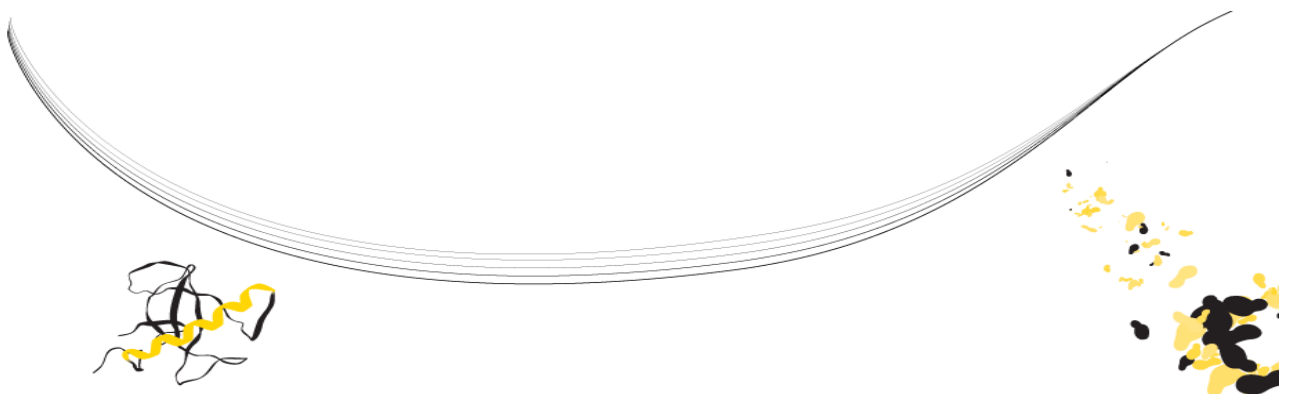# *Bachelorthesis*

„Internet therapy for anxiety disorders"

A critical review of its effectiveness

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Abstract

Anxiety disorders are worldwide the most prevalent of the psychiatric disorders as about every sixth person will acquire one at some point in life. They bring with them a high degree of suffering for the patient and huge economic costs to society. In order to make therapy available and attractive to a much greater number of patients and in order to reduce costs ADAPT is developing an internet therapy for anxiety disorders. Down to the present day little is known about its effectiveness, therefore this paper will investigate whether internet therapy is a viable alternative or supplement to usual face-to-face therapy.

A search was conducted for meta-analyses and other reviews on the topic and 13 studies testing internet therapy for anxiety disorders and other medical problems were evaluated. Results show that internet therapy is as effective as usual face-to-face therapy in reducing anxiety symptomatology, as long as therapist contact is available to patients. The target group was found to consist mainly of well-educated, working women. Internet interventions can thus be a cost-effective alternative or supplement to usual treatment; although a great deal of further research has yet to be conducted so as to be able to rule out possible disadvantages and to be able to apply internet therapies on other health problems as well.

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1. Introduction

All over the world many people suffer from the different kinds of anxiety disorders. Anxiety disorders are the most prevalent of psychiatric disorders, with the worldwide lifetime prevalence being estimated at 16,6%. In the Netherlands 4,6% of the women and 1,6% of the men between the age of 18 and 65 come down with an anxiety disorder every year (Nationaal Kompas Volksgezondheid, n.d.). This leads to high costs to the health care system and through absence from work due to illness. However, although a high strain is put on the individual suffering from anxiety disorders, less than 30 percent of these individuals seek treatment (Lépine, 2002).

Reasons why many individuals do not seek help do not only lie in the nature of the disease (e.g., social phobia) which often limits people in being active and leaving their home, but also in feelings of shame, unknowingness (about diagnosis and treatment), large waiting lists in mental health institutions, geographical barriers if individuals live in an isolated area or have mobility limitations and eventual costs of treatments (Reger & Gahm, 2009). Here internet therapy can be of great support: Patients can for example have therapy in their own usual surroundings and move on in therapy at their own pace. Another great advantage is anonymity, which might diminish feelings of shame or of being stigmatized and encourage individuals to seek help (Barak, 1999; Rochlen et al., 2004).

1.1   Definition of internet therapy

There are many types of internet therapy and an exact definition has yet to be determined. Rochlen, Zack and Speyer (2004) for example distinguish between stand-alone services and internet therapies that are part of a traditional face-to-face therapy. Some of the stand-alone services do not include any therapist contact; others include contact via e-mail, chat or telephone. Some studies show that it is sufficient for patients to be able to talk via the phone or write to a paraprofessional who encourages them or reminds them to go on with the treatment (Cuijpers & Schuurmans, 2007). Keizer, Postel, Westendorp and Brenninkmeijer (2007) introduce terms such as e-health, online counseling, internet-

mediated therapy, internet counseling or web-based therapy. They define electronic therapy as a process of interaction between a client and a therapist, where client and counsellor reside in different places and communicate via the internet. Here the distinction is made between synchronous and asynchronous forms of therapy. In a synchronous therapy the interaction between therapist and client is direct and immediate, for example in a chat or via the telephone. Asynchronous means that some time elapses before the reactions take place, for example in e-mails.

Although this is a very recent development, there already exists a wealth of internet interventions and research about them. Programs usually have the same structure. Patients first go through a screening process to make sure the program is suited for their problem and in order to screen for individuals not suited for internet therapy (e.g. individuals at risk for suicide or with unstable personality characteristics). These individuals are referred to a psychologist or other medical institution, as they are too unstable for participation in internet programs. After individuals are accepted to a program, they begin with the different modules offered via the internet. Some programs offer direct feedback and constant contact with a psychologist, others do not. While many programs are free of time limits and always accessible to patients, some of the studies set time limits for the completion of modules. Apparently there are many questions still to be answered about procedures and about how to achieve highest effectiveness of internet therapies.

1.2   Aim of this research

ADAPT which is part of Dimence, a Dutch institution for mental health, is now developing a new internet intervention for individuals with anxiety disorders.

For this intervention ADAPT works together with the University of Twente and Tactus, a Dutch substance abuse counselling organization that has already successfully implemented an internet program for individuals with alcohol problems, the so-called "alcohol de baas" program. It is based on the bio-psycho-social model and works with the techniques of psycho-education, cognitive restructuring, self-control and exposure techniques (Keizer et al., 2007).

People with anxiety disorders experience a strong individual and social burden and are high utilizers of healthcare resources (Lépine, 2002). In order to create a new opportunity for these individuals suffering from anxiety disorders, and in order to reduce costs to the health care system, ADAPT is creating the program "angsten de baas". The focus of this program is on panic disorder, agoraphobia, general anxiety disorder and specific phobias. Thus the focus of research also is on these disorders, although internet interventions on other disorders are not disregarded, given that this is a quite new field of study.

Consequently there are still many questions to be answered, concerning the effectiveness of internet therapies, the possible advantages and disadvantages, about intake and screening and for example drop out and compliance to the programs. Providing a review over all these topics is the purpose of this paper.

I will give a short overview over the content of this paper. In the method I will explain how information was gathered, which sources of information were used and how many articles were actually considered in this paper. In the following section considering the results I will first shortly describe what current internet interventions look like; then I will outline how patients are recruited for studies and which kind of screening instruments are used. In the following section the main target group will be examined. Next the drop-out percentages and the factors that predict it will be assessed; then I will consider how to improve the compliance to internet treatments. In the section about patient preference, satisfaction and acceptability I will examine what patients like and do not like about internet therapy and which factors lead to their satisfaction. Then I will measure whether internet therapies are effective for anxiety disorders and which factors might improve or weaken effectiveness. The last section of the results will cover the strengths and limitations of internet therapies, describing the possible advantages and dangers internet terapies contain. Finally I will discuss my findings and present my recommendations.

2. Method

Since internet therapy is quite a new field of study I searched the databases for articles with publication years from 1995 to present. There might have been studies before that date, but they would not be comparable to the ones that are analyzed here because internet and other modern technologies were hardly available to anyone.

The search was conducted in the databases Scopus, Web of Science, PsycINFO, PubMed, Psychology & Behavioral Sciences Collection, Google Scholar and PsycArticles. Search Terms were anxiety disorder (including generalized anxiety disorder, panic disorder, agoraphobia etc.), internet therapy, cognitive behavioral therapy, online, web-based and self-help.

Search for the terms apart produced many hits. Some examples of the databases Scopus and PsycINFO: Anxiety disorder (Scopus: 53104, PsycINFO: 22557), internet therapy (Scopus: 3835, PsycINFO: 2), self-help (Scopus: 8609, PsycINFO: 284). Searching for a combination of terms considerably reduced the number of hits, but still offered more than expected: For example with a combination of anxiety disorder and internet therapy Scopus still found 140 articles, although PsycINFO only found one. Anxiety disorder and online (Scopus: 125, PsycINFO: 45), anxiety disorder and self-help yielded similar results: Scopus 324 and PsycINFO 18. Many articles were also found with a combination of anxiety disorders and cognitive behavioral therapy (Scopus: 1683, PsycINFO: 117). Reference lists of the most important articles were screened in order to find more relevant articles.

Articles were selected on the basis of their abstracts. To get an idea of how common internet therapy is, how it is conducted and of how earlier research has been done in this field, studies as well as reviews and meta-analyses about internet therapy in general and of course about internet therapy and anxiety disorders in particular, were included. The inclusion criteria for the studies considered in this paper were first that they had to be randomized controlled trial (RCT) studies on anxiety disorders. Only ten internet intervention studies were found that examined panic disorder, social or specific phobia or anxiety disorder, so another three studies concerning internet interventions for tinnitus, depression and sexual dysfunctions were included.

Thus thirteen studies concerning internet therapy were eventually taken into consideration (for results see tables 1 to 3). In addition, four meta-analyses about self-help

for anxiety disorders and about internet interventions for anxiety disorders were included (see table 4). One book, two websites and nine articles or reviews that include further information on internet therapies and anxiety disorder therapies were also taken into account.

Tables of studies:

<u>*Table 1: Study statistics, recruitment and drop-out*</u>

Study	N	M age	M educ./ alternative	Recruitment	Control group	Drop-out
Andersson et al., 2002	117 (53 CBT, 64 waitlist)	Betwe en 18 and 70	-	Recruited by means of newspaper articles in Swedish national and regional papers and on the Web page of the Swedish Hard of Hearing Association.	Waitlist	In the first phase of the study, 26 completed all stages of treatment (51% dropout), and 64 of the WLC group completed measures.
Andersson et al., 2006	64 (32 ICT, 32 waitlist)	37.3	69 % had at least some college	Recruited by means of newspaper and magazine articles, and an Internet link	Waitlist	Treatment group: 18 of 32 participants completed all modules (44% drop-out)
Carlbring et al., 2005	49 (25 ICT, 24 TAU)	35.0	-	Recruited from a waitlist of individuals interested in Internet treatment.	TAU	There were 3 dropouts from the LIVE therapy group and 3 from the IT group (12% drop-out)
Carlbring et al., 2006	60 (30 ICT, 30 waitlist)	36.7	Compulsory school (5%) secondary school, college or university (70%). Uncompleted secondary school, vocational school, college or university (22%); 3% completed vocational school	Recruited from a waiting list of people who earlier had expressed an interest in participating in an Internet administrated self-help program for panic disorder.	Waitlist	Of 30 participants, 24 (80%) finished all of the modules within the intended 10-week time limit.
Gilroy, Kirkby, Daniels, Menzies, & Montgomery, 2000	45 (15 ICT, 15 placebo, 15 TAU)	33.1	-	Recruited via newspaper advertisements and public notices.	Placebo, TAU	5 participants did not complete treatment (11% drop-out).
Kiropoulos et al., 2008	86 (46 ICT, 40 TAU)	38.96	mean=12.53 years of education	Recruited through the PO website, via search engines, hyper-links established with other Australian mental health websites and through local and national media releases.	TAU	7 applicants discontinued during treatment (8% drop-out).
Klein, Richards, & Austin, 2006	55 (19 ICT, 18 waitlist, 18	-	-	Recruited by contacts to a study Web site.	Waitlist, Manualized CBT workbook (MAN)	9 participants did not complete the intervention (16% drop-out).

	MAN)					
Lange et al., 2005	46 (32 ICT, 14 psycho-education)	42	8% lower education, 22% high school or vocational school, 70% university or college	Recruited via interview and advertisements in national and weekly newspapers and via the study website	Psycho-education	Of the 57 eligible participants, 46 completed the treatment. 8 dropped out from treatment group, 3 from control (11% drop-out)
Mayoh, 2006	30 (15 ICT, 15 TAU)	32.40	-	Participants were either referred from their general practitioners, or from the CRUfAD waiting list, or presented to the University of Sydney Psychology Clinic for treatment for panic disorder.	TAU	Of the 30 participants, 21 completed treatment (30% drop-out)
Proudfoot et al., 2004	274 (146 ICT, 128 TAU)	43.5	13% ≤10 years of education, 48% had 11 to 15 years of education, 39% >15 years of education	Recruitment took place in general practices in London and south-east England. Patients were identified by their general practitioner or by screening with the GHQ.	TAU	In the CT group 40 participants were lost at 6-month follow-up, in the TAU group 31 were lost (25.5% drop-out)
Shandley et al., 2008	96 (53 ICT with GP, 43 without GP)	40.9	mean=12.8 years of education	Recruitment took place via participating GPs, Australian mental health websites, and local and national media. Study volunteers could register their interest on the PO website.	Panic Online Treatment with GP contact	Overall attrition from pretreatment to posttreatment was 28.1%, with significantly more participants in the PO+GP group dropping out of the treatment
Tillfors et al., 2008	38 (19 ICT, 19 ICT+exposure) 28 waitlist	31.9	All the participants were university students	Recruited via Internet and newspaper articles in regional and student papers	Waitlist (from a recently completed internet trial), ICBT + exposure	8 participants (21.6%) prematurely terminated the treatment program
Van Diest, Van Lankveld, Leusink, Slob, & Gijs, 2007	39	39.0	Primary school (3%), High school (31%), Vocational education (13%), university degree (49%)	Subjects could apply by completion of the pretest on the study website. The site was freely accessible through the Internet.	No control group, only pre- and post-treatment data	46% of the participants dropped out.

ICT= Internet- or computer-based treatment

TAU= Treatment as usual

Table 2: Design and Diagnosis

Study	Nature of ICT		Nature of placebo	Diagnosis/ symptoms
Andersson et al., 2002	The self-help manual included 10 components presented in six modules on a weekly basis for 6 weeks.		-	Tinnitus
Andersson et al., 2006	9-week internet-delivered self-help program divided into nine modules. In each module, participants posted a		-	Social Phobia

	message in a discussion forum about a specific topic.		
Carlbring et al., 2005	10-week internet-delivered self-help program divided into 10 modules. Participants also posted at least one message in an online discussion group during each module. Additionally, each module ended with five to eight questions and an interactive multiple-choice quiz.	-	Met DSM-IV criteria for a diagnosis of panic disorder; panic disorder was the primary problem with a duration of at least 1 year.
Carlbring et al., 2006	The 10-week treatment was manualized and divided into 10 modules.	-	The participant must fulfill DSM-IV criteria for panic disorder and must have a duration of panic disorder of at least 1 year
Gilroy et al., 2000	Computer-aided vicarious exposure. Each participant received three 45-minute treatment sessions, spaced approximately 2 weeks apart.	Progressive muscle relaxation delivered with an audiotape. Authors cite that relaxation is ineffective for specific phobia.	Specific Phobia (Spiders) based on the CIDI; minimum duration of phobia of 1 year.
Kiropoulos et al., 2008	Panic Online (PO) is a 12-week structured program comprised of an introductory module, four learning modules, and a relapse prevention module. In addition, participants had access to the stress and benzodiazepine reduction modules also housed in PO.	-	Participants had a DSM-IV primary diagnosis of Panic Disorder (with or without agoraphobia)
Klein et al., 2006	Panic Online is a 6-week structured program including an introductory module, four learning modules, and a relapse-prevention module.	Information control in which participants were instructed to reread Internet-based informational program about panic. Received no active CBT.	Primary diagnosis of panic disorder as assessed by the ADIS-IV
Lange et al., 2005	The Interapy treatment is made up of cognitive-behavioral therapeutic interventions. Treatment is divided into 8 phases and takes up a minimum of 11 weeks (Mean treatment time=16 weeks).	Pycho-education; information about what depression is, types of treatments and background information on Interapy program.	Depression, assessed by the Beck Depression Inventory
Mayoh, 2006	Participants were provided with a 64-page treatment manual. The manual was divided up into eight sections, one for each week of the treatment program, plus one section to be read during the 4-week post-treatment period between sessions 6 and 7.	-	Panic Disorder with or without agoraphobia
Proudfoot et al., 2004	Beating the Blues is a 9-week interactive, multimedia, computerised cognitive–behavioural therapy package consisting of a 15 min introductory videotape, followed by eight therapy sessions. Each weekly session lasts about 50 min, with 'homework' projects between the sessions.	-	Depression, mixed anxiety and depression or anxiety disorder (including phobias or panic)
Shandley et al., 2008	Panic Online is a 12-week eTherapy program consisting of an introductory module, four learning modules, and a relapse prevention module.	-	Panic disorder (with or without agoraphobia)
Tillfors et al., 2008	The main treatment component was a self-help manual, which consisted of nine modules; one per week. Participants were encouraged to take an active part in an online discussion group.	-	Social phobia
Van Diest et al., 2007	The treatment was based on the model of Masters and Johnson (1970), including sensate-focus exercises. The treatment's duration was 3 months.	-	Sexual dysfunctions

Table 3: Contact, measures and results

Study	Clinician contact with ICT group	Primary outcome measures	Results
Andersson et al., 2002	All modules involved homework assignments and weekly reports on a report web page to be submitted weekly. When submitting a week's report, the participant was sent an encouraging E-mail with the instruction to go to the next module.	Tinnitus Reaction Questionnaire (TRQ) Hospital Anxiety and Depression scale (HADS) Anxiety Sensitivity Index (ASI)	Treatment group > waitlist on tinnitus-related distress, depression, and diary ratings of annoyance. At the uncontrolled follow-up, 27 (31%) of all participants had achieved a clinically significant improvement.
Andersson et al., 2006	Individual feedback via e-mail on questions at the end of each module (approximately 3 hr per participant). Participants invited to complete two 3-hr group exposure sessions.	Social Phobia Screening Questionnaire (SPSQ) Montgomery Åsberg Depression Rating Scale (MADRS-S) Liebowitz Social Anxiety Scale (LSAS-SR) Beck Anxiety Inventory (BAI); Quality of Life Inventory (QOLI)	Treatment group > waitlist on most measured dimensions (social anxiety scales, general anxiety and depression levels, quality of life). Treatment gains were maintained at 1-year follow-up.
Carlbring et al., 2005	Individual feedback was provided via e-mail on homework for each module; participants could send unlimited e-mail (M=15.4); M therapist time=150 min per participant	Body Sensations Questionnaire (BSQ) Agoraphobic Cognitions Questionnaire (ACQ) Beck Anxiety Inventory (BAI) Beck Depression Inventory (BDI)	Internet-administered self-help plus minimal therapist contact via e-mail = (equally effective as) traditional individual cognitive behaviour therapy. One- year follow-up confirmed the results.
Carlbring et al., 2006	Participants were free to send an unlimited number of e-mail messages. Mean number of reciprocal contacts was 13.5. The mean time spent on each participant per week was appr. 12 minutes. Weekly telephone calls were made by the therapists to each participant. Telephone conversations lasted an average of 11.8 minutes per week.	Agoraphobic Cognitions Questionnaire (ACQ) Body Sensations Questionnaire (BSQ) Quality of Life Inventory (QOLI) Beck Depression Inventory (BDI) Mobiliy Inventory (MI)	Treatment group > waitlist on all measured dimensions (bodily interpretations, maladaptive cognitions, avoidance, general anxiety and depression levels, and quality of life). Treatment gains were maintained at the 9- month follow-up.
Gilroy et al., 2000	Five minutes in the initial session to ensure participant was comfortable using the program.	Behavioral Assessment Test (BAT) Subjective Units of Distress Scale (SUDS) Spider Questionnaire (SQ) Fear Questionnaire (FQ) Phobic Targets (PT)	Computer-aided vicarious exposure = live exposure therapy in significantly reducing phobic symptoms. Both the computer and live exposure treatments > relaxation placebo treatment.
Kiropoulos et al., 2008	All psychologists interacted with their participant via email, providing individualized support and feedback to the participant. PO required significantly less therapist time than the face-to-face CBT condition.	Panic disorder severity scale (PDSS) Anxiety sensitivity profile (ASP) Depression, anxiety, stress scales (DASS) Agoraphobic cognitions questionnaire (ACQ) Body vigilance scale (BVS)	Internet-based CBT program = face-to-face CBT in reducing panic disorder and agoraphobia clinician severity ratings, self reported panic disorder severity and panic attack frequency, measures of depression, anxiety, stress and panic related cognitions, and displayed improvements in quality of life.
Klein et al., 2006	Individualized e-mail support and feedback; actual therapist time: M=332.5 min per participant.	ADIS for DSM-IV (ADIS-IV) Panic disorder severity scale (PDSS) Anxiety sensitivity profile (ASP) Depression, anxiety, stress scales (DASS) Agoraphobic cognitions	Both CBT treatments > waitlist in reducing PD symptomatology, panic-related cognition, negative affect, and number of GP visits and improving physical health ratings. Internet treatment > CBT manual in reducing clinician-rated agoraphobia and number of GP visits at post-assessment. At follow-up, these

		questionnaire (ACQ) Body vigilance scale (BVS)	effects were maintained for both CBT groups, with internet CBT better at improving physical health ratings and reducing GP visits.
Lange et al., 2005	Treatment took place only via the website. Emails were only used in special cases, when participants had questions or needed some extra information	Beck Depression Inventory (BDI) Depression subscale of the SCL-90 Depression, Anxiety and Stress Scale (DASS)	Active treatment group > psycho education group in clinically significant improvements. (75% vs 36 %). Improvements were maintained at 6-week follow-up.
Mayoh, 2006	Participants in the IT condition were required to log onto the Making Changes website at the scheduled time each week. Conversation took place via a chat program on the website.	Depression, Anxiety and Stress Scales (DASS) Agoraphobic Cognitions Questionnaire (ACQ) Body Sensations Questionnaire (BSQ) Mobility Inventory (MI) Working Alliance Inventory (WAI)	TAU > Internet Therapy in significantly reducing panic symptomatology overall. Internet Therapy did significantly reduce certain symptoms of panic disorder, indicating that Internet Therapy may be useful as an adjunctive treatment to face-to-face therapy
Proudfoot et al., 2004	A practice nurse checked that the patient had logged on successfully at the beginning of each session. The nurse indicated where she was to be found if something went wrong. Nurses were instructed to spend no more than 5 min with each patient at the start and at the end of each session.	Beck Depression Inventory II (BDI) Beck Anxiety Inventory (BAI) Work and Social Adjustment Scale (WSA) Attributional Style Questionnaire (ASQ)	Computerised therapy > TAU in improving depression, negative attributional style, work and social adjustment. Computerised therapy > TAU for more disturbed patients.
Shandley et al., 2008	Communication between participants and psychologists occurred via email. No limitations were placed on email frequency. On average, per participant, eTherapists sent 15.29 emails and spent 378.62 minutes emailing participants throughout treatment.	Anxiety Disorders Interview Schedule-IV (ADIS-IV) Anxiety Sensitivity Profile (ASP) Depression Anxiety Stress Scale (DASS) Mobility Inventory (MI) Panic Disorder Severity Scale (PDSS)	Panic Online treatment without GP= PO treatment with GP in clinically significant improvements on measures of panic and panic-related symptomatology. Both groups significantly improved over time. Improvements for both groups were maintained at follow-up.
Tillfors et al., 2008	Therapist feedback on the homework assignments was given via e-mail. The participant was called and asked about the reason behind the delay as well as mood status if the therapist had not heard from the participant over a period of over 2 weeks. On average, Internet-therapists spent 35 min each week on e-mail support for each participant. The ICBT+ exp group had five live group exposure sessions.	Social Phobia Scale (SPS) Social Interaction Anxiety Scale (SIAS) Beck Anxiety Inventory (BAI) Montgomery Åsberg Depression Rating Scale (MADRS-S)	Both treatment groups = TAU in significantly improving all measured dimensions (social anxiety, general anxiety, depression levels, and quality of life). Adding group exposure sessions did not improve the outcome significantly.
Van Diest et al., 2007	Therapist contact took place via e-mail. The number and frequency of e-mail contacts was left to the judgment of the therapist and participant. At the end of the treatment period participants were asked to participate in the exit interview by telephone or by e-mail, whichever they preferred.	Maudsley Marital Questionnaire (MMQ) Golombok Rust Inventory of Sexual Satisfaction (GRISS) International Index of Erectile Function (IIEF)	14 (67%) participants reported an improvement of their sexual functioning. 7 (47%) participants reported the improvement had sustained one month after termination, 8 (53%) participants reported no further change.

Table 4: Meta-analyses

Authors, Year	Topic	No. of studies included	Inclusion criteria	Results/ Conclusion
Den Boer, Wiersma & Van den Bosch (2004)	Exploring the effectiveness of self-help strategies for treatment of patients suffering from remittent and chronic disabling mood and anxiety disorders.	14	a) Only randomized controlled trials that used symptom measures or a psychiatric diagnosis and compared bibliotherapy or self-help group with placebo or waiting list conditions and usual treatment conditions; b) diagnosis was based on a structured clinical interview for assessment of a DSM or ICD diagnosis or on assessment scales using a cut-off score to establish caseness; c) only adult population; d) only therapeutic interventions for self-treatment administered through group meetings (self-help groups) or bibliotherapy.	Mean effect size of self-help (mainly bibliotherapy) v. control conditions is 0.84, and 0.76 for follow-up; effect sizes of self-help v. treatment are -0.03 and -0.07 respectively. A longer treatment period is more effective. The dearth of studies on self-help groups for emotional disorders does not permit an evidence-based conclusion concerning the effects of self-help groups.
Hirai & Clum (2006)	Examining the effectiveness of self-help (SH) interventions for individuals with anxiety problems.	33	a) Studies that employed media-based (including books, manuals, audiotapes, videotapes, computer-assisted programs, Internet, or some combination) interventions with minimal therapist contact; b) only therapist-initiated, nontherapeutic contact by phone, letter, e-mail, face-to-face, or combinations of these methods; c) only adult populations; d) at least one control group with random assignments to groups; e) were either published in an English language journal or were unpublished dissertations.	Drop-out rates were very low, not higher than in Therapist-directed interventions (TDIs). SH was moderately effective compared to control groups, but TDIs were more effective than SH interventions to treat both diagnosed and nondiagnosed anxiety problems. The existence of an incremental effect for TDIs is evidence in favor of a stepped-care approach in the treatment of anxiety problems.
Reger & Gahm (2009)	Measuring effects of internet- and computer-based cognitive behavioral treatments for anxiety.	19	(a) randomized controlled trial (RCT) of individual CBT delivered with Internet or computer-based software; (b) included adult participants with anxiety; (c) administered outcome measures assessing levels of anxiety, depression, general distress, dysfunctional thinking, or functioning/quality of life; and (d) reported sufficient information about the study results to allow computation of an effect size (ES) estimate.	The effects of ICT were equal to therapist-delivered treatment across anxiety disorders.
Spek, Cuijpers, Nyklicek, Riper, Keyzer & Pop (2007)	Measuring to what extent internet-based cognitive behaviour therapy (CBT) programs for symptoms of depression and anxiety are effective.	12	a) Only randomized controlled trials; b) both published and unpublished; c) only studies that compare internet-based CBT with control groups such as waiting-lists, treatment as usual, and placebos; d) prevention studies are included, so no limitations in (minimal) significance of symptoms; e) only participants above 18 years old; f) studies without therapist support, or with limited support; g) only internet-based treatment, computer-based treatment not involving the internet is excluded.	Effect sizes of internet-based interventions for symptoms of anxiety were larger than effect sizes for depressive symptoms. This might be explained by differences in the amount of therapist support.

3. Results

3.1   Types of internet interventions

A range of different types of internet interventions exists. I will give a short explanation of the most common types and their structure.

The majority of the studies on social, anxiety and panic disorders presented here use programs that are supposed to run between 6 and 12 weeks and consist of several modules the patient runs through. Most modules are based on cognitive behavioral therapy (CBT) and include psycho-education and socialization, instructions for controlled breathing, cognitive restructuring, interoceptive exposure, exposure in vivo, and relapse prevention and assertiveness training. Feedback on the completed modules is usually given via e-mail and many times patients are asked to do homework assignments and/or to take part in an online discussion group. In some programs therapist contact is limited, for example to an e-mail or phone call once a week on a scheduled time in order to discuss the module; in others patients are free to contact their therapist as frequently as they wish. At the end of each module patients usually fill in a short multiple-choice test or some essay questions so the therapist can assess whether the patient has understood the content and advanced in therapy during the module.

One example of an already successfully implemented program is the so-called FearFighter, an internet treatment applied for panic and anxiety disorders, specific phobias, anxiety co-morbid with depression and obsessive-compulsive disorder. This 3-month program is based on CBT and has been tested many times; it has been proven to be clinically effective and cost effective. Patients can use the program 24 hours, as many times as they wish and are advised to use it at least once a week in order to report how they have been doing. Usually therapist contact is kept to a minimum; brief telephone contacts are scheduled for a total of one hour over 10 weeks (FearFighter Panic & Phobia Treatment, n.d.).

Most internet interventions for anxiety disorders are based on CBT principles and patients run through modules that include the different CBT techniques. Therapist contact can be restricted or unrestricted.

3.2   Recruitment and screening

The intake procedures, consisting of recruitment and screening of individuals, was done in different ways in the different studies, but usually had some common components.

Recruitment of participants for the studies is often done via local or national newspaper and magazine articles; if websites are involved, recruitment takes place via internet links on the study website (e.g. Andersson et al., 2006; Lange et al., 2005). In many studies advertising folders were put in general and health practitioner practices, on notice boards or in self-help groups. Sometimes patients were also referred by their general or health practitioner. Carlbring et al. (2005, 2006) recruited participants from a wait list of people who had earlier expressed interest in taking part of an online intervention program.

The screening of the participants is in most cases achieved by a computerized screening interview. In these interviews a number of questionnaires are used in order to assess the presence and severity of the problem in question, to assess current and past treatment, and sometimes also to assess whether there are any co-morbid diseases like depression etc.

Another important feature of the screening procedure is to find out which participants are not suited for an internet intervention. If a patient for example has suicidal intentions or unstable personality characteristics he or she will be excluded from the program because an internet intervention is not safe when close personal supervision is needed. Participants excluded from an internet intervention are referred to a psychologist or another medical institution.

In most of the studies, individuals who fulfil the inclusion criteria are invited to a Structured Clinical Interview for DSM-IV (SCID), either in person or by phone (Tillfors et al., 2008; see also Carlbring et al., 2005), in order to confirm the diagnosis. Sometimes the SCID has already been part of the first screening interview. In a study by Proudfoot et al. (2004) for example, part of the screening is done by a general practitioner.

Apparently there are different procedures regarding the intake. The advantages of using websites, search engines, or self-help groups in the internet for recruitment for an internet

intervention are obvious. By also distributing information about the programs in local and national newspapers and magazines, in yellow pages and in general practitioners offices it can be made sure that the general public is reached.

The computerized screening interview seems to be very effective for screening, as there clearly is a preference for it in almost all of the studies. The SCID is another essential part of the screening process. It is usually done via the telephone and in some cases as a face-to-face interview.

Although there seem to be certain preferences concerning screening instruments, it is not yet known which screening instrument is the most effective one.

3.3   Target group

In studies with an open recruitment strategy it seems that noticeably more women than men use internet therapy programs. At large about two thirds of participants in most studies is female (e.g. Proudfoot et al., 2004). Also striking is that the majority of the participants seems to be well educated and working; most of them have had at least some college or university education (Lange et al., 2005) and only a small percentage is unemployed.

In their book about internet therapy for alcohol problems Keizer, Postel, Westendorp and Brenninkmeijer (2007) compare the internet therapy target group to the face-to-face therapy target group (based on numbers of TACTUS, a Dutch institution for counselling on addiction). Although about equally as many women as men use the internet therapy, the percentage of women is a lot higher than in traditional face-to-face therapy. They also find that the level of education is significantly higher in the internet therapy group. While in the face-to-face setting about 28% of the clients have a high school diploma and only 12% have a college or university education, of the internet therapy users about 34% have a high school diploma and 50% have college or university education. In the face-to-face therapy only 33% of clients has work, while 73% of the internet therapy users are employed.

The studies listed in Table 1 also give a pretty unambiguous picture about marital status, living situation and age of most of the participants in internet programs. The majority is married and living together (either with a partner or with friends). Mean age of

participants in the studies considered here is about 37 years (not including studies with university students only).

The target group of internet therapy thus seems to be mainly female, well educated and working.

3.4 Drop-out

Drop-out rates of 8% to 51% were found in the studies regarded in this paper. The mean drop-out rate is 25%, where 5 studies had a drop-out of less than 20%, 5 studies between 20% and 30% and 3 studies more than 30%. This great range is not surprising, since the studies varied greatly in number of participants and in design. Anderson, Jacobs and Rothbaum (2004) found that drop-out rates for computer therapies are approximately equivalent to drop out rates of regular therapy. This is confirmed by meta-analyses about self-help for anxiety disorders such as the one conducted by Hirai and Clum in 2006; but only as long as the participants are guided through the therapy or when treatment is administered by a professional. Unguided self-help therapies result in much higher drop-out rates than usual face-to-face therapy (Cuijpers & Schuurmans, 2007). More research should be conducted on this topic in order to confirm these numbers.

Drop-out reasons of the suitable patients that have been accepted to a program and have begun a therapy are often unknown and are difficult to find out, especially when programs are run via the internet and anonymously. The main reason in internet intervention studies where reasons could be assessed seemed to be lack of time (e.g. Carlbring et al., 2005; Tillfors et al., 2008; Andersson et al., 2006). Other reasons mentioned were lack of motivation, personal or health problems not related to the treatment, not having enough peace and quiet at home or not being satisfied with the program/ treatment. These are continuously mentioned reasons, as well in studies concerned with interventions for the different anxiety disorders, as in studies with internet interventions for other problems: tinnitus or sexual dysfunctions for example. When treatment modules had to be completed within a certain range of time, another reason for drop-out was that the program was too

fast and patients could not finish the modules according to schedule (e.g. Andersson, 2002; see also Andersson et al., 2006).

But many times when patients did not complete the whole program reasons were that they simply had already had enough training and knowledge and felt that they did not need to go on with the program in order to get better (Lange et al., 2005).

Drop-out rates of internet therapies thus seem to be in a similar range of that of regular face-to-face therapy, although more research should be conducted on this topic. In order to be able to improve treatments further and to increase compliance it would be useful for all programs to collect information about reasons of drop-out.

3.5   Compliance

Compliance to treatment is in general a difficult topic, not just in internet therapies but also in traditional face-to-face therapies or medical settings.

In order to improve compliance to internet therapies there have been numerous attempts and suggestions. Ritterband et al. (2003) for example suggest stressing the importance of following through with treatment recommendations, adding motivational components to the program and providing reinforcement for cooperation and program completion. The internet and computers in general provide a wide array of opportunities to make programs more appealing through the use of graphics, animation, videos or audio material. Ritterband also suggests the use of games, quizzes and case reports to make programs more interesting and personal. Although the impact of these means still needs to be assessed, this is a great opportunity not just for the anxiety disorder programs, but for many more internet- and computer-based self help programs to make access and therapy easier and more appealing.

Many programs include e-mail or telephone contact with a psychologist, therapist, general health practician or contact with a layperson that is simply of supportive or facilitative nature. This seems to improve compliance a great deal, since patients can be reminded regularly, motivated and supported if they come across any sort of problem, without infringing on the right of anonymity (Carlbring et al., 2006).

Adding reinforcement and motivational components to internet programs and offering patients a contact person whom they can call or email when they have questions or doubts are some promising ideas to improve compliance to treatment.

3.6   *Patient preference, satisfaction and acceptability*

In general there seems to be a slight patient preference for internet therapy over usual face-to-face therapy. Rochlen et al. (2004) for example found in their research that clients in the internet therapy condition had a higher level of participation than clients in the face-to-face condition, including the client's activity level, initiative, trust, spontaneity and disinhibition. Usually satisfaction is reported to be high in both the internet therapy groups and in the face-to-face groups. Although some researchers report no difference in patient preference or satisfaction (Klein et al., 2006), or even find patient satisfaction to be greater in face-to-face therapy because for example communication with the therapist was rated as more enjoyable (Kiropoulos et al., 2008), many of them also find a slight preference for internet interventions (Barak, 1999; see also Proudfoot et al., 2004).

King and Moreggi (1998) collected some statements of consumers of internet therapy. They reflect very well why some patients prefer internet therapy and others again prefer face-to-face therapy. Positive comments for example were made about availability by a person who moved to a remote area, anonymity, convenience or being able to organize thoughts while writing. Negative comments included statements about trust, a slow give and take and a minimum of information. In other studies (Van Diest et al., 2007) easy access, self-pacing opportunity, own time management and lack of waiting time were judged as positive aspects of internet therapy. Critical points mentioned were that direct contact with the therapist was not possible and that therefore difficulties were experienced to describe feelings, and that answers did not come immediately. Some patients remarked that substantial writing skills are required for internet therapy.

Where patients run through a given program with time restrictions to finish the modules, the pressure of time is experienced as negative by several patients (Carlbring et al., 2005).

Cunningham, Rapee and Lyneham (2006) examined adolescents` preference on how information is presented in internet therapies. They found out that video material was usually preferred over cartoons, audio or text options. Most common reasons mentioned for video preference were realism and the friendly, interactive and visually appealing format. Reasons for video dislike were bad "fake" acting or preference for learning by reading. Those participants who preferred the cartoons judged them being "more fun" and "easier to relate to". Although only adolescents were interviewed in this study, it might be revealing for internet therapies for adults as well. Meta-analyses also confirm that combining written material with audio and/or video information may enhance outcomes of therapies (Hirai & Clum, 2006).

In general acceptability of computerized therapy seems to be high. In a study by Proudfoot et al. (2004) for example, withdrawal from internet therapy was similar to the rates reported for face-to-face therapy. Furthermore, from those who dropped out only half quit because of dissatisfaction with the treatment. Satisfaction with the computerized treatment was actually higher than satisfaction with treatment-as-usual. Lange et al. (2005) report that the majority of their patients enjoyed the internet therapy and 78% experienced the contact with their therapist as personal while only 4% judged it as impersonal.

It seems thus that although a lot of research has yet to be done; for many people internet therapy is a viable alternative or supplement to regular face-to-face therapy.

3.7   Effectiveness

Most of the studies comparing internet treatment with regular face-to-face therapy come to the conclusion that they are equally effective. Only Mayoh in her study of 2006 came to the conclusion that treatment as usual (i.e. face-to-face therapy) is more effective in reducing

panic symptomatology overall, but also suggests that internet therapy may be useful as an adjunctive treatment. Proudfoot et al. (2004) found the computerized therapy to be slightly more effective than treatment as usual; especially for more disturbed patients.

Therapist contact seems to be crucial for the effectiveness of the internet treatments. In ten of the thirteen studies the patients were able to contact their therapist via e-mail. In one study a chat program was used and in the other two the researcher or a nurse was present to give instructions and in case participants had questions or problems with the program. Hence it seems that in all the recent internet intervention programs therapist contact is possible or even desirable and that it increases treatment effect. This improved treatment effect was confirmed by meta-analyses by Hirai and Clum (2006) as well as Spek et al. (2007). Cuijpers and Schuurmans (2007) found the same effects, but also raise the question whether it is sufficient if patients are accompanied by a paraprofessional, student or nurse instead of a psychotherapist. They found evidence that if the therapy or coaching was delivered by non-professionals this did not influence the effectiveness of the therapy. Den Boer, Wiersma and Van den Bosch (2004) also found evidence of there being no difference between paraprofessionals and psychologists that conduct group lessons (e.g. for patients with depression). A lot more research will have to be done in order to find out whether internet treatments with contact to paraprofessionals are equally effective and safe as treatments with psychologist-contact.

Comparisons of usual, non-computerized self-help treatments for anxiety disorders revealed that effectiveness of panic disorder, agoraphobia, specific phobias, and social anxiety problems was in the high to moderate range and were comparable to regular face-to-face therapy. Self-help treatments for social anxiety and specific phobia however were not as effective as treatment as usual. Hirai and Clum (2006) therefore suggest that in order to obtain better results for the treatment of social anxiety the therapy may have to include a social setting. From the studies used in this paper no such conclusion can be drawn because eleven of the thirteen studies proved internet therapy to be equally effective as face-to-face therapy and considerably more effective than control groups. It will have to be investigated further whether these findings also hold for internet interventions for anxiety disorders.

Kiropoulos et al. (2008) and Anderson et al. (2004) compared internet therapy with usual face-to-face therapy and found that significantly less therapist time was needed for

the patients in the internet interventions than for those in the face-to-face condition, whilst effectiveness of both treatments was equal.

Overall it seems from the studies used in this paper and from meta-analysis that internet treatments with therapist contact are about equally as effective as usual face-to-face therapy. Whether treatment would be equally effective if patients exclusively had contact with paraprofessionals or students has yet to be determined.

3.8   Strengths and limitations

Of course internet therapy has many strengths, but also has its limitations.

Some of its strengths have already been mentioned earlier, such as great availability, anonymity or lack of waiting time. Besides that there are quite a lot more advantages of internet therapy. Van Diest et al. (2007) point out that especially for specific psychological problems there often exists an unequal geographical distribution of therapists or clinicians and the internet is a great addition and opportunity to reach a greater part of the population. The easy access from a home computer is also a great advantage, not only for people who live in a remote area or do not have time at regular working hours, but also for people who are physically disabled and their caretakers, for hearing impaired patients (since most communication is visual) or for people who live, work or travel in foreign countries and are not able to access local health care (Rochlen et al., 2004). In their paper Rochlen et al. also point out the effects of online communication on therapy. They found that a sort of disinhibition takes place when patients do not face the therapist directly. A high degree of intimacy and honesty is established rapidly, so patients are able to talk about delicate issues a lot earlier and they tend to get to the core of their problems faster. Internet therapy also gives patients as well as therapists a better opportunity for self-reflection, since they can take their time to write and think and they can reread what has been said at any time they like. That gives patients the opportunity to practice, internalize, or ask questions if anything has remained unclear. Even the process of writing itself can be therapeutic for some patients; being able to write and express themselves whenever they feel like it and not just on a weekly visit. Besides that the internet itself offers a vast array of resources and

therapists can provide patients easily with all sorts of supplementary information; in form of informational websites, assessment tools or video clips for example.

Cuijpers and Schuurmans (2007) point out that self-help internet interventions could be a great first step into a stepped care approach where patients first receive a low-cost internet intervention and are later referred to a more intensive and costly treatment (like face-to-face therapy) only if necessary. Many patients, especially with anxiety disorders who do not seek therapy simply try to evade talking about their fears with strangers. They fear stigmatization, are ashamed or in case of social anxiety disorder avoiding contact with other people simply is part of their disorder. Doing so via the internet, not having to face the therapist directly may make it easier for patients to bring themselves to commence therapy. It has also been stated by patients that in the internet program they were able to talk about topics they would never have dared to talk about in front of another person. Communication via the internet might thus liberate people and even enhance their social contacts.

Another advantage is the obvious cost-effectiveness. Although of course these programs first have to be developed and implemented, there may be a great reduction of cost to the health care system and eventually especially for the patient, for whom internet therapy usually is completely free of charge. Especially for people in a difficult economic situation or limited access to health services this might be a great relief or even a motivation to begin a therapy.

Of course the limitations and disadvantages of internet therapy also have to be considered.

Obviously internet therapy only is available to patients that have the equipment (home computer, internet access etc.), are able to type and have some computer skills in order to be able to handle the medium. They also have to be able to express themselves in a written form. This suggests that people with a low socio-economic status who are not able to afford the computer equipment and people who have difficulties with writing or with expressing themselves verbally are excluded from internet therapy.

Another important disadvantage is the absence of eye-contact between patient and therapist. This way no nonverbal cues can be transmitted so that body language and voice characteristics are lost completely (Barak, 1999). King and Moreggi (1998) state that also the visual clues that give the therapist an idea of the client's mental condition (e.g. clothing, manner of speaking, odd mannerisms, amount of eye contact, orientation etc.) are also

completely absent. Thus communication is reduced to the minimum of using words. This directly leads to the next limitation of internet therapies. The communication being exclusively written misunderstandings can happen easily. Clients might misunderstand what has been said or read too much (or not enough) "between the lines", and since communication is in most cases asynchronous (via e-mail) the therapist is not able to clarify immediately. Although the asynchronous communication has its advantages (being able to revise and think things through etc), it also has its dangers. Especially in cases of anxiety disorders the patients might be overly anxious and lacking self-confidence, leading to even more negative interpretations of what has been said or if the therapist is not able to answer immediately. Besides that especially in crisis intervention the time delay can be a great problem. If the client for example becomes suicidal or even homicidal the therapist may not be available immediately in order to help and intervene.

Misunderstandings can also happen the other way round if the therapist is not well-trained in text communication; he might miss what the client is trying to tell him "between the lines" or overestimates it (Rochlen et al., 2004). Another issue is that by not having to face the therapist, clients might simply evade delicate topics and never get to the point of their problems. This is hard to detect for a therapist who has no eye-contact with his client and thus has no visual clues about the clients' resistance such as looking away or shifting in a seat (King & Moreggi, 1998).

Griffiths, Lindenmeyer, Powell, Lowe, & Thorogood (2006) indicate that by providing low-cost internet interventions to groups that are already receiving little professional support and attention one may reinforce the isolation of these groups. It might even increase the stigma these people feel if all conversation is done anonymously via the internet and people talk about their issues less and less in public. Anderson et al. (2004) state that by using the internet people might isolate themselves from the "real world", generally avoiding face-to-face social contacts and developing feelings of loneliness; which is especially problematic for patients with anxiety disorders and social phobia.

One final issue is the security of internet therapy. If therapists are not aware that data has to be encrypted in the internet the confidentiality of client data might be at serious risk. Also the patient has to be made aware that e-mail correspondence has to be protected so that third parties do not have access.

Apparently there are many advantages of internet therapy for anxiety disorders, but the limitations also have to be considered before implementing an internet therapy. There are strong arguments on both sides that have to be weighed.

4. Discussion

4.1   Review of results

Concluding from all the studies, reviews and meta-analyses considered here it seems that implementing an internet intervention for anxiety disorders might be quite successful. Effectiveness of internet therapies is in eleven of the thirteen RCT studies considered here found to be comparable to that of usual face-to-face therapies. One study found internet therapy to be less effective and one found it to be even more effective than face-to-face therapy. The important factor here seems to be that therapist contact is included in the treatment so that patients can contact someone in case there are any questions, doubts or problems. If these requirements are met effectiveness and compliance are high and most patients are satisfied and show high acceptability of internet treatments. That means that internet interventions really seem to be a great alternative or supplement for many people.

The main target group of internet interventions being female, well educated and working suggests that anonymity indeed is a great appealing factor. Since this is the group that usually does not necessarily make use of traditional face-to-face therapy. Especially with a background of anxiety disorders or drinking problems where the shame factor is enormous, and when people are afraid of losing their face in the public or taking damage in their job position if they have to undergo therapy, internet therapy seems to be a good alternative (Rochlen et al., 2004).

Taking into account that the main drop-out reason is lack of time it seems advisable not to set time limits in which patients have to complete modules so they do not feel pressured. Although some patients might need a reminder or a motivational call or e-mail in order to complete the treatment this is probably more useful than setting time limits. A positive reason why patients stop might be that internet programs give people an idea what

therapy is like. That way the inhibition threshold to take up "real-life" face-to-face therapy drops and people do not drop out for good, but rather in order to take up regular therapy.

In order to improve compliance to internet therapies these should be designed as attractively as possible and include reinforcement and motivational parts. Rochlen et al. (2004) propose making preference studies to examine whether different attitudes and personality traits, for example introversion and extroversion determine preference for different styles of therapy. People with low intrinsic arousal might prefer videos for the transfer of information, while people with high intrinsic arousal might prefer text or audio material. Likewise, people who feel highly stigmatized by therapy or who struggle with intimacy for example might prefer online therapy over face-to-face therapy in order to avoid a direct visual contact with the therapist.

Regarding the strengths and limitations of internet therapy careful consideration has to take place which of the disadvantages can be discarded or overcome and whether the advantages outweigh them. When patients run through modules that teach them techniques to overcome their anxieties most of the communication disadvantages may be discarded because patients simply have to run through the modules and communication with the therapist is only of supportive and not of therapeutical nature. The security issues can also be overcome if an intervention is carefully planned with the help of IT and internet security experts. The advantages of availability, effectiveness and anonymity are clearly a strong argument in favour of internet therapies.

4.2   Limitations

Since internet therapy is quite a new field of study there are some limitations to this paper that will be discussed in the following. Due to the fact that at present few studies have been conducted on this topic it is difficult to find comparable studies. Although more studies were found than I had expected, they often differ considerably in design and dimension (number of participants, length of follow up, control group etc.). Therefore the here found results could be distorted because all studies were weighed the same; no matter how great the sample size, whether there was a control group and of which type it was or how long the results could be maintained. Since most of the patients in these studies are well-educated

and able to use computer equipment it is questionable whether these results are applicable to a less educated population or persons that do not have such computer skills.

Another point is that it is not possible yet to assess long-term effects of internet therapies. Some studies have follow-up periods of up to one year, but as of today not much is known about the reliability and stability of results of internet therapy after for example 2 years or longer.

4.3   Future directions

Many issues proposed in this paper are still scarcely investigated and have to be confirmed by further research.

Concerning the screening it would be useful to conduct a meta-analysis in order to find out which screening instrument is best suited for internet interventions. Most researchers seem to use the Structured Clinical Interview for DSM-IV (SCID) for screening means, but I would recommend confirming its validity for the purpose of internet therapy by further research.

Due to drop-out reasons being rarely assessed it is highly recommendable to do so in future studies in order to be able to find the underlying factors and prevent people from dropping out. Although the results of the studies imply not to set time limits in which patients have to complete modules it should be investigated whether this is the case for all patients. Some patients might even need this pressure in order to motivate themselves to take action and in order to finish therapy at some point of time.

In order to further improve effectiveness and compliance to internet treatments programs should be designed as attractive and appealing as possible. Therefore, it should be investigated whether there are certain types of person or personality that prefer certain styles of presentation (e.g. audio/visual presentation of information or a written format). In line with this a wide range of research should still be done in order to find out whether a certain type of person exists that in general prefers internet therapy over regular face-to-face therapy. This might be the case for certain personality types or psychological characteristics but also for people of different gender, race or ethnicity. Research in this area is very promising, as being able to tailor internet interventions to different types of clients

will probably enhance its effectiveness further. It also should be investigated whether internet therapies are more effective for certain kinds of anxiety disorders, for example whether treating panic disorders is more successful than treating social phobias.

Besides that it is still unclear how much guidance and help is actually necessary. Some interventions consist of pure conversation with a therapist with the only difference to treatment as usual being that conversations take place via the internet; other therapies are made up of a program the client runs through by himself and only contacts the psychologist or paraprofessional if questions or problems are encountered. Still other programs include a weekly report or conversation with the therapist and the rest of the time the client is on his own. In some programs patients are called for feedback (which might save therapist time); in most however feedback is given via e-mail. Again it is possible that the patients' preference of a certain style of internet therapy and frequency and type of contact with the therapist is linked to a certain type of personality, psychological characteristics or demographic variables. A lot more research should be done in this field in order to be able to develop (cost-) effective and well-tailored interventions.

Another question worth investigating is whether it is necessary that patients are guided by a professional psychologist. It would definitely be worth investigating whether guidance by a paraprofessional or student impairs effectiveness of internet therapies because if effectiveness is equally high a lot of therapist time could be saved and even more patients could benefit from internet therapies. This is also an interesting point in the face of cost-effectiveness. Little research has been done to investigate to which degree internet interventions are cost-effective. Of course a lot of therapist time could be spared, but the implementation and development costs also have to be taken into account. Depending also on how many patients can be reached, how much therapist time is necessary and whether professional guidance is necessary at all, internet interventions could save health care systems a great deal of money and patients the ordeal of having to wait for appointments. Therefore thorough investigation in this area is strongly advisable.

Some experts state that the internet makes people feel more isolated, others state the exact opposite; that people develop even more social contacts via the internet. Thus there is a great need for further research in order to determine whether the internet actually exacerbates or improves social anxiety symptoms and under which conditions it does so.

4.4   Recommendations/ Conclusion

For an intervention like "angsten de baas" it is recommendable to recruit individuals via the website, search engines, or self-help groups in the internet, but in order to reach the general public and people who are not so used to handling the internet and computers, it is advisable to also distribute information about the program in local and national newspapers and magazines, in yellow pages and in general practitioners` offices.

The computerized screening interview seems to be the preferred screening instrument. If the SCID is not part of the first interview it is advisable to do it via the internet or telephone (except if patients explicitly ask for a face-to-face interview), otherwise the great advantage of anonymity will be lost right in the beginning of the program.

Also, therapist contact is strongly advisable. Although more costly and time-consuming in the beginning it will most probably show the better results and more effective treatments in the end. Motivational components should be included in the program so people are further inclined to pursue therapy.

Unfortunately, internet therapy only is available to people who can read and write and have the equipment, and of course there still remains the question of whether internet therapy is viable for any kind of person and disorder. But in my eyes the advantages of internet therapy like availability, anonymity, effectiveness and low costs for both health care systems and clients clearly outweigh the disadvantages. Therefore, internet therapies should be investigated a lot more so they can be implemented quickly and effectively in a lot more areas than just for anxiety disorders.

Reference List

Anderson, P., Jacobs, C., & Rothbaum, B. O. (2004). Computer-supported cognitive behavioral treatment of anxiety disorders. *Journal of Clinical Psychology, 60*, 253-267.

Andersson, G., Carlbring, P., Holmström, A., Sparthan, E., Furmark, T., Nilsson-Ihrfelt, E., et al. (2006). Internet-based self-help with therapist feedback and In vivo group exposure for social phobia: A randomized controlled trial. *Journal of Consulting and Clinical Psychology, 74,* 677-686.

Andersson, G., Strömgren, T., Ström, L., & Lyttkens, L. (2002). Randomized controlled trial of internet-based cognitive behavior therapy for distress associated with tinnitus. *Psychosomatic Medicine, 64,* 810-816.

Barak, A. (1999). Psychological applications on the internet: A discipline on the threshold of a new millennium. *Applied & Preventive Psychology, 8,* 231-245.

Carlbring, P., Bohman, S., Brunt, S., Buhrman, M., Westling, B. E., Ekselius, L., et al. (2006). Remote treatment of panic disorder: A randomized trail of internet-based cognitive behavior therapy supplemented with telephone calls. *American Journal of Psychiatry, 163,* 2119-2125.

Carlbring, P., Nilsson-Ihrfelt, E., Waara, J., Kollenstam, C., Buhrman, M., Kaldo, V., et al. (2005). Treatment of panic disorder: live therapy vs. self-help via the internet. *Behaviour Research and Therapy, 43,* 1321–1333.

Christensen, H., Griffiths, K. M., Korten, A. E., Brittliffe, K., & Groves, C. (2004). A comparison of changes in anxiety and depression symptoms of spontaneous users and trial participants of a cognitive behavior therapy website. *Journal of Medical Internet Research, 6 (4).* Retrieved June 15, 2009, from http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1550629

Cuijpers, P., & Schuurmans, J. (2007). Self-help interventions for anxiety disorders: An overview. *Current Psychiatry Reports, 9,* 284-290.

Cunningham, M. J., Rapee, R. M., & Lyneham, H. J. (2006). Feedback to a prototype self-help computer program for anxiety disorders in adolescents. *Australian e-Journal for the Advancement of Mental Health, 5.* Retrieved June 9, 2009, from www.auseinet.com/journal/vol5iss3/cunningham.pdf

Den Boer, P. C. A. M., Wiersma, D., & Van den Bosch, R. J. (2004). Why is self-help neglected in the treatment of emotional disorders? A meta-analysis. *Psychological Medicine, 34,* 959-971.

FearFighter Panic & Phobia Treatment. (n.d.). Retrieved September 8, 2009, from http://www.fearfighter.com

Gilroy, L. J., Kirkby, K. C., Daniels, B. A., Menzies, R. G., & Montgomery, I. M. (2000). Controlled comparison of computer-aided vicarious exposure versus live exposure in the treatment of spider phobia. *Behavior Therapy, 31,* 733-744.

Griffiths, F., Lindenmeyer, A., Powell, J., Lowe, P., & Thorogood, M. (2006). Why are ealth care interventions delivered over the internet? A systematic review of the published literature. *Journal of Medical Internet Research, 8(2)*. Retrieved June 3, 2009, from http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1550698

Hirai, M. & Clum, G. A. (2006). A meta-analytic study of self-help interventions for anxiety problems. *Behavior Therapy, 37,* 99-111.

Keizer, H., Postel, M., Westendorp, H., & Brenninkmeijer, M. (2007). *Ontwikkeling Alcoholdebaas.nl, Internetbehandeling.* Amersfoort: GGZ Nederland.

King, S. A., & Moreggi, D. (1998). Internet therapy and self help groups - the pros and cons. *In J. Gackenbach (Ed.), Psychology and the Internet: Intrapersonal, Interpersonal and Transpersonal Implications*, 77-109.

Kiropoulos, L. A., Klein, B., Austin, D. W., Gilson, K., Pier, C., Mitchell, J., et al. (2008). Is internet-based CBT for panic disorder and agoraphobia as effective as face-to-face CBT? *Journal of Anxiety Disorders, 22,* 1273-1284.

Klein, B., Richards, J. C., & Austin, D. W. (2006). Efficacy of internet therapy for panic disorder. *Journal of Behavior Therapy and Experimental Psychiatry, 37,* 213–238.

Lange, A., Vermeulen, H., Renckens, C. H., Schrijver, M., Van de Ven, J. P., Schrieken, B., et al. (2005). De geprotocolleerde interapy-behandeling van depressie via het internet; resultaten van een gerandomiseerde trial. *Directieve therapie, 25,* 25-50.

Lépine, J. P. (2002). The epidemiology of anxiety disorders: prevalence and societal costs. *Journal of Clinical Psychiatry, 63,* 4-8.

Mayoh, L. (2006). *Synchronous internet therapy for panic disorder: How does it compare to face-to-face therapy?* Retrieved on June 4, 2009, via University of Sydney, Sydney eScholarship Repository Web site: http://hdl.handle.net/2123/1603

Nationaal Kompas Volksgezondheid. (n.d.). Retrieved September 22, 2009, from http://www.rivm.nl/vtv/object_document/o1701n17538.html

Proudfoot, J., Ryden, C., Everitt, B., Shapiro, D. A., Goldberg, D., Mann, A., et al. (2004). Clinical efficacy of computerised cognitive-behavioural therapy for anxiety and depression in primary care: randomised controlled trial. *British Journal of Psychiatry, 185,* 46-54.

Reger, M. A., & Gahm, G. A. (2009). A meta-analysis of the effects of internet- and computer-based cognitive-behavioral treatments for anxiety. *Journal of Clinical Psychology, 65,* 53-75.

Rochlen, A. B., Zack, J. S., & Speyer, C. (2004). Online therapy: Review of relevant definitions, debates, and current empirical support. *Journal of Clinical Psychology, 60,* 269–283.

Shandley, K., Austin, D. W., Klein, B., Pier, C., Schattner, P., Pierce, D., et al. (2008). Therapist-assisted, internet-based treatment for panic disorder: Can general practitioners achieve comparable patient outcomes to psychologists? *Journal of Medical Internet Research, 10(2).* Retrieved June 4, 2009, from http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2483919

Spek, V., Cuijpers, P., Nyklicek, I., Riper, H., Keyzer, J. & Pop, V. (2007). Internet-based cognitive behaviour therapy for symptoms of depression and anxiety: a meta-analysis. *Psychological Medicine, 37,* 319–328.

Tillfors, M., Carlbring, P., Furmark, T., Lewenhaupt, S., Spak, M., Eriksson, A., Westling, B. E., et al. (2008). Treating university students with social phobia and public speaking fears: Internet delivered self-help with or without live group exposure sessions. *Depression and Anxiety, 25,* 708–717.

Van Diest, S. L., Van Lankveld, J. J. D. M., Leusink, P. M., Koos Slob, A., & Gijs, L. (2007). Sex therapy through the internet for men with sexual dysfunctions: A pilot study. *Journal of Sex & Marital Therapy, 33,* 115-133.