or responded to by the writer	6	0.50 hrs (5 mins each)	5	0.33 hrs	11	0.91 hrs (9.7%)
Total	68	7.60 hrs	18	1.82 hrs	86	9.42 hrs

The table illustrates that almost three quarters of support time was estimated to have been devoted to email processing in relation to the online course requirements. Other email support took up 16% and phone support took up less than 10%.

The implications of support appear to be:

- Requirements by the treatment professional to respond to emails or generate emails, and for any calls that may have to be made or responded to account for about an hour for each participant. Three quarters of this time is devoted to assessing and responding to exercises in the online course. Support devoted to calls totals less than one hour for all participants and is hence small;
- the number of sessions indicated in the table include one hour per participant for support. If this is considered the number of face-to-face sessions reduces to below 3.

The number of sessions delivered is a key factor in assessing effectiveness. An intervention that achieves subclinical BDI scores in 20 sessions is defined to be less effective than one achieving similar results in fewer sessions.

A schedule of weekly sessions represents the usual practice and is exemplified in studies by Cottone et al. (2001) and Gaynor (2003). Whitfield (2003) observed that traditionally CBT sessions were provided weekly, though there was little evidence to support this frequency, and hypothesised that access to treatment may be improved by decreasing the number of sessions through the use of self-help.

Table XIV presents the number of sessions delivered in the comparison and the present studies. The hours in the present study were increased by one for each participant (total 9) to account for the time devoted to the

tasks such as email support as explained earlier. In the Jacobson studies the face-to-face sessions were a week apart.

Table XIV. Sessions provided to all participants and completers in face-to-face studies combined and the present study

	Comparison studies	Present study
No of participants	272	9
No of sessions	3152.8	34.5
Mean sessions per participant	11.59	3.83
No of completers	209	6
Mean sessions per completer	15.09	5.75

Fisher exact tests indicate the differences in the ratios of sessions to completers and in the ratio of sessions to participants for the combined studies and the present study are significant ($p<.01$ for both tests). The table above demonstrates that the average number of sessions in the present study per participant is 62% less than for the face-to-face studies.

(c) Conclusion

The data presented in the tables in this research question indicate that in relation to the comparison studies:

i. the participants in the present study began with similar levels of depression;
ii. the present study at post-treatment achieves a significantly lower mean BDI score;
iii. the present study at post-treatment achieves a significantly higher proportion of completers with BDI<9;
iv. the present study does not differ statistically significantly in the mean number of days for completion;
v. the differences in the ratios of sessions to completers and in the ratio of sessions to participants for the combined studies and the present study are significant;
vi. the time devoted to email support appears to be one hour for each participant.

In the light of these findings the first research question would seem to find some support from the results of this study. The intervention in the study appears to be as effective as face-to-face counselling in treating clients with mild to moderate depression in CBT skills.

(ii) Research question 2

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

It is first necessary to gain an appreciation of progress through the intervention. This is provided through different vantage points and is amplified by referring to the case studies.

(a) Progress measured by the BDI and the HDRS

One view is provided in the following table, which shows means and standard deviations for the BDI and the HDRS at the pre-treatment, post-course, post-sessions and follow-up stages.

Table XV. BDI and HDRS means and standard deviations at each intervention phase

Phase		BDI Mean	SD	HDRS Mean	SD
Pre-treatment –	intend to treat (n=9)	25.78	2.49	26.00	5.39
	completers (n=6)	26.50	1.50	25.50	3.00
Post-course (completers)		4.7	3.1	4.3	1.6
Post-sessions (completers)		5.0	3.2	4.0	0.8
Follow-up (completers)		4.8	1.5	4.2	1.5

The table reveals that the pre-treatment means for completers and non-completers lie in the upper half of the BDI moderately depressed category (20-28) (Beck et al. 1996) and similarly for the HDRS (14-30) (Hamilton 1960, Bagby et al. 2004). The measures indicate that at pre-treatment completers were relatively more homogeneous in relation to their BDI scores compared with all participants. The standard deviation widens for the BDI in the post course and post sessions phases of the intervention as the scores move away from congregating at the high end of the

moderate category and increasingly spread within a wider range of the non-depressed category. At follow up the range becomes narrower as the mean is at its lowest value.

Another view of progress through the intervention seen in terms of the BDI and the HDRS is provided in the following table. This table lists t-tests for BDI and HDRS means of completer data at different phases and indicates the significance in changes in mood as participants advance from pre-treatment to follow-up.

Table XVI. *t*-tests for BDI and HDRS means of completer data at different phases

	Comparisons	BDI	HDRS
1	Pre-treatment – post-Internet course	t=14.85 p<.01	t=13.15 p<.01
2	Post-course – post-individual sessions	t=-0.54 ns	t=-1.00 ns
3	Post-individual sessions – follow-up	t=0.12 ns	t=1.35 ns
4	Pre-treatment - follow-up	t=65.0 p<.01	t=17.35 p<.01

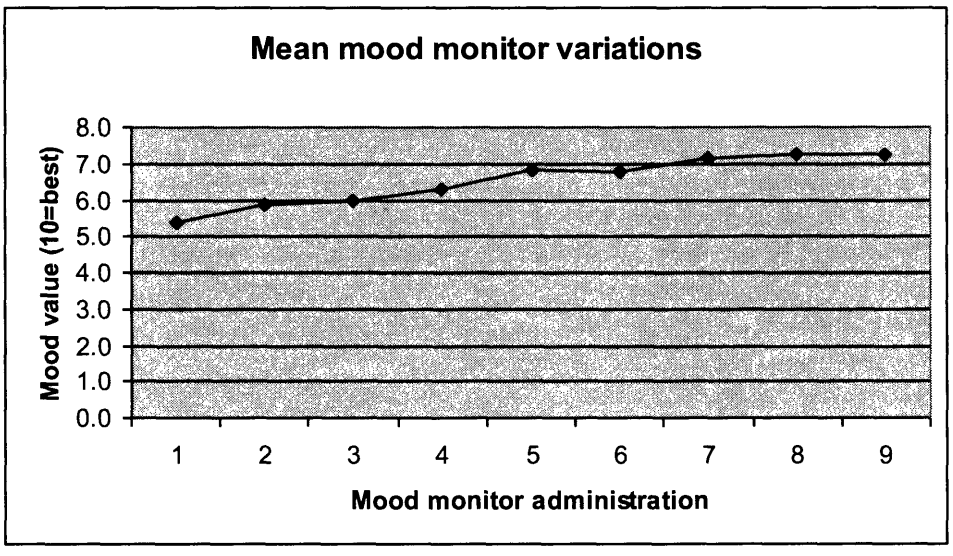
The results indicate a significant reduction in means on both BDI and HDRS before treatment and after the online course, and before treatment and three months after completion. The implication is that the intervention can be considered to be successful in assisting participants to reduce their depression significantly following completion of the course and to maintain the gains that have been made three months after completion of the sessions. No significant differences emerge in either test administered between the end of the course and the follow-up. The writer hypothesises that the major reason is related to the fact that four of the six completers required no sessions after completing the course. The Internet course worked fully for them. That is their treatment needs were met fully through their efforts on the course. Of these four, one came to the session to complete the tests and the questionnaire and three completed the same tasks over the phone. The other two attended mainly to seek confirmation of their ways of applying skills to address current life issues potentially serious enough to cause a relapse, as well

as complete tests and questionnaires. The absence of significance between means of the tests administered at post sessions and the follow-up is hypothesised to reflect the absence of substantial room for improvement and also the robustness of the intervention beyond the delivery of treatment. The third and fourth participants (Cathy and Dee) commented that even though they did not need to have any sessions during the course their availability assured them of help in mastering concepts that could not be grasped solely online.

(b) Progress measured by the mood monitor and the Goldberg tests

The BDI and the HDRS were applied at the end of defined stages of the intervention. The mood monitor and the Goldberg tests were completed several times by the participants as they progressed through the course. Scores on these two measures reflect the path of progress through the course. Figure 2 presents a plot of mean mood monitor values for the six completers at the nine different administrations throughout the course.

Figure 2. Graph of mean mood monitor scores over nine administrations

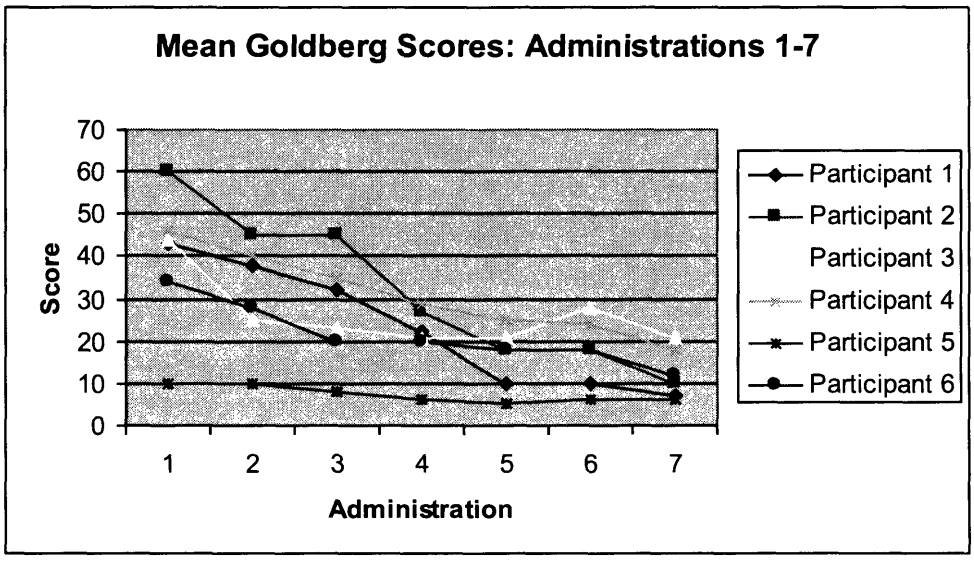


The graph shows a steady improvement in mood as participants advance through the course. A t-test conducted on the means of the first administration and the ninth administration indicated a significant difference (t=-3.04, p<.01). The flattening between the fifth and the sixth

administrations is caused by two participants receiving adverse personal news. However, both soon resumed their trend towards improvement. The reversal for these two participants is highlighted in Figure 2. They are depicted by a triangle and a star respectively (Participants 3 and 5). The reversal of improvement demonstrates the influence of adverse life events on depression while the resumption signifies that the individual has addressed the setback and moved on.

Figure 3 depicts Goldberg scores for individual participants over the course. A Goldberg score of less than 25 signifies no clinical depression. The graph shows all participant scores at the seventh (last) administration are below the cut off.

Figure 3. Goldberg scores for individual participants over the course.



Note: participant 5 was at mild level when he began the course.

Figure 3 shows that reductions to below the cut off of 25 were achieved by participants 2 (5th Goldberg administration), 3 (2nd Goldberg with a temporary relapse at the 6th) and 6 (3rd Goldberg). These occurred in the first four weeks. The results are consistent with research by Illardi and Craighead (1994) which proposes that about two thirds of change in CBT for adult depression occurs within the first four weeks. The results also appear to be consistent with the distribution of the learning curve, where

most of the learning occurs early and is followed by a plateau denoting consolidation (for example Ritter & Schooler, 2002).

The following table draws data from the case studies to illustrate significant changes in participant progress shown in Figure 2:

Table XVII. At 4 weeks into the intervention: Goldberg Scores, reporting periods completed, key events in participant outlook

Participant No	Goldberg depression level at 4 weeks	Reporting period completed (10=last)	Key events in first 4 weeks on course
1 - Aaron	Mild	2	Overcame procrastination; applied concept of looking at things differently
2 - Bill	Subclinical	9	Completed course three days later
3 - Cathy	Subclinical	9	Close to completing course
4 - Dee	Mild	5	Grasped and applied concept of looking at things differently
5 - Eric	Subclinical *	10	Grasped and applied thought challenging at home and work in many different situations
6 - Fred	Subclinical	9	Redefined his situation as less threatening

* four weeks after delayed course commencement. Depression dropped from mild to subclinical during the first four week period.

It appears that participants who advance more quickly through the course show a higher rate of improvement. One explanation might be that they are motivated enough to drive themselves to get well as quickly as possible. Alternatively the more effort they put into the intervention the quicker they achieve freedom from depression because the key behavioural change skills are presented in the first few sessions. Participant no 2 (Bill) is an example. He completed the module on 'looking at things differently' (the Epictetus principle) in the same day as his initial interview and began applying the concept to his day-to-day functioning. The table following, which shows the number of days taken by each participant to complete the course, indicates that the four-week mark tends to occur in the second half of course duration, with the

exception of the first participant. The table seems to support the idea that early occurrence of change probably acts as one motivator for the participants to persevere with the course.

Table XVIII. Days taken to complete the Internet course

Participant	No of days
1	125
2	31
3	44
4	55
5*	54
6	36
Mean (SD) all	57.5 (34.4)
Mean (SD) (without outlier)	44.0 (10.6)

Note: Participant 5 married just after being tested and began the course two months later. That is he devoted 54 of the 114 days since enrolment to the course. His symptoms had largely abated by his return but he wanted to do the course. He felt that as the novelty and excitement of the marriage wore off and his mother-in-law increased her dominance over the couple, depression might return and he would need to have the skills taught by the course to address the condition if it arose. (This reminds of the view by Seligman (2006) that we should aim to maintain wellness rather than solely cure disease).

If the outlier value is removed from consideration the mean length of time taken by the five participants is 44 or about seven weeks and all completed the course in less than two months.

(c) Follow-up assessments

In Table IX two comparison studies and the present study include follow-up data. T-tests on the means of post-treatment and follow-up BDI scores for each of the studies reveal that the difference is not significant. Any gains made as a result of treatment have not changed by with the passage of time; they have been maintained at the follow-up stage in all

studies. T-tests of the BDI means of the present study and the two comparison studies reveal that the present study has a significantly lower BDI score at follow-up (t=3.05 p<.05 for Shapiro et al. (2004); t=3.93 p<.01 for Jacobson et al.1996)). Any interpretation should be tempered because one of the comparison studies has a six-month term follow-up and the other two including the present study have a three-month term.

Testing the difference with the t-test in proportions of completers with BDI<9 in the present study and in the comparison studies combined in a group (by reworking data in Table IX) reveals that the difference is statistically significant at the follow-up stage (t=2.68, p<.05). This leads to the conclusion that the present study has a significantly higher proportion of completers with BDI<9 at follow-up than the combined comparison studies. As the case studies reveal, all completers and non-completers fared well in their lives after completing the intervention. Their depression lifted as they resolved key challenges in their lives such as family problems, life issues and finding satisfying work.

(d) Conclusion

The question would seem to find some support from the results of this study. Treatment gains, whether measured by mean differences or by proportions of completers with subclinical symptoms, persisted for at least 3 months after completion of treatment. It needs to be stated clearly that more research is required to establish the persistence of gains.

(iii) Research question 3

Is this intervention more likely to retain clients through to completion compared to other interventions?

(a) Face-to-face depression intervention studies

Table VIII reveals 67% (6) of participants at the start of the program completed all modules of the course and the face-to-face treatment. The 33% (3) non-completers did at least one module of the course. One of

the two female non-completers improved to the extent that she felt that she did not need to go on to complete the treatment. The other female non-completer married just after completing the first course module and felt that her life had changed for the better. The male non-completer considered that a combination of contracting work he enjoyed and applying thought challenging skills learnt in the course would provide him with the means to manage his depression.

Comparisons in completion rates with other depression treatment studies can only be approximated because every study is unique. Treatment, provider and participant situation and experiences all vary. An examination of completion rates of the comparison studies attempts to place this study in context, as follows.

Table IX outlines the numbers of participants and completers for the comparison (face-to-face) and the present studies. A Fisher Exact test finds no significant differences between the ratios of completers to participants in the comparison and the present studies ($p>.05$). Any conclusion can only be tentative because of the small sample. Within this limitation it may be tentatively concluded that the completion rate for the intervention in the present study is comparable to the completion rate for face-to-face treatment. The results of the present study do not support the proposition that the intervention is more likely to retain clients through to completion compared to other interventions

(b) Internet or computer-assisted depression intervention studies

The results of the present study are compared with similar results from other studies utilising online or computer-assisted treatment. The studies are those analysed in Chapter 2 section (v). The following able presents completion rates for the comparison studies and the present study.

Table XIX. Comparison of completion rates for Internet- or computer-based CBT depression treatment studies including the present study

Study	Mean length of treatment (weeks)	Intenders (Completers)	Completion rate
Andersson et al. (2004)	10	57 (36)	0.63
Christensen et al. (2004)	6	525 (414)	0.79
Clark et al. (2002b)	32	297 (220)	0.74
Marks et al. (2003) (Cope program)	9.2	55 (39)	0.71 *
Wright et al. (2005)	8	15 (12)	0.75
Total above studies		946 (721)	0.76
Present study	8.2	6	0.67

* total completion rate for all four programs in the Marks et al. (2003) study

The table indicates that completion rates lie within a narrow band for all studies. A Fisher Exact Test reveals that the difference between the proportions of completers in the comparison study and the present studies is not significant ($p>.05$). The present study is not different from the other IT-based studies in terms of completion rates noting that it differs in that the Internet delivery is integrated with face-to-face delivery.

A comparison with the Internet-based treatment studies in Table XIX reveals that the present study has a high completion rate and the highest rate for at least part-completion. The completion rate of the other Internet-based studies combined (rate=0.71, n=683) was compared with the completion rate in the present study (rate=.67, n= 6) by using the normal approximation of the hypothesis test of the population proportion (Wessa, 2006). The result reveals that the difference in completion rates is not significant. That is the proportions of completers in the present study and in the comparison Internet studies with the most completers are similar.

(c) Conclusion

Research question 3 would seem to find some support from the results of this study. The proportion of completers in the intervention is statistically similar to the proportion of completers in face-to-face studies and other online studies. However, the small number of participants in the present study make this finding extremely tenuous.

(iv) Research question 4

What are the potential savings of this intervention compared to other interventions?

There are four face-to-face comparison studies that include information on the number of sessions provided to participants. The table below outlines details of the number of sessions in the comparison studies and the present study.

Table XX. Sessions provided to all participants and completers in face-to-face studies combined and the present study

	Comparison studies *	Present study *
No of participants	272	9
No of sessions	3152.8	34.5
Mean sessions per participant	11.59	3.83
No of completers	209	6
Mean sessions per completer	15.09	5.75

* studies used: Shapiro et al. (1994), Cahill et al. (2003), Jacobson et al. (1996) and Jacobson et al. (1991).

Fisher exact tests for the differences in the ratios of sessions to completers and to participants for the combined studies and the present study are significant ($p<.01$ for both tests). The raw data indicates that the mean number of hours in the present study per participant (3.83) is 62% less than for the face-to-face studies.

The case studies reveal reductions in indirect treatment costs. By undertaking the intervention at home participants do not have to take time off work to attend the provider and also save travel and parking costs.

(a) Conclusion

Research Question 4 would seem to find some support from the results of this study. The use of the intervention suggests that treatment costs may be reduced in the order o 62%.

(v) Note on interrelationships of different measures

The study utilises four different measures of depression. Two of these, the BDI and the HDRS, are applied in face-to-face sessions at defined end points during the intervention namely pre-treatment, post-course, post-sessions and follow-up. The mood monitor and the Goldberg tests are completed by the participants at the end of particular course modules. The question arises as to the homogeneity of measurements and the causes underlying any apparent discrepancies in the measurement of the same phenomenon, namely the participants' level of depression.

The interrelationships between the different measures employed in the intervention to indicate levels of depression are highlighted in the table following, which presents product-moment correlation coefficients for the BDI with the other three measures at the different phases of the study.

Table XXI. Product moment correlation coefficients for BDI and other measures at each study phase

Phase		Value	P
Pre-treatment BDI - HDRS	Intend-to-treat Completers	0.78 0.94	<.01 <.01
Pre-treatment BDI – Goldberg 1st administration		0.89	<.01
Pre-treatment BDI – Goldberg 2nd administration		0.67	ns (.07)
Pre-treatment BDI – Goldberg 5th administration		0.53	ns
Pre-treatment BDI – mood monitor 1st administration		-0.46	ns
Post-course BDI – Goldberg 7th administration (final)		0.55	ns
Post-course BDI - mood monitor 9th administration		-0.04	ns
Post-course BDI - HDRS		0.77	<.05
Post-sessions BDI - HDRS		0.42	ns
Follow-up BDI-HDRS		0.44	ns

In the table the HDRS and the BDI provide similar results at pre-treatment and post-course. At the post-sessions and the follow-up stages the distributions are no longer similar. The reasons might include that the tests measure different aspects of day-to-day mood fluctuations for individuals no longer clinically depressed, or that individuals might exhibit too few symptoms to provide a valid measure of any remaining depression on either or both scales.

The smoothness of progress through the intervention is illustrated in the table following which lists Goldberg – product moment correlations of progressive administrations.

Table XXII. Goldberg – product moment correlations of progressive administrations

Administration	r=	*p*
1st and 2nd	0.92	<.01
2nd and 3rd	0.97	<.01
3rd and 4th	0.90	<.01
4th and 5th	0.81	<.05
5th and 6th	0.94	<.01
6th and 7th	0.96	<.01

The first administration of Goldberg, undertaken by participants at the start of the course, provides scores with a distribution significantly close to the pre-treatment BDI indicating that for this sample the two tests are measuring statistically similar entities at this stage. As participants improve in mood the relationship between Goldberg scores and pre-treatment BDI scores weakens. This is to be expected because as participants progress with treatment their pre-treatment scores are no longer representative of their state of depression. The correlation between the second Goldberg administration and the BDI is just short of significance. Subsequent correlations move progressively further away from significance.

The table shows that each administration is significantly correlated with the one following. This indicates that progress throughout the course averaged over all participants has been smooth, that is, without significant discontinuities or statistically significant 'leaps'.

The compatibilities between mood monitor and Goldberg scores are highlighted by the results of a Kolmogorov-Smirnov two-sample test. The test produces a coefficient of 0.20 that is the difference in the distributions of the two tests is not significant. The statistical similarity of the distributions indicates the possibility of redundancy of one of the measures and also reveals that mood monitoring is a robust measure notwithstanding that it is subjectively derived. Individual correlations between Goldberg and mood monitor scores at similar phases through the course reveal that the two measures are not related including at the final administration. Both measures serve psychologically important functions. Completing the mood monitor requires the participant to focus on day-to-day fluctuations and address their cause. Goldberg test scores provide feedback on overall progress at certain stages throughout the course and act as reinforcement of effort. Higher scores in subsequent administrations of the Goldberg may underlie insufficient effort, the effect on mood of a recent disruptive event and the possibility of saturation, namely that a limit has been reached of possible gains through CBT at that time.

(vi) Case studies

The individual case studies outline a description of participant backgrounds and progress through the intervention. The description is based on information provided through face-to-face treatment sessions, emails and questionnaires completed by participants at the end of the phases of the intervention namely the course, face-to-face sessions and the three-month follow-up. The names used are aliases.

Participants' attractions to the intervention, relapses, significant components in the intervention and resultant behaviour are summarised in Table XXIII.

(vii) Completers

Below is an outline of key points in each case. A fuller description is in Appendix IV.

(a) Aaron

Aaron was first seen on 9 September 05. A male Caucasian in his 40s, he worked as a youth counsellor. He has had depression intermittently since an unpleasant childhood. He saw his life at a standstill since his thirties. Aaron had been on antidepressants for several years.

His score on the BDI (Beck, Steer, & Brown, 1996) was 27, just below the 'severe' cut-off. The HDRS (Hamilton, 1960) score of 26 indicated a moderately severe level. His first Goldberg score was 43, denoting moderately severe depression, and the mood monitor showed an average of 5.7 (0=bad, 10=good) with little variation over the three days and the three daily occasions. Two relapses were experienced resulting in the first two reporting periods taking 48 days to complete compared with 67 days for the remaining six periods.

In a face-to-face session Aaron practised the Epictetus principle to resolve 'road blocks'. Two further sessions helped him consolidate his knowledge before he submitted the fifth module. He notified his Goldberg score of 22, denoting mild to moderate depression, down from 38 two months earlier.

In his session at the end of the course Aaron revealed that he had begun to achieve a progressively deeper understanding into the mechanisms of addressing his depression from about the sixth reporting period onwards. During this period he learnt negative thought challenging using

Aristotelian logic and Socratic questioning. He gained expertise in applying the Epictetus principle. He considered his key tools were negative thought challenging and looking at things differently. Goldberg scores reduced to 7 at the end of the course.

Testing at the end of the course showed a BDI score of 0 and the Hamilton score of 3, that is, no clinical depression. At the three-month follow-up the BDI and Hamilton scores of 6 and 5 respectively indicated no clinical depression as for the previous two occasions. Aaron 'it's been a long time since I had no depression. It's a great way to treat'.

Key factors of participant experience

History: long-term depression, ineffectiveness of antidepressants

Attractions to online study: in charge of own treatment, face-to-face sessions, blend with life

Relapse: yes and recovered

Significant component: Epictetus principle (looking at things in different ways), negative thought challenging

Behaviour change: lifted depression and began University course

(b) Bill

The second participant, Bill, a graduate executive shift worker in the air transport industry, was first seen on 9 October 05. He was depressed and anxious. He had been seeing his GP for depression and had been taking antidepressants. His capacity to resolve the problems amassed in his personal life had not improved. He felt that his depression had led to deterioration in his work performance, which might cause a disaster. His wife of Asian background made little effort to acculturate and was depressed. The couple's small boy was about the only joy for him. Bill saw the resolution of his family problems as key to his wellbeing and to improving work performance. His aim in treatment was to clear his mind to reach a decision about his future in his family. Thoughts of breaking up were clouded with intense guilt feelings of abandoning his child.

Bill was attracted to the concept of the Internet training course because he could progress through the modules at home between shifts. Live sessions attracted him because he could discuss his difficulties with a professional with whom he had established a relationship through the Internet course. He was an experienced computer and Internet user.

Bill's initial BDI score was 28, at the cut-off between moderate and severe depression (Beck, Steer, & Brown, 1996). The Hamilton test score of 29 indicated moderate severe depression (Hamilton, 1960). Bill's first Goldberg and mood monitor scores were 60 (severe depression) and 5.9.

Bill took 31 days to complete the course and he attended six sessions. In his second face-to-face session he presented in a better mood compared when first seen. He found that he had little difficulty in understanding the content of the modules and especially in putting the Epictetus concept (looking at things differently) to work in his day-to-day life. He used the first face-to-face session to help him clarify options about his marriage. By the end of the session Bill had prepared a list of what he saw as issues in the marriage which he and his wife needed to resolve.

Changes in Bill's Goldberg scores mirrored his perception of improvement. In the first eight days his score fell from 60 to 45, representing a category change from severe to moderate severe. It was maintained at 45 during the next seven days. A further three days later the score reduced to 27, at the low end of the moderate severe category.

Bill's end course assessment showed a score of 4 on the BDI and 2 on the Hamilton (score 2). Depression symptoms were few and at a subclinical level. The three-month follow up scores were 5 for the BDI score and 4 for the Hamilton. No depression was noted.

Key factors of participant experience

History: depression due to continuing marital problems, ineffectiveness of antidepressants

Attractions to online study: in charge of own treatment, face-to-face sessions, treatment blends with life
Relapse: none
Significant component: Epictetus (looking at things in different ways)
Behaviour change: problem-solved marital issues, work performance improved.

(c) Cathy

Cathy was an Asian woman from a well-to-do family in her mid 20s. She was a graduate undertaking a master's research program. Cathy became lonely in Sydney. A few months into her studies she became close with a student from another Asian country and she fell pregnant. She had an abortion which made her feel guilty. She did not reveal the abortion to anyone else other than her partner. He did not give her any emotional support. He was a gambler. She began to gamble herself and soon became addicted. He often borrowed money from Cathy to feed his habit, which he did not repay. Her funds dwindled, her depression intensified and her studies began to suffer. Her partner was associated with an Asian criminal gang operating at the Casino. He was arrested, charged with fraud, convicted and imprisoned. Cathy was arrested though later released. Her depression intensified as did her fears of deportation.

Her first session was held on 2 October 05. BDI and Hamilton scores were both 28. She was attracted to the Internet because she was an experienced Internet user, liked information technology and could integrate treatment with her day-to-day activities. She preferred to undertake activities on her own though she appreciated the 'insurance' that the availability of a live treatment professional provided her. Her first Goldberg score was 44 (moderate severe) and her mood monitor averaged at 4.7. Her second Goldberg was 25, just within the mild cut-off. In the same period her mood monitor scores rose from an average of 4.7 to 6.1 further indicating a marked improvement. Cathy took 44 days to complete the course. Apart from the initial and the after-course

assessment sessions, she attended one other. Her BDI and Hamilton scores were at subclinical levels. In her post-course session on 22 November 05 held by phone because she was working long hours, she gained a score of 5 in the BDI and in the Hamilton, both within the subclinical level.

Cathy's improvement appeared as she began to come to terms with the Epictetus principle though a temporary relapse did follow. Her three-month follow-up showed a BDI score of 6 and a Hamilton score of 3. Neither showed clinical depression. Cathy said that her life had been more settled and she had been ruminating less about her distressing recent past.

Key factors of participant experience

History: depression due to loneliness, damaging relationship, association with criminal activity

Attractions to online study: Internet user, liking for computing, in charge of own treatment, face-to-face sessions available if needed, treatment blends with life

Relapse: recovered

Significant component: Epictetus, Aristotelian logic challenging

Behaviour change: resolved issues, continued with University course

(d) Dee

The fourth participant, Dee, a counsellor in a charity, was in her early 30s. She had been married and had three children, now aged 8, 10 and 12. Her husband was a violent drug addict who frequently abused his family and assaulted her in front of her children. One day he attacked her with a knife and inflicted serious injuries on her. Dee was markedly traumatised. At a moment of weakness she allowed her parents to become the children's foster parents. She had been placed on medication by her GP but she realised that this made her aggressive and restless, and also confused her thinking. She wanted help to lift her depression so that she could make the appropriate life decisions.

Dee reasoned that the Internet course would enable her to blend treatment with her life and not interfere with her work or study. The opportunity for live sessions was seen as a safeguard. She did not envisage any difficulties because she was familiar with CBT.

Dee's initial BDI and mood monitor scores were both 26 indicating moderate depression. Her first Goldberg score, reported on 19 October 05, was 46 and denoted moderate depression. The mood monitor average was 4.6.

Dee completed the course in 55 days. The Goldberg score reduced steadily from 46 during the course with no apparent relapses. The mood monitor scores mirrored her improvement. In her post-course session she scored 7 for the BDI and 6 for the Hamilton indicating no clinical depression. Dee did not seek any sessions during the course. In her three-month follow-up by phone the BDI score was 5 and Hamilton was 6. No clinical depression was indicated.

Key factors of participant experience

History: depression following trauma, antidepressants ineffective, loneliness without children, relapses

Attractions to online study: In charge of own treatment, face-to-face sessions available if needed, treatment blends with life

Relapse: none during course

Significant component: problem-solving

Behaviour change: problem-solved key issue of reuniting family

(e) Eric

The fifth participant, Eric, was in his mid 20s. He was of Middle East background and his parents were devoutly religious. A charge of assault led Eric to undertake a psychological assessment as part of his case in court. He was diagnosed with depression, which had its roots in the ever increasing conflict between himself and his parents over his Westernised lifestyle and also in an earlier truculent relationship. His depression appeared to be markedly worsened after he began to take steroids as part of body building. The court placed him on a bond provided he attend treatment for his condition. His GP agreed that he should receive treatment from the writer. He attended his first session on 19 October 05. Eric scored 24 for the BDI and 21 for Hamilton, indicating moderate and moderate-severe depression respectively.

Eric was computer literate. He liked the idea of taking charge of his own treatment and undertaking the course at his own time and pace. The Internet course enabled him to blend his treatment with minimal disruption to his lifestyle. He had given up steroids immediately after he offended though he kept up with his gym.

Eric married after his court appearance. Eric wanted to complete the treatment because he felt that his underlying depression, currently abated, was likely to return.

Eric began completed the first module on 22 December 05, just after he returned from his honeymoon. His initial Goldberg score was 10, signifying mild depression. The mood monitor average was 8.3. His Goldberg score reduced to 6 during the course signifying a change in category from mild depression to subclinical. His mood monitor scores varied between 8 and 9. Eric progressed well with the course. He took 54 days to complete all requirements. The end course BDI and Hamilton (3 and 4 respectively) showed no clinical depression.

Eric's follow-up assessment revealed BDI and Hamilton scores of 2 each, showing no clinical depression.

Key factors of participant experience

History: depression due to culture clash, relationship break up, worsened by steroid use leading to offending

Attractions to online study: in charge of own treatment, IT experience, treatment blends with life

Relapse: none during course

Significant component: logic challenging

Behaviour change: able to manage ongoing conflict with mother-in-law without aggression.

(f) Fred

Fred, an Iranian on a visitor's visa was in his mid 30s. He had a good command of English. He was a Christian and had suffered frequent persecution from the government and the wider community in Iran. He trained as a photographer and worked in this field whenever the opportunity arose. In Sydney he found the freedom that he wanted and began the procedure of applying for resident status in Australia. He was rejected at different levels. He engaged an immigration law specialist who was preparing an appeal directly to the minister. The guilt he felt over being a burden to his brother and family for the last few years, his loneliness and feelings of being an alien in a society that may reject him led him to depression.

Fred attended his first session on 15 December 05. The concept of pursuing his own treatment through the Internet appealed to him. He did not have a computer but know how to access the Internet. He considered the intervention as an opportunity of improving his online skills. He arranged undertake the course on the computer in the writer's reception office. Fred was briefed on the Internet course and quickly developed the necessary access skills. Fred's initial BDI score of 26 and Hamilton score of 23 revealed his depression was at a moderate level.

Fred began the course on 15 December 05. His first Goldberg score, reported three days later, was 34. This denoted moderate depression. The mood monitor average was 3.3 ranging from 3 in the morning and the evening, to 4 at midday. The low level of the scores was a reflection of his overriding loneliness and anxiety over his circumstances.

Apart from the introductory session Fred did not need additional treatment sessions. His progress was steady. By the end of the course 36 days later Fred's Goldberg score reduced from 34 to 12, signifying mild depression. His mood monitor showed parallel improvement, from an average of 3.3 to between 7 and 8. Given that there was no abatement in the pressures confronting him and the likelihood of a forced return to Iran was ever present, the result was accepted by Fred and the writer as the best possible under the circumstances. His post three-month follow up assessment resulted in a BDI score of 5 and Hamilton score of 5. No clinical depression was indicated.

Key factors of participant experience

History: depression due to possible forced return to Iran with dire consequences and loneliness

Attractions to online study: pursuit of own treatment through the Internet, face-to-face sessions available if needed, treatment blends with life

Relapse: none during course

Significant component: Epictetus

Behaviour change: saw his predicament in a different light and decided to problem-solve.

(viii) Non completers

(a) Glenda

Glenda was in her late 20s and worked as a communications professional in a large organisation. She had recently entered into a relationship to

which she brought her four-year old daughter from her former marriage. Her partner was also a professional in a similar industry. Glenda and her partner were experiencing difficulties making their relationship work. She felt she was being punished for bringing another man's child into the relationship. Stressors were building up for Glenda with led to depression.

Glenda attended the introductory session on 24 October 05. She scored 20 on the BDI, the lowest score at the moderate depression level. Her score on the Hamilton was 17, the highest score on the mild-moderate category. Four days later she forwarded a Goldberg score of 26, just within the mild to moderate category. Her mood monitor average was 6.2, rising steadily from 5.7 in the morning, to 6.3 at midday and ending the day at 6.7. A rapid improvement followed by the next assignment. She advised that she had completed the course. She had not forwarded her scores or assignments because she felt she gained enough knowledge to resolve her depression. She and her partner worked through some of the modules together and resolved some of their more pressing issues. Her distress had abated and she expressed her satisfaction at having the course available on the Internet case she ever needed to address a relapse.

Key factors of participant experience

History: depression due to family discord involving her current partner and child from a previous marriage

Attractions to online study: treatment blends with life situation and not having to devote time away from her family

Relapse: none during time on course

Significant component: problem-solving

Behaviour change: Negotiated changes with her partner, which resolved her depression.

(b) Harry

Harry, a former armed forces careerist, was in his mid 50s. He had accumulated some negative experiences which were often triggered in his mind and made him depressed and anxious because they came close to claiming some of his mates' lives. Harry experienced difficulties in adjusting to civilian life and work.

Harry attended his first session on 29 September 05. He was a recent but rapid learner of the Internet. Harry felt a little reticent in undertaking the depression Internet course on his own with email help and the occasional remedial session. He opted for weekly sessions in parallel with undertaking the program. His armed forces career made him feel more comfortable following a set structure.

Harry's BDI score was 27 (moderately depressed). The Hamilton score of 36 was at the moderately-severe category. His first mood monitor average was 4.3 and showed no variation throughout the day. His first Goldberg score was 62 denoting severe depression.

Harry completed the first four modules and attended his fifth and last session on 20 November 05. He subsequently kept in touch. On his last module he reported a mood monitor average of 5.9 with a peak in the evenings of 6.7 denoting that he was able to break the depression barrier at least for part of the day. His Goldberg had reduced to 45 placing his depression in the moderately severe grouping. Harry advised that he had read the remaining modules. He felt that he gained enough knowledge and wanted to put it into good use to lift his depression. He challenged negative thoughts supporting his nemesis that he could not be gainfully employed in civilian life. He managed to gain work as a contractor in an industry which valued and drew on his armed forces skills.

Key factors of participant experience

History: depression due to adjustment to civilian life after a career in the defence forces

Attractions to online study: technical challenge in pursuing own treatment through the Internet, face-to-face sessions in parallel, treatment blends with life situation
Relapse: none during time on course
Significant component: problem-solving
Behaviour change: found satisfying work, which lifted his depression

(c) Ilsa

Ilsa, was in her mid thirties. She had a difficult life. Her father left the family shortly after her birth and she was brought up initially by her maternal grandparents. Her mother remarried but the stepfather took little interest in his wife's children. In the mean time her mother pursued a number of extramarital affairs and the marriage eventually broke up. Ilsa went to live with an older cousin initially and she was then farmed out to other relatives. She changed schools several times because of her frequent moves between her mother and relatives. She did not manage to attend school beyond Year 10. She married at the age of 18 to find a sense of stability in her life and had four sons in the next six years. Her marriage destabilised as both partners pursued extramarital affairs and finally broke up. While she was trying to pick up her life she was raped by a group of men in her own home, who had been working in a nearby building site. Ilsa completed TAFE training and gained work which gave her a reasonable income. Her depression however continued to distress her and would arise whenever she was reminded of her sexual assault and her childhood abandonment. She came to the attention of the authorities over a fraud charge and her solicitor advised her to see the writer for a presentencing report. The writer diagnosed depression and remnants of trauma symptoms. Her solicitor recommended that she attend for treatment and her GP agreed.

Ilsa attended on 27 October 05. She was attracted to the Internet course because she lived in a country two hours away from Sydney. The option of attending sessions as required appealed to her. However she felt that it was unlikely that she would be taking advantage of their availability,

preferring email contact if she had the need to do so. Moreover she had formed a relationship with a man and they planned a wedding in the next few weeks.

Ilsa scored 26 on the BDI which placed her at the high end of the moderate category and 28 on the Hamilton, which was within the moderate-severe grouping. She completed the first two modules. Her Goldberg score was 72 signifying severe depression. Her mood monitor average ranged between 2.2 and 2.7, the lowest of all participants.

Ilsa did not complete any more modules. She advised that her mood had lifted considerably following her marriage. She had downloaded the Internet course into her computer so that she could study it whenever she needed help.

Key factors of participant experience

History: depression due to earlier trauma and life difficulties since childhood.

Attractions to online study: no travel hence no drain on time; availability of face-to-face sessions if needed.

Relapse: none during time on course

Significant component: none advised

Behaviour change: changed life circumstances

(ix) Summary of key participant experience

The key factors emerging from participants' experiences with the online course and the sessions are summarised to provide an overview of the key areas of significance in the intervention. The table following provides the summary.

Table XXIII - Key factors of participant experience

Completers

	History of depression	Attractions to intervention	Relapse	Significant component(s)	Behaviour change
Aaron	long-term, antidepressants ineffective	in charge, sessions, blend with life	recovered	Epictetus, negative thought challenging	lifted depression, began uni course
Bill	marital problems, antidepressants ineffective	in charge, sessions, blend with life	none	Epictetus	problem-solved marital issues, work performanc e improved, depression lifted
Cathy	depression due to loneliness, damaging relationship, association with criminal activity	in charge, Internet user, likes IT, sessions, blend with life	recovered	Epictetus, logic challenging	resolved issues, continued with University course, depression lifted
Dee	depression after trauma, antidepressants ineffective, loneliness without children, relapses	in charge, sessions, blend with life	none	problem-solving	problem-solved key issue of reuniting family, depression lifted
Eric	depression due to culture clash, relationship break up, worsened by steroid use leading to offending	in charge, IT experience, blend with life	none	logic thought challenging	able to manage ongoing conflict with mother-in-law without aggression or relapsing into depression
Fred	depression due to possible forced return to Iran with dire consequences, loneliness	pursuit of own treatment through the Internet, sessions, blend with life	none	Epictetus	redefined predicamen t in a different light and decided to problem-solve, depression lifted

Non completers

Glenda	depression due to family discord due to current partner and child from a previous marriage	blend with life, not having to devote time away from her family	none	problem-solving	Negotiated changes with her partner, which resolved her depression.
Harry	depression due to adjustment to civilian life after a career in the defence forces	technical challenge in pursuing treatment through the Internet, parallel sessions, blend with life	none	problem-solving	Found satisfying work, which lifted his depression
Ilsa	depression due to earlier trauma and life difficulties since childhood	no travel involved; sessions if needed.	none	none	Depression lifted due to changed life circumstances

Summary	History of depression	Attractions to intervention	Relapse	Significant component(s)	Behaviour change
Completers and Non completers	life situations	blend with life (6), sessions (6), in charge of treatment (5), technical and IT (3),	relapsed but recovered (2) no relapse (7)	Epictetus (4), problem-solving (3), logic challenging (s), none (1)	Solved underlying life issue, depression lifted

The table reveals that depression for all participants, completers and non-completers, stems from a range of life situations, mainly relationship problems. The attractions to undergoing the intervention include the ability to blend treatment with life's demands, the availability of face-to-face sessions if needed, being in charge of one's own treatment and using the Internet particularly for those who have an affinity with IT and this medium of communication. The significant elements in the course, namely those leading to a marked insight into one's depression, include the Epictetus principle, logical challenging and problem-solving. All

completers succeeded in addressing their depression by taking steps to resolve the issues confronting them or by looking at their problem in a different light.

(x) The contribution of the case studies to the research questions

The case studies provide information on the research questions. The first research question, namely "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?" is partly answered. All six completers found the intervention valuable and succeeded in reducing their depression to subclinical levels. Those adept at self-learning were well able to progress on their own. The three non completers used the skills in the course, without completing assessments or other requirements to reduce their depression. Most had downloaded the site to their computer for ready availability in the future. None had undergone face-to-face treatment previously so that the intervention could not be compared with this form for effectiveness.

The completers demonstrated that by incorporating the skills learnt in the online course, such as looking at things differently and challenging negative thoughts, in their day-to-day functioning they were able to maintain a depression-free outlook beyond the completion of the course. The third question cannot be answered fully. The intervention did retain six participants to the conclusion because they saw an improvement developing as they progressed through the course. Two non completers gave up the course because they were able to benefit from the presented material.

The fourth question can be demonstrated through its ability to help several of the participants who had been on antidepressants to gain freedom from this debilitating condition. Indefinite continuation of antidepressants without resolution of depression would reach the stage

where their total cost would exceed the cost of any intervention which proved to be successful.

(xi) Evaluation of contents and presentation of online course

The evaluation is undertaken with the aid of results from the questionnaires. It needs to be noted that the comments are essentially client-therapist feedback and this aspect would affect the veracity of the comments. Hence care needs to be taken with any interpretation of the comments. Statistics summarising participants' views on the intervention as provided on the questionnaire were presented in the discussion on Research Question 1. The following table outlines mean responses to items in the questionnaire on contents and presentation.

Table XXIV Post module questionnaire on contents and presentation – mean scores

No	Item	Mean
1	The text in the module was easy to understand	5.00
2	The sessions had too much material for my level of concentration	1.50
3	The sessions had too little material to keep my interest	1.20
4	The material was boring	1.20
5	I enjoyed the way the material was presented in the module	4.80
6	Reflecting on the pictures on the right side of the pages helped me feel better	4.17
7	The humorous pictures were enjoyable	4.40
8	I always visited the sites with more information	4.00
9	The sites with more information were useful	4.50
10	I always visited the games and puzzles sites	2.50
11	The games and puzzles were a good way of relaxing after each session	2.50
12	I ignored many of the sites on the right	3.67
13	Completing Goldberg was a good way to let me know how I was progressing	4.60
14	The exercises helped me to apply the skills I learnt in the sessions	3.67
15	The exercises took too long to do	1.20
16	The exercises were not long enough	3.67
17	Emails enabled me to communicate adequately with my psychologist	5.00
18	Even though my psychologist wasn't with me I felt that I had his support	5.00
19	I came close to giving up on the module	1.50
20	Looking back on the module, I am glad I did it	5.00

Participants chose responses that ranged from 5 implying 'strong agreement' with the statement through 4 'agreement', 3 'not sure', 2

'disagreement' and 1 'strong disagreement'. The table yields the following results.

(a) Quality of communication

Quality of communication (items 1-7) was defined as readability, interest and manageability of material presented in the modules. There was full agreement about the readability of the material. All completers rated readability at the maximum mark of 5. The result becomes more significant when it is considered that three of the completers are of a non English speaking background and speak another language at home. The sufficiency of material in each module and its interest rated almost as highly. Three completers scored 1 (strong disagreement) for the item stating that the modules had too much material for the participant level of concentration while the other three scored 2. Similarly five completers rated at the most favourable score the items concerning boredom, insufficiency of the material to maintain interest and enjoyment. One completer rated the items at one point less than the best score. The opportunities for reflection and humour in the course were similarly rated highly. No completer mentioned in the assessment session any difficulties or suggestions about the quality. On the basis of completer comments the course material appears easy to read, able to maintain interest and comes in manageable pieces.

(b) Enrichment material

The enrichment material (items 8-12) consists of sites with further information on the topics covered in the course modules, for example on Epictetus, CBT and Aristotle. Five completers scored four or more on visiting the sites always and one completer scored two. During his session this completer (Aaron) remarked that he visited some sites and read until he felt the material became irrelevant. All completers scored the usefulness of the information on the sites at 5 or 4. However five completers ignored many of the sites. During their post course assessments no particular patterns emerged – it appeared that whether or not a completer clicked on the site depended on interest, perceived

relevance, mood at the time, tiredness, time of day and other time pressures.

(c) Exercises

The course contains several exercises for completion by the participant to be forwarded to the writer. The exercises (items 14-16) cover the application of key principles in CBT. Five completers disagreed at the strongest level (score of 1) that the exercises took too long to do. One completer gave the question a score of 4. Whether the exercises were long enough polarised the completers. Four agreed strongly that the exercises were not long enough and two disagreed strongly. One of the two who disagreed (Eric) commented that he devoted more time to practising the skills in vivo because he was more practically oriented. The other (Fred), who had some difficulty with written English, felt that they were the right length for him. The capacity of the exercises to help participants apply the skills learnt in the modules polarised the completers. Three agreed strongly (score 5) and one agreed at score 4. Two disagreed scoring the item at 1 and 2 respectively. Of these one was an experienced CBT user (Dee) and the other (Eric) felt that he gained more by applying the skills to his day-to-day functioning. The results indicate that length, usefulness and time demands of the exercises are largely determined by individual perceptions.

(d) Live support

All completers rated at 5 their agreement that they perceived that they had their treatment provider's support (items 17-18) even though he was physically not present. Communication by email was apparently considered to be adequate. Email support entailed sending and receiving assignments and depression test assessments, seeking advice on 'stuck' points and arranging live sessions. The result supports the acceptability of online treatment and live support through asynchronous communication.

(e) Motivation to complete

All completers on items 13, 19 and 20 disagreed (scores 1 and 2) that they came close to giving up the course and all strongly agreed (score 5) that they were glad to have completed it. They agreed at score levels 4 and 5 that completing Goldberg provided a good measure of progress. The conclusions are that the course is perceived to be sufficiently self-motivating, the frequent feedback of progress is appreciated and completion is worthwhile.

(f) Evaluation of questionnaire on the course content

No significant shortcomings were highlighted in the analysis of results. The course content appears to communicate well to participants and is able to motivate them to complete its requirements. The enrichment material appears at least sufficient if not too extensive. On the whole the exercises appear to be acceptable though perhaps they could be redesigned to introduce optional additional components and to strengthen their relevance to day-to-day life. Frequent completion of the Goldberg Depression Scale is considered important as feedback to effort. Email communication appears sufficient to assure the participants of access to their treating professional. The next table presents data on behaviour changes resulting from the course.

Table XXV. Questionnaire: Behaviour changes resulting from course – mean Likert scores (0-5) at post-course, post-sessions and follow-up

No	Item	Post course	Post sessions	Follow-up
1	Avoiding isolation	4.5	4.5	4.25
2	Exercising	4	4	3.8
3	Getting up at usual time	4.6	4.4	4.2
4	Going on with daily activities	4.75	4.75	4.75
5	Breathing relaxation	4.25	4.75	4.25
6	PMR	3	2.2	2.2
7	Basic meditation	3.5	2.6	2.8
8	Mini meditation	4	4.75	4.6
9	Relaxation activities	4.75	5	4.5
10	Taking supplements	4.5	4	4.2
11	Following a good diet	4.75	4.5	4.5
12	Identifying negative thoughts causing a downward mood	4.8	4.8	4.6
13	Challenging negative thoughts with 'where is my evidence'	5	5	5
14	Challenging negative thoughts using Aristotelian logic	4.5	4.2	4.2
15	Persevering with thought challenging	4.5	4.75	4.75

Note: the table makes no distinctions between the sub-groups of clients by face-to-face sessions because only two participants (Aaron and Bill) took post-course sessions. Those who took in-course sessions took them at different stages of the course. An analysis of the questionnaire results follows.

(xii) Transfer of skills

The questionnaire sought information on the extent to which skills learnt in the course were transferred to life situations and whether the transfer lasted beyond the course itself. The questionnaire tapped into three broad areas – stress management, coping with life and CBT skills. An analysis of responses follows.

(a) Stress management

Breathing relaxation appeared to be widely adopted. Three completers reported ratings of 5 (the procedure is done as often as needed) from three completers and 4 (more often than not) from the other three. PMR (Progressive Muscle Relaxation) (PMR) proved to be somewhat less popular. Only one participant (Eric), a gym enthusiast, rated it at 5 and in

an email he remarked that it helped him in his muscle building. Two participants (Aaron and Dee) used PMR 'less than half the time needed' and 'hardly ever' respectively; hence neither saw much value to it. Their views on interview were that breathing relaxation was similarly effective and less complicated. The extent of use remained essentially similar in the following administrations of the questionnaire. At the follow up administration breathing relaxation was rated at 5 by three completers and 4 by the other three. PMR use was polarised – three completers used it hardly ever while the other three more often than not. The post-session questionnaire yielded compatible results.

At course end meditation was reported to be used by three completers as needed and by one more often than not. By follow up three completers reported using meditation more often than not. Mini meditation was rated at least 4 by five completers and by one (Cathy) at 3 or at least half the time she needed to use it. In her interview Cathy said that breathing relaxation was enough for her and that she preferred to analyse her thoughts as a way of reducing stress. At follow up all participants said that they used mini meditation at least more often than not. It appears that over the three months since ending the course, completers come to incorporate mini meditation as an often used approach in managing stress.

Five participants rated usage of relaxation activities (reading, humorous videos) at 5 and one at 4. The ratings were maintained in the assessment at the end of the sessions. At follow up all completers rated usage at 5. The conclusion is that the course assists participants to appreciate the need for and incorporate relaxation activities as legitimate tools in their efforts against depression. Exercising received ratings similar to relaxation activities. Five completers rated exercising at 4or 5 in all administrations of the questionnaire. The sixth (Cathy) said in her interview that she realised that exercising is important. However the pressures of her studies did not give her much opportunity to exercise though she did go to the gym in her apartment block as time allowed.

(b) Coping with life

All completers, except one, report in all administrations that they continue to get on with their daily activities as required. The exception, Aaron, does so more often than not. The amplification given in his interview is that he faces challenges in balancing work and study particularly in planning his assignments to avoid last-minute rushes. All completers avoid isolation and communicate with significant others as often as they need to do so, or 'more often than not'. The finding remains stable through all three administrations of the questionnaire. Getting out of bed at the usual time is also robust in all administrations with the exception of one completer (Aaron) at follow up. His interview reveals that because he studies until late at night he has a little more sleep in the morning provided he does not have to go to work. All completers report in all administrations that they follow a good diet and take supplements at least more often than not. The conclusion from this part of the questionnaire is that the program succeeds in assisting participants to transfer knowledge and skills learnt in the module to their day-to-day lives.

(c) CBT skills

The questionnaire measures the frequency of use of four key approaches in the application of CBT to daily life, which concern the identification and challenge of negative thoughts causing a downward mood. In a practical sense a key measure of success of the course is the extent to which completers incorporate these approaches in their functioning. Responses show that the most often used approach is the Socratic question 'where is my evidence'. All participants in all administrations of the questionnaire rate this approach at 5 – it is used as often as needed. Identifying negative thoughts causing a downward mood and persevering with thought challenging until the mood changes are almost as highly rated as Socratic questioning. In the post course administration four completers rate these approaches at 5 (as often as needed) and two at 4 (more often than not). In the post session and follow up five completers rate it at 5. Eric rates both at 4 because, as he said in his interview, sometimes he

finds difficulty in identifying and challenging negative thinking in situations where he and his mother-in-law exchange heated words. He reiterates the difficulty he finds in looking at his mother-in-law's views differently but realises he needs to continue to try to do so. Follow up interviews reveal that, as with Eric, a major plank in persevering with thought challenging is the Epictetus principle. In regards to Aristotelian rules of logic five completers rate the item at 5 in the post course administration of the questionnaire and four at the subsequent administrations. One (Eric) rates the approach consistently at 3. Eric finds the Socratic and Epictetus principles more readily applicable. In summary the analysis of this part of the questionnaires, illuminated by the completers' views, illustrate that the principles have been successfully transferred from the course into their day-to-day functioning.

(xiii) Evaluation of the efficacy of the two components of the intervention

The issue arises whether the efficacy of each component of the intervention, namely the online course and face-to-face treatment can be evaluated. The results provided in answering the research questions demonstrate the efficacy of the intervention as a whole. For example Table X shows that the study achieved subclinical scores on the BDI for all completers. In addition Table XXIII provides evidence of the success of the intervention from the participants' own realities.

The intervention is an integration of two components - an Internet course and face-to-face sessions. It is difficult to evaluate the effectiveness of each component separately in the light of the reality that participants arranged and attended sessions whilst they were undertaking the Internet component. The picture becomes more blurred when it is considered that there was email contact by the writer with all participants and that all were seen before the commencement of the intervention. However given that four completers did not seek sessions during the course it might be

assumed that the course alone was an efficient mode of treatment for them. Participant views are analysed below.

(xiv) Participant views on the intervention

Participants completed items based on Likert scales with range of 1 (strongly disagree) to 5 (strongly agree) to assess their views on different aspects of the Internet course. The instruments are presented in Appendix (ii). Scores are drawn from several item scales to answer the research question.

The following table outlines items and scores from the post course questionnaire which indicate participant satisfaction. The first two items draw average responses at the maximum level of 5 signifying high-level participant satisfaction with the course.

Table XXVI. Post course questionnaire views on participant satisfaction – mean scores

Direct evidence on satisfaction

No	Item	Mean
19	Looking back on the course, I am glad I did it	5
20	Revisiting the course should help me avoid depression in the future	5

Supporting evidence on satisfaction

1	The text in the course was easy to understand	5
2	The sessions had too much material for my level of concentration	1.5
3	The sessions had too little material to keep my interest	1.2
4	The material was boring	1.2
5	The way the material was presented in the module was enjoyable	4.8

Although the presentation of CBT differs between psychologists there are common principles such as those which appear in the table below. Participants completed scales on items evaluating their use of the skills taught from 5 (as often as you need to do so) to 1 (hardly ever) as follows:

Table XXVII. Post course questionnaire views on use of skills taught – mean and range of scores

No	Item	Mean	Range
112	Identifying negative thoughts causing a downward mood	4.7	4-5
113	Challenging negative thoughts with 'where is my evidence	5	5-5
114	Challenging negative thoughts using Aristotelian logic	3.7	3-5
115	Persevering with thought challenging until the mood improves	4.5	4-5

The response levels indicate that completers consider that they are able to apply key CBT principles effectively in their day-to-day functioning. The same items administered three months after completion of the sessions reveal little variation as the following table shows.

Table XXVIII. Post course and post three months response comparisons on use of skills taught– mean scores

No	Item	Mean post course	Mean post three months
112	Identifying negative thoughts causing a downward mood	4.7	4.6
113	Challenging negative thoughts with 'where is my evidence	5.0	5
114	Challenging negative thoughts using Aristotelian logic	4.0	3.6
115	Persevering with thought challenging until the mood improves	4.5	4.7

There is little change in items 112 and 113. Item 114 shows a reduction of 0.4, from 4.0 to 3.6 while item 115 shows an increase of 0.2 from 4.5 to 4.7.

The analysis indicates that participants see the course as a legitimate treatment because it provides training in key skills in the amelioration of depression and also, combined with face-to-face treatment, facilitates the embedding of the skills in individual day-to-day functioning.

The free written comments added by three participants to their questionnaires and verbal comment by the other three highlight their satisfaction with the intervention, as indicated in the following table:

Table XXIX. Free comments by participants on value of intervention

Participant	Free comment
Aaron	(written) Well structured & presented. A good tone achieved in the writing.
Bill	(written) The best thing I have ever done. My life has changed dramatically since the beginning of my treatment but I believe I am much better equipped to deal with issues in a more logical, stress free or stress reduced way. I do feel confident that I can prevent depression. Excellent site. Helped my progress exponentially. Will revisit site every 2-3 days to go over topics and keep fresh with techniques to help overcome my depression.
Cathy	(written) I liked the module, it's easy & straight forward and also had a lot of teachings that I could relate too. I like its convenience as I can access it whenever I want being online. The module made me think, & the exercises were helpful as they made me think. I especially find the thought-challenging exercises helpful.
Dee	(verbal) Lifting of her depression enabled her to resolve key issue concerning her reunification with her children
Eric	(verbal) Learnt to apply a greater tolerance to events which formerly provoked irritable responses
Fred	(verbal) Saw his predicament about a negative response by the government to his refugee visa application as less catastrophic

The discussion illustrates that the completers see the Internet course in this study as a legitimate treatment vehicle. That is the course facilitates the learning of appropriate skills in the treatment of depression arising from a wide variety of causes. The skills that appear to be most effective are those that emanate from the Epictetus principle, Socratic questioning and Aristotelian logic.

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?

(xv) Summary

The findings presented in this chapter suggest that:

1. A partly Internet-based intervention could be at least as effective as face-to-face counselling in treating clients with mild to moderate depression;
2. Gains persisted three months after completion of treatment;
3. The proportion of completers in the intervention was statistically similar to the proportion of completers in face-to-face studies or other online studies;
4. Considerable savings measured in saved provider time compared with face-to-face could be realised.

CHAPTER 5 – DISCUSSION

(i) Genesis of the study

The genesis of the study emanates from the debate emerging on the use of the Internet for clinical psychological interventions. Studies by Clarke et al. (2005) and Christensen et al. (2004) demonstrated the efficiency of the Internet in the early treatment and prevention of depression. The researchers saw a radical change in health systems in developed nations with self-help and self-responsibility for evidence-based interventions becoming a new component of healthcare delivery. Fenichel et al. (2005) summarised and responded to the more frequently heard misinformation and arguments against delivery of treatment through the Internet, including that online therapy was impossible, it was delivered almost entirely by email, it was devoid of the richness of human experience, it could not address suicide prevention and crisis intervention and that online and face-to-face treatment shared similar principles. Many studies, for example those referred to in this study, demonstrated the efficacy of the Internet as a treatment delivery vehicle in a wide range of applications from weight loss to potential suicide. The richness of human experience can be provided by the participant's imagination in the same way that poetry is enjoyed. Self-learning is a well established principle and is compatible with self-responsibility for one's treatment that is valued today. The use of self-learning in the present study emanates from the writer's experience in using programmed learning techniques to train RAAF technical trainees (Jacmon, 1966).

(ii) Restatement of the problem

The study aimed to provide insight into the use of the Internet as a component of face-to-face treatment. The study was originally conceptualised with the Internet course as the first stage in treatment. In the first session the client would be assessed and if found with mild to moderate depression would be invited to participate in the course. If

agreeable the client would be briefed on accessing the course, working through the modules, completing required activities and emailing results. The client would be invited to arrange to attend for face-to-face individual sessions if difficulties were encountered in the concepts covered by the course. Following completion of the course the client would be tested to assess the current level of depression and to map out treatment strategies. Next the client would be offered face-to-face sessions during which guidance would be given by the treatment provider to apply the skills learnt in the course to daily functioning. Testing would be carried out at the end of the sessions to assess the effectiveness of treatment in reducing depression or to gauge the need for further attention.

The concept of session usage needs to be redefined. Each participant in the present study had one pre-course session and a further session was estimated to have been given in relation to commenting on emailed assignments and comments. Four of the six participants attended sessions during the course itself. The post-course session was used mainly for assessment. Only two participants required further sessions for treatment purposes. In one case a personal difficulty had occurred during the course which the participant wanted to discuss. In the other case the participant suffered a relapse. The implications of these events are that it is not necessary to draw distinctions between the course and the session phases. In future applications of Internet interventions clients would be invited to arrange sessions as they feel the need to do so.

Another part of the problem that should be restated in the light of experience concerns the limitation of participants to those with mild to moderate depression. BDI scores from only two participants (completers and non-completers) lay in the lowest half of the moderate category. A completer with a pre-treatment BDI score of 28 (the upper cut-off of the moderate category) scored in the severely depressed category in the first administration of the Goldberg after he commenced the course indicating that he may have been more than moderately

depressed. Five of the studies in Table IX had a mean BDI score lower than that in the present study. Research is accumulating on the effectiveness of CBT for severe depression, for example Winbrow (2005) in discussing the NICE guidelines states that CBT is the treatment of choice for moderate, severe and treatment resistant depression particularly for young people. Severely depressed clients presenting themselves for treatment in the future would not be precluded from the course. They would be advised that research at this stage is not clear that CBT is the best method available. If they choose to undertake the course they would need to monitor their progress closely and in the absence of any improvement they should be prepared to seek alternative treatment.

In the study successful participants are deemed to be those who achieve a subclinical level of depression on the BDI, namely below 9. The results showed that all six completers met this criterion. Of the other three participants, a woman who scored at the lower cut-off for moderate depression (the lowest score in the study), left the study after completing one module of the course. She advised that she became better quickly and was happy to learn the material on the website without submitting the homework. Another participant, with initial BDI score just below the upper cut-off for moderate depression, left the course after the third Goldberg administration. He advised that the modules that he completed gave him certain skills and made him realise that he needed to take charge of himself by addressing the negativities that occupied his mind and pursuing challenging activities. He was a former defence force specialist and was able to set himself up as a consultant in his field of expertise. He later advised that he had secured several contracts to do training and that he was very busy. Importantly depression no longer worried him. The third participant, a woman, completed two modules up to the second Goldberg administration before her marriage. She reported that marriage had changed her life and that she was no longer depressed. The conclusion emerging from consideration of the non completers is that they have been in fact successful in defeating their depression. One did

so early in the course, another used advice in the course to map out his own therapy and in the third a change in life circumstances led to the desired result. In the real-life application of the course any participant who improves to the extent that depression is no longer at clinical levels at any module would be considered a success of the intervention.

(iii) Major findings and their relevance to the research questions

Hypotheses were evaluated on the basis of comparison of five studies similar to the present study except that they involved entirely face-to-face depression treatment (Table VIII) and where appropriate the results of the questionnaires. In all studies participants were treated with CBT and their level of symptom distress was measured by the BDI. Comparisons were made with studies offering IT-based treatment only (Table VIII).

(a) First research question

Whether 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 was tested by the application of t-tests to the means of scores of participants in the present study in the various phases (pre-treatment, post-course, post-treatment and follow-up) compared with those in the face-to-face studies with similar score categories. The first research question would seem to find some support from the results of this study.

Online treatment with or without a face-to-face component has been demonstrated to be appropriate for disorders including panic attacks and Generalized Anxiety Disorder (Westen & Morrisson, 2001), weight loss (Tate & et al., 2001) and eating disorders (Winzelberg 2000). Given that the studies for example in Table XVII demonstrate that CBT lends itself to Internet presentation and that CBT is an evidence-based treatment, there is an argument for further research to assess the merits of expansion of online treatment. With the limitations of this study, further research is

merited to replicate this work, with tighter controls over the modalities and the mix of modalities used and evaluating the impact of these with control groups. The present study tentatively demonstrates that it is not impossible for a provider to develop an online course embodying his or her treatment approach.

A factor worth noting is that an intervention which integrates course and sessions is essentially 'fail safe'. Where the client cannot cope with the course because of low concentration or the need for maximum personal support, he or she can simply discuss the issue with the provider and revert to entire or increased face-to-face treatment. In short, the client is wholly in charge of how the treatment is to be delivered. It is hypothesised that a large proportion of clients would be motivated to try the integrated treatment at least because of cost savings.

(b) Second research question

The second research question, the persistence of any positive effect realised from such an intervention, would seem to find some support from the results of this study. There is support from the literature for this finding, for example Andersson et al. (2005), Christensen et al. (2004), Clark et al. (2002b) and Marks et al. (2003).

It might be argued that the period of three months might not be lengthy enough to demonstrate robustness of the intervention. However the purpose of the intervention is to train participants in skills to address downturns in their moods whenever they occur. The individual who did not gain skills adequately during the intervention is unlikely to apply them effectively in three months time or later. On the other hand the individual who incorporates the skills in his or her daily functioning as they are learnt and applies them as needed is likely to score at subclinical depression levels on the BDI or other measure at any time past the intervention.

The issue arises of a possible need for follow-up training by which an individual can revise or sharpen CBT skills and their application. This would be particularly relevant where individuals have not experienced sufficiently negative events to have learnt the application of CBT skills in enough different situations in order to generalise learning. That is, in line with the view by Seligman (2006) they aim to maintain their wellness rather than wait until they are facing the possibility of a relapse.

(c) Third research question

The third research question, whether the intervention is more likely to retain clients through to completion compared to other interventions does not seem to find support from the results of this study. This finding is consistent with the literature. A comparison by the Fisher Exact test between the ratios of completers to participants of face-to-face treatment studies by Cahill et al. (2003), Westen & Morrison (2001), Shapiro et al. (1994), Jacobson et al (1996) and Jacobson et al. (1991) finds no significant differences ($p>.05$).

The essential difference between the comparison studies and the present study are that in the present study participants and provider maintain a close therapeutic relationship throughout the intervention by email and face-to-face where needed by the participant, and this personalisation tends to encourage continuation on the intervention. In the cases of the three individuals who did not complete their treatment the reasons were simply that their depression had receded. In two of these cases the parts of the course they completed provided them with sufficient impetus to take charge of their own treatment without further help.

(d) Fourth research question

The answer to the fourth research question, namely the size of the potential savings of this intervention compared to other interventions, is 62%. Assuming that further studies with appropriate control groups validate this finding a reduction of this magnitude presents a significant saving in treatment costs and thus maximises the value of the Medicare

benefit for psychological treatment. At the same time it frees up psychologist resources to be used to increase throughput. The savings generated from psychological interventions were estimated at 20% in meta analysis of 91 studies by Chiles, Lambert and Hatch (1999) which were published between 1967 and 1997 using meta-analytic techniques. The intervention lends support to the view by Ahearn et al. (2006) that eHealth is emerging as a vehicle to shore up the inadequacy of the healthcare system to meet needs for chronic disease management.

(iv) Limitations of the study

The study has several limitations including:

- The availability of the intervention is limited to depressed individuals who, apart from not having psychotic symptoms, have (1) access to the Internet, (2) the requisite information technology skills, (3) adequate English literacy to understand the information presented and (4) the ability to compose and communicate with emails. Those without computers and with low English reading and writing skills are less likely to be able to participate;
- the small size of the sample. This reduces the validity of comparing results with other studies and also generalising the findings. The best that can be said is that the study points to the need to undertake larger scale studies with control groups;
- the lack of randomization. The sample was purposive. It was not chosen on a random basis. Hence its capacity to be generalised cannot be assessed mathematically;
- there was no control group. Hence there is no evidence that improvements noted could not have occurred because of the passage of time;
- there was a "power" relationship between the writer delivering the program and the clients receiving the intervention. However the implication which was understood by all participants was that if they did not deem their progress in addressing depression to be

satisfactory they could leave the program and seek alternative treatment through their GP

- the choice of a three-month follow-up period. Although this can be argued as sufficient, a longer follow-up period would have likely been able to test the ability of the individual to apply the skills learnt in the intervention in a wider range of life situations than those likely to be encountered within three months;
- the restriction of participants to those with mild and moderate depression. There is insufficient evidence as yet to support the efficacy of CBT for severe depression;
- the lack of evaluation through Likert Scales or comments of the specific treatment outcomes of adding supports to the online course such as online sessions or emails. This would have been too difficult to obtain because of the integrated nature of the course. Many sessions were used for remedial work and hence their availability would have been crucial to those who needed to have them. Emails were very much a part of the course and participants would not have validly been able to estimate the effect of each to their treatment.

(v) Recommendations for further research

The present study researches the concept of treating depression with an intervention which integrates a course in CBT skills with face-to-face sessions. The sessions aim to help the individual clarify any difficulties in learning CBT concepts and apply the skills learnt in the course to address the disorder. The concept requires more research with statistically random and larger samples utilising control groups before it can be accepted as an effective approach in the treatment of depression.

A suitable study would be allocating at random volunteers for treatment to wholly face-to-face sessions and to an integrated program of sessions and course designed and delivered by the same provider. There is

considerable preparatory work required before such a study can be validly undertaken. For example treatment providers need to learn website development skills and be supported whilst developing their sites, hosting capacity has to be acquired and sites uploaded and tested.

Similar studies are needed which include clients at the severe level of depression. A study by Prisciandaro and Roberts (2005) showed that depression, as defined by the symptom-focused DSMIV, was best considered as a dimensional construct. That is the categories of mild, moderate and severe in the BDI or other tests are artificial dividers on a continuum rather than denote real differences between the depression categories. If this is the case there is no valid reason for not expanding studies to include individuals with depression across the range of the continuum.

Treatment modalities need to be established by which follow-up or refresher training in CBT skills can be effectively delivered. Modalities might include an online intervention either the one completed or a different one such as MoodGYM, attending one or a small number of sessions according to need or both. Bibliotherapy could also play a role because it would provide an individual with a different approach to CBT thereby enriching learning.

The practicability should be researched of refining online intervention measures to cater for individual differences in learning rates and time availability for the intervention. Individuals might show sufficient improvement to address their disorder within a small number of sessions and so lose their motivation to complete the course, as has happened in the present study. On the other hand safeguards are needed to ensure that temporary 'placebo'-like improvements are not mistaken for robust change and lead to the participant deciding to end the intervention. This issue is less likely to arise where face-to-face sessions are interspersed with the online course because the treatment provider can alert the individual to the likelihood that this might be occurring.

The selection of participants who are best suited to treatment with an online component needs to be based on criteria established by research. There is a self-selection element involved in that individuals without knowledge or a liking for online work are less likely to opt for this modality. However there is no certainty that just because an individual feels at ease in an online environment he or she would do better in an online intervention. An approach is needed to provide individuals with guidance to make effective choices in treatment modality and providers to assist them in making these choices.

The concept of stepped care was often cited in this study. Research is needed to establish the most effective treatment modality for given levels of severity of depression. The writer envisages that a client would complete the BDI, undergo a clinical assessment to validate the test score and be recommended a form of treatment on the basis of score, clinical judgement and client wishes. For example clients scoring at subclinical levels would be recommended inspirational readings and video presentations. At progressively higher BDI scores and validating assessments clients would be invited to consider bibliotherapy, online treatment in a self-help site, online and face-to-face as in the present study and for the most severe forms intensive face-to-face therapy. This approach does not deny the individual's right to choose medication or other forms of treatment. Some of the writer's clients did opt for medication with a psychiatrist when they perceived they were not progressing sufficiently well. Most returned to CBT when they realised that medication and side effects were interfering with their functioning and also, for some, because its interaction with alcohol removed an important mode of relaxation they shared with their friends and families at mealtimes. Where appropriate the writer enjoys advising his clients that CBT and a glass of wine are compatible.

The present study is on depression. Although this disorder deserves most attention given its high prevalence in the community other disorders

including panic, generalised anxiety, the phobias, bulimia and anorexia also deserve attention. CBT is a treatment methodology that is highly amenable to self-management as demonstrated by Internet, bibliotherapy and manualised face-to-face studies. Similar control-group studies should test the efficacy of integrated course and session CBT interventions in different disorders. Providers intending to utilise this type of intervention could develop the core of CBT in one module with other modules covering the specifics of individual disorders. In this way providers could maximise the numbers of clients treated. One of the advantages of the integrated intervention is hypothesised to be that participants become valuable contributors to continuous development of the online course and the approach itself. The provider is able to collect data from every client and use the information to tune the course and the intervention closer to needs.

The writer is aware that non English language communities have a dearth of psychologists who are bilingual to the extent that they can deliver treatment in a language other than English. The study points to a possible venue by which older people in these communities can access treatment. Although they might not have adequate online skills they likely have children or grandchildren with the skills who would be willing to provide some elementary training and access time to their own computers. Following completion of this study the writer intends to prepare a similar site in Greek because through his practice he has seen many older persons from this background with Internet access at home and a willingness by children and grandchildren to help their old folk explore this medium.

Motivation to complete treatment is an important factor for further research. The less engaging the treatment the more likely that the individual might abandon it. The Internet course appears to have in-built attractions for clients. It is self-contained and from the start clients know the amount of reading material and exercises it includes. They are therefore in a position to plan, which itself is a useful skill in overcoming

depression. This leads to an enhanced sense of responsibility and ownership – they are in charge of their treatment. They are not entirely dependent on someone else to show them the way out of their depression. Another factor is that some clients with depression might miss sessions due to low mood and other impediments. Because the course is online participants are able to pursue learning when they feel best able to do so. Postponing sessions whilst on the online course is not necessarily fatal to progress and any queries can be managed by email. The requirement to undertake a task, especially of a cognitive nature is often perceived as daunting by a depressed individual. However this is offset by having to attend fewer sessions in the beginning, before improvement begins, when motivation is low.

One of the assumptions of online treatment that merits research in relation to its contribution to the treatment process is the inherent ready availability of enrichment material. No live treatment can provide a client with the richness of material on the Internet. Participants can find different explanations for concepts and examples to supplement their learning or to help them appreciate a topic in its entirety. The therapist acts more as a coordinator and facilitator of learning rather than as a dispenser of knowledge. Training in skills is not as time constrained as in face-to-face treatment because it is undertaken by the participant working on the online course at his or her optimum pace. The sessions provide the opportunity to expand CBT skills training into coaching and shaping behaviour in a range of life situations confronting the client. The proviso that individuals have online skills does not appear to be a daunting obstacle. In the study, one completer had rudimentary skills in accessing the Internet. He was briefly shown how to access the site and progress with online treatment. He became adept in a short time. All these factors should be researched to determine the validity of their contribution to the treatment process.

The savings demonstrated by the study is a key advantage in today's strained government health budgets. The study shows that for most

clients the Medicare rebate limit of twelve sessions annually is likely to be sufficient for treating all but those who have a lengthy history of depression. For the latter there is always the possibility of continuing their treatment online through sites such as MoodGYM. Where money is not a pressing concern or the individual has private health insurance to supplement Medicare, continuing to attend face-to-face sessions with the same or different provider is an option. In any case, individuals should have continuing access to the online course or a publicly available intervention such as MoodGYM and the option of pursuing material in referred sites.

The issue of non completers appears to be less relevant to the success of an online treatment program than anticipated at the beginning of the study. Online treatment has the inherent capacity to cater for individuals with widely differing learning abilities, preferences and time availability. In the study the non completers did not abandon the course because of difficulty or loss of interest. One was motivated to pursue a different approach to overcoming his depression, another simply read ahead and applied the skills without treatment provider support and the third experienced a change in life circumstances. Interventions using online courses should be designed flexibly to cater for the range of individual differences and particularly to avoid implying that depression won't lift unless all segments of the course are completed.

Charging clients for the online component in an intervention which combines both face-to-face and online is a challenge. The writer has made the site freely available to his clients and has not charged them. However it is possible that a client attending the introductory session during which access to the site is arranged might find as he or she progresses with online treatment that this is enough by itself to lift depression. Unless some form of charging is introduced the provider is not being recompensed. This issue is made more difficult to resolve where Medicare or the private health funds are involved, which pay only for treatment directly provided to the client.

(vi) Final comment

The expansion of healthcare provision through the Internet is unlikely to wither. There is a need to research improvements in intervention delivery and at the same time to overcome the many impediments before findings in studies such as the present one are able to make an impact – the profession needs to be convinced and professionals require training and support in website design and online treatment delivery. Ethical considerations should be addressed and guidelines written.

Online interventions are likely to attract individuals who are knowledgeable about the Internet and are comfortable with taking charge of their own treatment. Given the current and the projected levels of access to the Internet, interventions such as in the present study are becoming available to an increasing proportion of the population. There are some imbalances such as the lower levels of access by older people who tend to experience depression and other psychological ills more frequently and by the economically deprived. The writer believes that the proportion of older Internet users might be increasing at a greater rate than estimated. He is president of a group of former RAAF national servicemen in Sydney, all close to the age of 70. Of the 60 members who have joined up to November 07, 35 or over half have Internet access and most have broadband. About half have acquired online access in the last two years.

The study shows that the therapeutic benefits available through online treatment are not confined to sites especially designed and set up to meet needs of the Internet community. A practitioner with training and experience in face-to-face counselling and some computer knowledge is able to develop a website to take over some of the information giving and skills development in the treatment of depression by CBT. There are software packages that made website design an easy process, such as Microsoft FrontPage, Microsoft Publisher, Broderbund PrintShop and A4

Desk which uses Flash for designing animated presentations. PrintShop is low-cost software while A4 Desk can be freely downloaded.

Online work by the clients can be fully integrated into the treatment plan. Apart from explaining any concepts which the client finds difficulty in understanding whilst undergoing the online course, sessions are devoted to ensuring clients are able to apply the skills learnt to their day-to-day functioning. Being online the course provides ready access to all topics that need coverage and hence is sensitive to individual differences in learning rates, time availability and motivation to pursue enrichment by accessing other sites with related topics. The perceived and actual availability of the live therapist creates a sense of partnership. Sessions help to establish a healthy and vibrant client-therapist relationship. The routine aspects of teaching information and skills are pursued by the clients themselves through the course. Skills coaching, that is applying CBT to the resolution of real life issues confronting clients, is done in the sessions. Apart from leading to a reduction in face-to-face sessions this approach cements the client-therapist relationship into one of a partnership. The writer normally requires about eight to twelve sessions to treat depression for moderately depressed clients. The study took an average of less than five. There were however large variations, from ten for a male in his late 40s with a history of lifetime depression episodes to two for two males who only needed two face-to-face sessions. The writer estimates that he would have needed a minimum of 16 hours to treat the first participant hence the Internet course did result in cost and time savings.

The study has shown that the argument that is putting online and face-to-face treatments at opposite ends is nonsense. Both have their strengths and roles to perform. An approach that integrates both modalities into one intervention draws benefits from each, reduces costs and treatment times and importantly puts clients in charge of their own treatment.