Faculty of Health Sciences, Department of Psychology

Internet-based cognitive behavior therapy for depression

Effectiveness and patient experiences

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Contents

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The work of thesis began back in 2008, when I was finishing the clinical practice of my education at the Department of Psychology at the University of Tromsø. Eight months pregnant, I accepted the position as a ph.d. student, before going for maternity leave. Six months later, I joined the research group part time, often accompanied by my son. Joining in on research group meetings, the little fellow surely charmed the professors with his joyful presence. My contributions to the research group only started in 2009, but the efforts by the research group in the years before in writing research proposals and searching for grants were substantial. I appreciate that these efforts, that ultimately resulted in financing by The Norwegian Research Council, made my work towards this thesis possible. Furthermore, a number of people have been important along the way.

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Abstract in English

Internet-based interventions for depression and other common mental health disorders have received an increasing amount of attention in the last two decades. Most commonly, interventions are based on cognitive behavioral therapy (Internet-based cognitive behavioral therapy; ICBT). ICBT may include various degrees and types of support, from no support at all, to automated e-mail support, low intensity or high intensity therapist support either by e-mail, phone or face-to-face. The Internet program studied in this thesis is MoodGYM, which is based on cognitive behavior therapy, is openly accessible online without therapist or e-mail support.

ICBT has potential as a means of both prevention and treatment of depression. It can offer a way of reaching a high number of people in population based preventive initiatives. Widespread distribution in larger populations does not allow for intensive support, otherwise this would compromise the advantages of Internet-based interventions (reaching a high number of people, anonymity, and independence of deliverer capacity). Thus, for prevention efforts, Internet-based prevention is mainly self-guided. Automated e-mail support, and even tailored, automated e-mails could possibly increase adherence and outcome in prevention interventions. In depression treatment, a weighty argument for using an Internet-based approach has been that it can potentially increase the availability of highly demanded treatment, and fill a current treatment gap where psychological treatment is wanted but often unavailable. In a treatment setting, where the target is a single person or a small group, therapist support is often provided.

The overall aim of this thesis is to evaluate the effect of ICBT using MoodGYM, as an a) openly accessible, self-guided intervention, and b) as a treatment for depression including therapist support. The specific aims of each paper were I) to investigate the effect of automated e-mails on the usage of MoodGYM in a sample of high school students; II) to

study the effects of MoodGYM with face-to-face therapist support in a sample of depressed primary care patients; and III) to explore patient experiences with MoodGYM with face-to-face therapist support.

The first paper presents a study conducted in high schools that used MoodGYM as a mental health promotion program with automated e-mail support or no support. Students were to undertake the program unsupervised by teachers in their own time. The findings show that uptake of the intervention was low, with a high drop-out which was unaffected by e-mail support. The low rate of participation and adherence compromised analysis regarding intervention effects on mental health measures.

The second paper investigated the effect of ICBT using MoodGYM with face-to-face therapist support in depressed patients compared to a waitlist control group. The results favored ICBT at post-treatment with moderate to high between-group effect sizes on measures of depression (BDI-II), anxiety (HADS-A) and satisfaction with life (SWLS). The intervention effects partly sustained at 6-month follow-up.

The third paper presents an interview study exploring patients' experiences of helpfulness from ICBT using MoodGYM with face-to-face therapist support. The patients' accounts describe what helps alleviate symptoms as 1) their own agency seeking treatment and during treatment; 2) the role of MoodGYM as a source of relevant knowledge; and 3) the dialogue with the therapist for sharing thoughts and feelings, and receiving feedback and assistance in making use of MoodGYM.

Overall, the thesis does not provide support for the use of MoodGYM as a self-guided mental health promotion program among high school students, which would be highly dependent on individual motivation. The main challenges seem to be both to initiate use and supporting sustained usage. Based on previous research and the additional findings in the thesis, an intervention providing individual support targeted at high-risk individuals may be a

preferred mode of delivery. If the program is delivered as a universal program to students, closer supervision is necessary, e.g. by a teacher in the classroom.

In line with previous studies, the thesis supports the effectiveness of MoodGYM with face-to-face guidance. ICBT may be a valid treatment option for primary care patients presenting with depressive symptoms in the mild to moderate range, who otherwise have poor access to psychological treatment. Practitioners providing ICBT should be aware of the dynamic interplay between patient agency, program content and therapist support. The findings may be interpreted within a learning conceptualization of ICBT, corresponding to emotional, cognitive and behavioral learning processes.

Sammendrag (Abstract in Norwegian)

Psykiske lidelser representerer et folkehelseproblem, og depresjon er blant de absolutt vanligste lidelsene. Norske retningslinjer for behandling anbefaler psykologisk behandling for milde til moderate av depresjoner, men tilgjengeligheten av slik behandling er svært begrenset.

Internettbaserte løsninger har i økende grad de siste tjue årene blitt anvendt innen behandling av vanlige psykiske lidelser som depresjon og angst. Det er utviklet en rekke programmer som vil hjelpe sine brukere å redusere symptomer og øke mestring, og det finnes nå en betydelig forskningslitteratur som viser effekten av slik behandling. Internettbasert behandling for depresjon og angst varierer blant annet med tanke på kontakt med en terapeut, fra ingen kontakt med en terapeut til høy grad av kontakt. MoodGYM er et slikt program som bygger på prinsipper fra kognitiv atferdsterapi, og som er fritt tilgjengelig på Internet..

Denne avhandlingen har tre formål: 1) å undersøke effekten av MoodGYM, som en åpen, brukerstyrt intervensjon i videregående skole, 2) å undersøke effekten av MoodGYM med ansikt-til-ansikt terapeutstøtte som behandling for depresjon og 3) å belyse brukernes egne erfaringer med terapeutstøttet MoodGYM som behandling for depresjon.

Artikkel I presenterer en studie som var rettet mot elever i videregående skole for å evaluere MoodGYM som helsefremmende tiltak for psykisk helse. Hensikten var å evaluere anvendbarheten av et slikt program til dette formålet og dessuten å undersøke effekten av automatisert e-post på gjennomføringsgrad/frafall fra intervensjonen. Artikkel II presenterer en studie hvor MoodGYM var hovedkomponent i terapeutstøttet behandling av deprimerte pasienter henvist fra primærhelsetjenesten. Formålet var her å evaluere effekten av behandling på depresjons- og angstsymptomer og tilfredshet med livet. Artikkel III presenterer en kvalitativ intervjustudie som undersøker pasientenes erfaringer med behandlingen i studien fra artikkel II, med fokus på hva de opplevde som virksomt for sin depresjon.

I artikkel I fant vi en høy grad av frafall som ikke ble signifikant påvirket av e-postoppfølging. Det ble ikke funnet effekt på psykisk helse, noe som kan skyldes det store frafallet. I artikkel II fant vi at behandlingen med terapeutstøttet MoodGYM hadde god effekt på depresjons- og angstsymptomer etter avsluttet behandling, sammenlignet med en ventelistegruppe. Vi fant også at effekten vedvarte seks måneder etter endt behandling. I artikkel III viste resultatene til behandlingen som et dynamisk samspill mellom a) MoodGYM som kilde til relevant kunnskap og struktur for behandlingen, b) pasienten som primær endringsagent i behandlingen og c) relasjonen til terapeuten som arena for å dele følelser og erfaringer, samt fremme forståelse og bruk av terapeutiske verktøy fra MoodGYM.

Avhandlingen gir ikke støtte til bruk av en åpen, internettbasert intervensjon som helsefremmende tiltak blant elever i videregående skole, da dette i stor grad blir avhengig av elevens egen motivasjon. Den primære utfordringen er å få brukere til å gjennomføre programmet. Det kan, ut fra annen forskning og de øvrige funnene i avhandlingen, være støtte for en tilnærming hvor elever med forhøyet risiko eller symptomnivå får internettbasert program med individuell oppfølging, for eksempel fra skolens helsesøster.

Vi finner, i likhet med annen forskning, støtte for en behandling med terapeutstøttet MoodGYM for personer med depresjonssymptomer. Internettbaserte programmer med terapeutstøtte kan være et trinn i behandlingskjeden for milde til moderate depresjoner for å øke tilgjengeligheten av virksom psykologisk behandling for denne pasientgruppen. Komponenter som kan være viktig er relevansen av informasjonen Internettprogrammet gir, muligheten for dialog med en terapeut og pasientens evne til å nyttiggjøre seg av ny kunnskap.

Abbreviations:

AUDIT: Alcohol Use Disorder Identification Test

BDI-II: Beck Depression Inventory II

BAI: Beck Anxiety Inventory

CBT: Cognitive behavioral therapy

CCBT: Computerized cognitive behavioral therapy

CES-D: Centre for Epidemiological Studies Depression scale

DUDIT: Drug Use Disorder Identification Test

GSE: General Self-Efficacy scale

HADS: Hospital Anxiety Depression Scale

IAPT: Improving Access to Psychological Therapies

ICBT: Internet-based cognitive behavioral therapy

MINI: Mini-International Neuropsychiatric Interview

NICE: National Institute for Health and Care Excellence (England)

RSES: Rosenberg Self-Esteem Scale

SWLS: Satisfaction with Life Scale

List of papers:

I Lillevoll, K. R., Vangberg, H. C., Griffiths, K. M., Waterloo, K. & Eisemann, M. R. (2014). Uptake and adherence of a self-directed Internet-based mental health intervention with tailored e-mail reminders in senior high-schools in Norway. *BMC Psychiatry*, *14*,14.

II Høifødt, R. S., Lillevoll, K. R., Griffiths, K. M., Wilsgaard, T., Eisemann, M., Waterloo, K. & Kolstrup, N. (2013). The clinical effectiveness of web-based cognitive behavioral therapy with face-to-face therapist support for depressed primary care patients: Randomized controlled trial. *Journal of Medical Internet Research*, *15*,8, e153.

III Lillevoll, K. R., Wilhelmsen, M., Kolstrup, N., Høifødt, R. S., Waterloo, K., Eisemann, M. & Risør, M. B. (2013). Patients' experiences of helpfulness in guided Internet-based treatment for depression: Qualitative study of integrated therapeutic dimensions. *Journal of Medical Internet Research, 15*,6, e126.

1. Introduction

"I guess I should have reacted the way most of the other girls were, but I couldn't get myself to react. I felt very still and very empty, the way the eye of a tornado must feel, moving dully along in the middle of the surrounding hullabaloo." Sylvia Plath, The Bell Jar

1.1 Depression

Depression represents one of the major health concerns of our time. It affects individuals and their families deeply, and has tremendous effects for the society (Wittchen & Jacobi, 2005). According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), the core symptoms of depression include depressed mood and loss of interest, with a minimum duration of two weeks (American Psychiatric Association, 2013). In addition, at least five other symptoms must be present in order to fulfill the diagnostic criteria for a depressive disorder, such as increase or decrease of appetite; insomnia or hypersomnia; psychomotor agitation or retardation; fatigue or loss of energy; feeling of worthlessness or guilt; diminished ability to concentrate or indecisiveness; or recurrent thoughts of death. In addition, the symptoms cause significant distress or impairment for the individual, and cannot not be accounted for by substance use, medical conditions or bereavement.

There are two main ways of assessing depression, either using clinical interviewing or self-report scales. The first corresponds to the understanding of depression as a categorical phenomenon with distinct features as described in the diagnostic manual. Individuals either fulfill criteria of the diagnosis or not. Diagnostic interviewing (e.g. the Mini International Neuropsychiatric Interview) can be used to assess the presence of diagnosis, in the literature referred to as 'clinical depression'. However, this approach ignores the finding that even subthreshold depression may cause marked impairment and suffering (Lewinsohn, Solomon, Seeley, & Zeiss, 2000). Alternatively and commonly employed in research, depressive

symptomatology can be assessed continuously, using psychometric scales with established cut-off scores that indicate severity (e.g. Beck Depression Inventory II (BDI-II), Center for Epidemiologic Studies Depression Scale (CES-D) or Hospital Anxiety and Depression Scale (HADS)).

Prevalence of depression in Norway is comparable to international estimates, although differences in methodology complicate direct comparisons. The estimated 12-month prevalence of major depressive disorder across Europe is 6.9 % (Wittchen et al., 2005; Wittchen, Jacobi, Rehm, Gustavsson, Svensson, Jönsson et al., 2011), thus, approximately 30 million people will suffer from depression during one year. Estimates of the 12- month prevalence of depression in Norway is 7.3 % among the adult population (Kringlen, Torgersen, & Cramer, 2001). Life-time prevalence, as estimated by the National Comorbidity Survey (NCS) Replication in the United States, is 16.6 % for major depression (Kessler, Berglund, Demler, Jin, Merikangas, & Walters, 2005). In a Norwegian sample of adults, life-time prevalence was 17.8 % (Kringlen et al., 2001). Among adolescents in the age of 13-17, the 12-month prevalence of depression or dysthymia is estimated to 8.2 % according to the NCS study (Kessler, Avenevoli, Costello, Georgiades, Green, Gruber et al., 2012), with a severity distribution fairly equally distributed into mild, moderate and severe problems (Kessler, Avenevoli, Costello, Green, Gruber, McLaughlin et al., 2012). A longitudinal study of development of depression found a life-time prevalence of depression and dysthymia at age 18 of 20.67 % (Hankin, Abramson, Moffitt, Angell, Silva, & McGee, 1998). The life-time prevalence of depression, dysthymia or depression not otherwise specified (NOS) in a Norwegian study of adolescents aged 14-16 years, was 23 % among adolescents (Sund, Larsson, & Wichstrøm, 2011).

Depression in childhood is rare, however, prevalence studies show that first onset often occurs during middle adolescence or early adulthood (Hankin et al., 1998). During childhood

the prevalence is similar for boys and girls, but gender differences become apparent in middle adolescence. Between the ages 16 to 18, there is an increase in prevalence for both genders, but a markedly sharper increase among girls (Hankin et al., 1998). This gender difference sustains through adulthood (Wittchen et al., 2005). Depression often follows a recurrent trajectory, with approximately sixty per cent of sufferers of a depressive episode will experience recurrent episodes (American Psychiatric Association, 1994; Solomon, Keller, Leon, Mueller, Lavori, Shea et al., 2000). The probability of recurrent episodes is influenced by the number of lifetime episodes, thus, the risk of recurrence increases for each successive recurrence (Solomon et al., 2000).

1.2 Preventing depression

The prevalence of depression and its recurrent nature highlight the need for preventive and early intervention efforts. Prevention efforts may be universal, including interventions aimed at a whole population group, selected, targeting subgroups of the population that are at risk, or indicated, targeting individuals with minimal symptoms or markers indicating a predisposition for the disorder (Mrazek & Haggerty, 1994)(pp.22-24). Considering the steep increase in depression rates during adolescence and the risk of recurrence (Hankin et al., 1998; Lewinsohn, Clarke, Seeley, & Rohde, 1994), the gains of successful preventive interventions targeting this group can be substantial.

Schools have become one of the most important settings for preventive interventions that aim for both enhancing resilience and reducing internalizing and externalizing problems (World Health Organization, 2004). Delivering preventive interventions in the school environment have advantages such as a highly structured setting and a potential of reaching a cross section of the normal population of adolescents. This includes reaching individuals across socioeconomic statuses, people in risk of depression, and the opportunity to impact on

knowledge about mental health issues and prejudice against people with mental health problems. On the other hand, extra-curricular activities can take up precious time and teacher resources, an issue that may prevent schools from implementing preventive interventions.

There are a number of depression prevention programs that vary in content, although most include some components of cognitive behavioral therapy (Merry, Hetrick, Cox, Brudevold-Iversen, Bir, & McDowell, 2012). Previous research has yielded mixed results regarding the effectiveness of depression prevention interventions among adolescents. A review by Jané-Llopis and colleagues (2003) found effect sizes ranging from low (-.10 and .11) to moderate (.75), with no overall difference between universal, selective and indicated programs, a finding supported by later reviews (Brunwasser, Gillham, & Kim, 2009). On the other hand, several reviews find targeted programs to outperform universal programs (Calear & Christensen, 2010; Horowitz & Garber, 2006; Stice, Shaw, Bohon, Marti, & Rohde, 2009) leading some authors to suggest prevention efforts should mainly focus on high-risk individuals (Stice et al., 2009). However, universal interventions delivered to all students within a school environment have benefits such as reduced stigma, no screening procedure needed to identify individuals at risk, and their continuous application for mental health promotion.

1.3 Depression treatment

There are numerous theoretical viewpoints regarding the individual vulnerabilities and development of depressive disorders and the mechanisms at work during depression. Theories operate at different conceptual levels and are not necessarily mutually exclusive, e.g. neurochemical, interpersonal, cognitive. Biological models seek to understand the genetic predispositions of depression, and its endocrine and neurochemical basis (Cleare & Rane, 2013). Interpersonal theories emphasize the social context in which depressive symptoms

develop and the social role and interpersonal relationships of the individual (De Mello, De Jesus Mari, Bacaltchuk, Verdeli, & Neugebauer, 2005). Depending on the assumed mechanisms of depression, each theoretical approach provides recommendations for treatment.

One of the most influential theories of depression is cognitive theory, which also makes assumptions about the recovery process of depression (Garratt, Ingram, Rand, & Sawalani, 2007). According to cognitive theory (Clark & Beck, 1999), depressogenic schemas are part of a diathesis-stress model of depression and fundamental to the development of the disorder. The concept of schemas appertains to long-held core beliefs about the self that may not be overtly accessible to the individual, but give rise to surface cognitions such as automatic thoughts. When individuals are exposed to stressors, these depressogenic schemas can be activated and lead to negative perceptual biases and thinking, which eventually can turn into a downward spiral towards depression (Garratt et al., 2007). Depressogenic schemas are only indirectly observable through depressive automatic thoughts, dysfunctional attitudes, negative attributional patterns and cognitive distortions.

The assumption of a biased information processing system lies at the core of the cognitive theory of depression etiology, maintenance and recovery (Clark et al., 1999). Cognitive theory postulates that improvement in depressive symptomatology depends on changes in the information processing system. Cognitive behavioral therapy (CBT) aims to alter the function of depressive schemas (Beck, Rush, Shaw, & Emery, 1979), making use of both cognitive and behavioral strategies (Allen, 2006). There is a substantial body of research supporting the effectiveness of CBT in treating depression with large effect sizes in outpatient samples (Hollon & Beck, 2013). There has been discussion regarding the effectiveness of CBT in severe depression, although evidence suggest CBT to be a viable treatment option (Hollon et al., 2013; Luty, Carter, McKenzie, Rae, Frampton, Mulder et al., 2007).

Furthermore, findings indicate a reduced risk of relapse following treatment termination in CBT compared to pharmacological treatment (Hollon et al., 2013)

1.4 Availability of treatment

According to the European Study of the Epidemiology of Mental Disorders (ESEMeD), an estimated 15 % of mood disorders remain untreated (12 months prevalence) (Alonso, Angermeyer, Bernert, Bruffaerts, Brugha, Bryson et al., 2004). This makes depression one of the disorders that more likely receive professional attention and treatment (Bijl, De Graaf, Hiripi, Kessler, Kohn, Offord et al., 2003). The majority of help-seeking individuals receive treatment in the primary health care services (Wang, Aguilar-Gaxiola, Alonso, Angermeyer, Borges, Bromet et al., 2007), and approximately 38 % are receiving pharmacological treatment only (Alonso et al., 2004). The clinical guidelines for depression treatment include counseling, psychotherapy and pharmacotherapy. Because of the poor risk-benefit ratio of pharmacotherapy in mild to moderate depression, antidepressants are not recommended initial treatment for this group of patients (National Institute for Health and Care Excellence (NICE), 2009; Helsedirektoratet, 2009). Counseling and psychological interventions should be the first choice in mild to moderate depression, even including novel treatment approaches such as self-help through Internet-based programs or bibliotherapy. According to clinical guidelines, more severely depressed patients should be offered a combination of antidepressants and structured psychological treatment.

There are some differences between European countries and health care systems regarding mental health service use, but the majority of patients with mood disorders receive treatment in primary care (Alonso et al., 2004). Services in primary care are limited to empathic listening, informal supportive therapy, prescription of antidepressants and referral to specialized services (Backenstrass, Joest, Rosemann, & Szecsenyi, 2007; Dalgard, Sjetne, Bjertnæs, & Helgeland, 2008). Pharmacotherapy is by far the most common intervention for

depression (Alonso et al., 2004), although a review of the literature concludes that patients prefer psychological treatment (Van Schaik, Klijn, Van Hout, Van Marwijk, Beekman, De Haan et al., 2004). However, there is a shortage of trained therapists to deliver effective psychotherapy for depression in primary care and specialty mental health services (Lovell & Richards, 2000; Mykletun, Knudsen, & Mathiesen, 2009), and Norwegian general practitioners call for both increased capacity in secondary care and increased competence regarding depression treatment (Mykletun, Knudsen, Tangen, & Øverland, 2010).

Considering the fact that the majority of cases receiving treatment are mild to moderate, it is an intriguing paradox that the most frequently offered treatment is pharmacological. There is a need for means to improve access to psychological treatments in order to meet the demands. On the other hand, intensive psychological treatment puts a strain on limited resources in the health care system, and there is a need for low-intensity treatment options. A stepped-care model for treatment may provide a solution.

Stepped care model

Stepped-care models differentiate treatment options into lower and higher intensity treatments, offering the low intensity interventions initially, succeeding to higher intensity treatments when needed (Haaga, 2000). Pretreatment assessments and clinical judgment should inform treatment assignment to the minimum level intervention to achieve maximum gain (Newman, 2000; Scogin, Hanson, & Welsh, 2003). High intensity treatment commonly refer to weekly, face-to-face, one-to-one sessions with a trained therapist, whereas low intensity services consist of less clinician input but typically include self-help material that the patient works through.

The National Health Trust initiative Improving Access to Psychological Treatments (IAPT) offers an example of stepped-care for depression (Clark, 2011). Here, depression and anxiety disorders are treated within a stepped care model in line with NICE clinical

guidelines. Patients may self-refer or be referred by their general practitioner. Low-intensive treatments for depression include self-help or computerized CBT combined with brief guidance of personnel trained in low-intensity interventions, psychological wellbeing practitioners. Overall, reports of year one data from 31 clinics find a mean reliable recovery rate at 40.3 % and reliable improvement rate at 63.7 %, when measured by both the Patient Health Questionnaire Depression Scale and the Patient Health Questionnaire Generalized Anxiety Scale (Gyani, Shafran, Layard, & Clark, 2013).

From a health policy and societal perspective, more efficient resource allocation is a weighty argument supporting the implementation of stepped care. Offering low intensity treatment as a first treatment option to individuals at an early stage could potentially reduce the burden of societal costs related to mental health problems. For the individual patient, receiving timely care can reduce suffering and support mastery.

In summary, depression is a highly prevalent, recurrent disorder, often with first onset in adolescence, with a large degree of unmet need and many cases remaining untreated. There is a lack of good measures to prevent the development of depression in adolescents. The majority of cases of depression being treated receive pharmacotherapy, despite its limited effects in mild and moderate depression. Access to effective psychological treatment is strained, although it is the preferred form of treatment among patients with depression. Internet-based CBT offers a low-intensive approach to depression prevention and early intervention.

1.5 Internet-based self-help interventions

More than two decades of research on Internet and computerized mental health interventions have sought to establish their effectiveness in reducing various emotional and behavioral problems, most commonly anxiety disorders, eating problems and depression (Marks,

Cavanagh, & Gega, 2007). The term 'computerized' interventions refers to treatment provided via a computer. This includes internet-based interventions, computers placed within a clinic or applications used at home computers. The term 'Internet-based' interventions refers to treatment delivered over the Internet, and is as such, an integral part of 'computerized' interventions. Such mental health interventions range from educational interventions with largely generic content, to therapeutic interventions with or without human support aimed at promoting positive changes in users (Barak, Klein, & Proudfoot, 2009). Key components that interventions vary across are a) the content of the program, b) use of multimedia, c) interactive online activities and d) provision of feedback. Therapeutic interventions are typically set up in modules meant to be fulfilled in sequence, most often once a week with a median duration of ten weeks (Kelders, Kok, Ossebaard, & Van Gemert-Pijnen, 2012). The content typically includes generic educational information, assessments of current problems and changes over time, content guiding users in making goals and action plans, suggesting techniques and providing homework (Marks et al., 2007). Most internet interventions draw on principles of cognitive behavioral therapy (CBT), an approach aimed at alleviating psychological suffering through targeting maladaptive cognitions and behaviors (Beck, Steer, & Brown, 1996). The structural nature of CBT is transferable to the format of Internet interventions, but there are interventions based on other types of therapy such as psychodynamic therapy (e.g. Johansson, Ekbladh, Hebert, Lindström, Möller, Petitt et al., 2012), problem solving therapy (e.g. Hoek, Schuurmans, Koot, & Cuijpers, 2012) and interpersonal therapy (e.g. Donker, Bennett, Bennett, Mackinnon, Van Straten, Cuijpers et al., 2013). Internet interventions can be accessible online at no or low cost or as commercial products without any form of interaction with a therapist (e.g. www.moodgym.edu.anu.au, www.ecouch.edu.anu.au; www.Deprexis.de), or can be integrated as part of regular mental health care services including therapist contact (e.g. Improving Access to Psychological

Therapies, National Health Services, England; eMeistring, Bergen Health Trust, Norway; Internetpsykiatri.se, Karolinska University Hospital, Sweden), or at an online clinic (e.g. This way up clinic, Clinical Research Unit for Anxiety and Depression, Australia). Therapist support, when is provided, is often through e-mail, phone or face-to-face sessions (Kelders et al., 2012; Marks et al., 2007). Interventions delivered via the Internet have the advantages of being accessible to the user at any time and location, low costs for both the user, and for the service deliverer once the program software is developed.

1.6 Internet-based interventions for depression

A growing body of research on Internet-based and computerized interventions supports their effectiveness in reducing depressive symptoms among sufferers (e.g. (Christensen, Griffiths, & Jorm, 2004; Johansson, Sjöberg, Sjögren, Johnsson, Carlbring, Andersson et al., 2012; Perini, Titov, & Andrews, 2009; Ruwaard, Schrieken, Schrijver, Broeksteeg, Dekker, Vermeulen et al., 2009). Research on computerized treatments can be divided into two "branches" where studies within one branch provide some professional support to the patient during treatment (guided interventions), whereas studies in the other offer fully self-guided programs, except perhaps an initial assessment at baseline. Few studies have compared self-guided and guided interventions directly, and findings in such studies are mixed (Berger, Hämmerli, Gubser, Andersson, & Caspar, 2011; Farrer, Christensen, Griffiths, & Mackinnon, 2011; Sethi, Campbell, & Ellis, 2010). Meta-analysis has found large differences in effect sizes between studies of guided and self-guided interventions, favoring the former (Andersson & Cuijpers, 2009; Cowpertwait & Clarke, 2013). Still, the effects of self-guided interventions are found to be small but significant (Cuijpers, Donker, Johansson, Mohr, van Straten, & Andersson, 2011). Effect sizes for guided interventions are in the moderate to high range, 0.56-1.09, compared to the lower range, 0.02-0.55, in self-guided

intervention (Titov, 2011). It has been noted that possible differences in outcome may be due to poorer adherence in unguided studies, when less of the intervention material is experienced by the user.

A few studies have conducted direct comparisons between therapist supported computerized interventions and face-to-face therapy (Selmi, Klein, Greist, Sorrell, & Erdman, 1990; Wagner, Horn, & Maercker, 2014; Wright, Wright, Albano, Basco, Goldsmith, Raffield et al., 2005) and also a self-guided intervention to group face-to-face treatment (Spek, Nyklíček, Cuijpers, & Pop, 2008). The results are indicative of equivalent benefits of the treatments. Meta-analytic studies so far have not found outcome differences between face-to-face and computerized treatment for depression or anxiety (Andersson et al., 2009; Andrews, Cuijpers, Craske, McEvoy, & Titov, 2010).

The majority of studies have tested computerized interventions in community samples, although some randomized controlled trials of depressed primary care patients have been conducted (e.g. (De Graaf, Gerhards, Arntz, Riper, Metsemakers, Evers et al., 2009; Hickie, Davenport, Luscombe, Moore, Griffiths, & Christensen, 2010; Salkovskis, Rimes, Stephenson, Sacks, & Scott, 2006). The findings are promising (Høifødt, Strøm, Kolstrup, Eisemann, & Waterloo, 2011), although some evidence support the effectiveness of such treatment in reducing symptoms of depression and anxiety (Proudfoot, Goldberg, Mann, Everitt, Marks, & Gray, 2003; Proudfoot, Ryden, Everitt, Shapiro, Goldberg, Mann et al., 2004), whereas others did not find outcome differences compared to treatment options (De Graaf et al., 2009; Salkovskis et al., 2006). Findings may indicate that computerized treatments are no more effective than usual care in patients with moderate to severe depression (De Graaf et al., 2009; Salkovskis et al., 2006). Observational cohort studies of guided self-help interventions in routine care add to the research using RCT design, and provide important knowledge about efficacy before large-scale dissemination. Few have

conducted such studies, but one Swedish study found a significant improvement in depression post-intervention and at 6-months follow up in a large sample of routine care patients (Hedman, Ljótsson, Kaldo, Hesser, El Alaoui, Kraepelien et al., 2014).

There are still unresolved issues concerning effectiveness of computerized treatment. A recent meta-analysis found support for a moderate post treatment effect of computerized CBT for depression, but cannot find significant long-term effects or even function improvement post treatment (So, Yamaguchi, Hashimoto, Sado, Furukawa, & McCrone, 2013). Other reports find sustained treatment effects after one year (De Graaf, Gerhards, Arntz, Riper, Metsemakers, Evers et al., 2011) and three years (Andersson, Hesser, Veilord, Svedling, Andersson, Sleman et al., 2013), and lower relapse rates at two-year follow-up (Holländare, A. Anthony, Randestad, Tillfors, Carlbring, Andersson et al., 2013).

Self-guided interventions

Self-guided Internet-based interventions are particularly suited for large-scale dissemination in the population or as a preventive measure among subgroups. There is evidence for positive outcome effects in population-based studies (Christensen, Griffiths, & Korten, 2002; Powell, Hamborg, Stallard, Burls, McSorley, Bennett et al., 2013), and such results seem to be consistent in spontaneous site users compared to trial participants (Christensen, Griffiths, Korten, Brittliffe, & Groves, 2004). A recurring issue in Internet-based intervention research, in particular regarding self-guided interventions, is the issue of attrition (Christensen, Griffiths, & Farrer, 2009; Eysenbach, 2005). Non-usage attrition rates in RCTs range from 1-50 % (Christensen et al., 2009; Cuijpers et al., 2011). For open websites non-usage attrition has been reported up to 99 % (Christensen, Griffiths, Korten, et al., 2004). Randomized controlled trials report better retention, i.e. sustained usage of the intervention, than open trials (Christensen, Griffiths, Korten, et al., 2004). This may be due to the structured setting of research trials compared to open websites with spontaneous users.

The use of "push" factors, such as e-mail reminders or telephone tracking, has been recommended to increase adherence in Internet-based interventions (Lintvedt, Griffiths, Sørensen, Østvik, Wang, Eisemann et al., 2013; McKay, Danaher, Seeley, Lichtenstein, & Gau, 2008; Neil, Batterham, Christensen, Bennett, & Griffiths, 2009; Nijland, Van Gemert-Pijnen, Kelders, Brandenburg, & Seydel, 2011). In a systematic review by Kelders and colleagues (2012), RCT design predicted better adherence, along with increased interaction with a therapist, more frequent intended usage, more frequent intervention updates and extensive use of dialogue support, such as reminders. Research findings to date are mixed concerning the effects of adding "push" factors. Farrer et al (2011) found no differences in adherence to an Internet-based intervention (MoodGYM) for depression between a group of participants receiving weekly 10 minutes of telephone tracking compared to a no tracking group. A meta-analysis of Internet-based treatment for depression yielded larger mean effect sizes for interventions using reminder systems (Hedge's g = 0.49 versus 0.24) (Cowpertwait et al., 2013). In health behaviour interventions for diet, weight loss and exercise, the use of periodic prompts is associated with positive results, although not entirely consistently (Fry & Neff, 2009). Reminders are frequently employed in Internet-based interventions, although approximately one fourth does not include reminders (Kelders et al., 2012). The optimal type and frequency of reminders in health interventions are yet to be determined (Cowpertwait et al., 2013; Fry et al., 2009).

1.7 How does ICBT work? – Potent factors of therapy

The effectiveness of computerized and Internet-based CBT as a treatment option for depression has been supported through a substantive body of research, as has been documented in the previous section. The mechanisms through which reduction in depressive symptoms is attained remains unclear, although some studies of predictors and moderators of

outcome in CCBT have been conducted. A number of patient characteristics have emerged as significant predictors within single studies, but a consistent pattern across studies is not eminent. Patient characteristics that have been associated with better outcome include female gender (Donker, Batterham, Warmerdam, Bennett, Bennett, Cuijpers et al., 2013), higher education (Warmerdam, Van Straten, Twisk, & Cuijpers, 2013), employment (De Graaf, Hollon, & Huibers, 2010) and marital status (Button, Wiles, Lewis, Peters, & Kessler, 2012). Psychological factors and variables related to illness severity have also been investigated with mixed results. Some studies find high pretreatment illness severity at baseline related to increased benefit (Button et al., 2012; Warmerdam et al., 2013), whereas others find no association with outcome (Donker, Batterham, et al., 2013; Farrer, Griffiths, Christensen, Mackinnon, & Batterham, 2013), or poorer response among individuals with more severe symptom level (Sunderland, Wong, Hilvert-Bruce, & Andrews, 2012). Possible psychological, mediating variables that may account for the relationship between CCBT and improvement in depressive symptoms have received some attention. Warmerdam and colleagues (2010) found a reduction in dysfunctional attitudes, worry, negative problem orientation and strengthened feeling of control following Internet-based CBT or problem-solving therapy (PST). Drawing on social learning theory, mental health self-efficacy, i.e. the belief in one's own ability to perform specific behavior, is proposed as a possible mediating factor. If so, targeting self-efficacy in online interventions can improve outcome, an assumption that has received preliminary support (Clarke, Proudfoot, Birch, Whitton, Parker, Manicavasagar et al., 2014).

Another line of psychotherapy research recognizes the context within which therapy is embedded, and assumes that factors common across therapies influence outcome (Frank & Frank, 1991; Norcross, 2002; Wampold, 2015). The working alliance is acknowledged as an important ingredient in face-to-face therapy (Horvath & Luborsky, 1993), and research into

the role of alliance in CCBT and ICBT is emerging. A study comparing guided Internet-based CBT and face-to-face CBT did find that strong working alliances could be established in both settings, and that alliance was moderately correlated to depression post-treatment (Preschl, Maercker, & Wagner, 2011). However, the findings were equivocal, as alliance ratings did not predict change in depression from baseline to post-treatment. Andersson et al. (2012) investigated the alliance ratings in guided ICBT and e-mail therapy across three studies on depression, generalized anxiety disorder and social anxiety disorder. In line with Preschl et al. (2011), there were overall good alliance ratings in both e-mail therapy and guided ICBT, with no significant relationship to depression and anxiety change scores. Similar findings were reported in a study among university students, in which online CBT was compared to e-mail CBT (Richards, Timulak, & Hevey, 2013). The mean alliance ratings were lower than in the studies by Preschl et al. (2011) and Andersson et al. (2012), but were unrelated to improvement on outcome measures. It has been suggested that working alliance might be less important in computerized treatments than face-to-face treatments (Andersson et al., 2012), or that mechanisms of change might differ in computerized and traditional face-to-face therapy (Cavanagh & Millings, 2013). The relationship between user/patient, program, and supporter/therapist needs further exploration to widen our understanding of possible change mechanisms, strengths and limitations of e-mental health interventions. The dyad between a computer program for depression and seven mildly depressed users was explored in an interview study by Purves & Dutton (2013). Salient aspects of the therapeutic process were the users' relationship to the program that fostered encouragement and motivation, and presumed trust in terms of confidentiality and credibility. Furthermore, working with the program helped users work with their depression by offering structure to make order of their inner world and stimulate new thinking, and increasing personal agency. Personal agency, or

empowerment, is emphasized as one of the major assets of e-mental health interventions (Richards, 2004). Further research into the patient-program-therapist triad is warranted.

1.8 Aims of the thesis

Internet-based interventions have a potential within different approaches to depression prevention and treatment. The thesis comprises three separate studies with the overarching theme being effectiveness and experiences of helpfulness of an Internet-based intervention (MoodGYM) for reducing depressive symptoms. The potential of MoodGYM as a prevention and early intervention tool among youth were investigated in a study in high-schools. The specific aims were:

a) To evaluate the use of MoodGYM as a prevention and early intervention means in high schools (paper I)
b) To investigate the effect of automated e-mail reminders to promote sustained usage of MoodGYM (paper I)

A study of the effectiveness of guided self-help using MoodGYM for treatment of depression in primary care patients was undertaken, with the specific aim:

c) To evaluate the effectiveness and acceptability of a treatment consisting of MoodGYM with face-to-face therapist support in primary care patients (paper II).

A study of depressed patients' experiences that might extend our understanding of the triadic relationship between patient-program-therapist, with the specific aim of:

d) Undertaking an in-depth exploration of patient experiences with MoodGYM plus face-to-face therapist support, focusing on possible benefits or helpfulness of the treatment (paper III).

2. Method

"A question, by proposing a distinction, constructs its answer." Keeney,1983.

2.1 Introduction to Method

The following method section is divided into three parts corresponding to each of the studies that comprise the data material for this dissertation. The studies vary in their thematic and methodological stance, with the first two situated within the quantitative methodological tradition looking at the effects of the Internet-based program as an intervention measure, whereas the third explore the patient perspective using a qualitative approach.

Traditionally, quantitative methods of research emphasizing operationalization, objective measurement and controlled conditions have had a strong position in psychology. The randomized controlled trial has status as the golden standard for much psychological research, in particular that evaluating efficacy of treatment in clinical psychology (American Psychiatric Association, 2002; Norsk Psykologforening, 2007). This is parallel to the situation in medicine and psychiatry to which clinical psychology share common grounds and history (Benjamin Jr, 2005), with its emphasis on scientific method in positivistic terms. Qualitative methods of research aim to produce knowledge of social phenomena through exploring the subjective experiences of those involved (Malterud, 2003). It has the capability of bringing forth rich descriptions reflecting nuances and diversity provided in the data material. As such, qualitative study designs are valuable for gaining knowledge about patients' experiences with a treatment. Furthermore, they are well suited for exploring the dynamic process of human interaction fundamental to the practice of clinical psychology.

The studies of guided self-help using MoodGYM (paper II and III) combine the use of quantitative and qualitative methods, an approach labelled mixed methods. At the outset, the project was designed to include both approaches, with the purpose of generating a rich material to assess the treatment. In that sense one can say that they were of equal significance

and complementary to each other. On the other hand, the inevitable methodological divergences force the researcher to prioritize one at the stake of the other. The application of quantitative methods, by conducting a randomized controlled trial, puts forward certain demands that decidedly were prioritized, such as standardized procedures for recruitment, selection, randomization, treatment and assessments. This makes up the foundation of the study, but is not how treatment in an everyday, routine care setting would proceed. From the perspective of qualitative methods, one might argue that the study would be better informed by a naturalistic setting. Hence, one can argue that the qualitative study under these circumstances is embedded within, and supplementary to, a quantitative trial. An alternative approach might include an independent qualitative study of guided self-help provided within a routine care setting. Given the aim of the current study, - to explore narratives of how guided self-help with MoodGYM might alleviate depression, it was deemed sufficient as a first investigation. A study within a naturalistic setting might have yielded some different results, given that the participants in a randomized controlled trial are dissimilar from the common routine care patient.

The studies that comprise this dissertation were conducted within different projects and data collection procedures, with one overarching theme: using MoodGYM to prevent and provide early intervention for depression. Study I was performed in high-schools in Troms county, Norway, and aimed to evaluate self-directed use of MoodGYM as a depression prevention measure. The purpose of study II was to assess guided self-help with MoodGYM for depression, before doing a naturalistic study among medical doctors in general practice. Study III is a qualitative study in which participants from study II were interviewed about their experiences from treatment.

The design, method and procedure of the different studies will be presented in the following.

2.2 Study I

The study was conducted from September to November 2009 in four high-schools in Troms county, Norway. All schools in the county were invited to participate in the study, but several were already involved with other mental health interventions or declined for other reasons. The following section presents the design, participants, procedure and measures briefly. An expanded description is presented in paper I.

Design

The study was a four-arm randomized controlled trial with measures administered at baseline and post-intervention after 6-7 weeks. Totally there were three intervention groups and a control group: 1) MoodGYM without e-mail reminders; 2) MoodGYM with standard e-mail reminders; 3) MoodGYM with tailored e-mail reminders, and 4) a control condition similar to a waitlist control group, receiving information on how to access MoodGYM by the end of the trial. Originally, the trial included a 6-month follow-up to evaluate longer term prevention effects. However, this was omitted due to a low uptake and usage of MoodGYM in the intervention groups.

Participants and recruitment procedure

The participants were students in the volunteering schools, which the research group recruited through school visits. The students were between 15 and 20 years of age. All students were eligible for participation in the study.

The recruitment process included a short initial lecture about mental health and a presentation of MoodGYM, followed by an invitation to participate in the study. Students could, depending on their preference, either choose to participate in the baseline survey only, or in the MoodGYM trial, as well.

Procedure

The baseline survey was undertaken on the day of the research group visit. Participants consenting to the MoodGYM trial were randomly allocated to either one of the three intervention groups or the control group. The intervention groups received an e-mail within a week of the school visit containing information on how to log on to MoodGYM. Participants then used MoodGYM in their own time. The intervention groups, including reminders got weekly e-mails preceding each module of MoodGYM. Otherwise the intervention was unguided. By the end of the six weeks trial period, the research group visited the schools to collect post intervention data.

Materials

The baseline survey included questions about demographic characteristics (gender, age, average grade in high school) as well as self-reported current and previous need of help for psychological problems and mental health service use. Both the baseline and post intervention questionnaire included measures of depression (Centre for Epidemiologic Studies Depression Scale; CES-D, (Radloff, 1977, 1991)); self-efficacy (General Self-Efficacy scale; GSE (Leganger, Kraft, & Røysamb, 2000; Røysamb, Schwarzer, & Jerusalem, 1998)) and self-esteem (Rosenberg Self-Esteem Scale; RSES, (Rosenberg, 1965; Von Soest, 2005)). The post intervention questionnaire also included questions regarding reasons for non-usage of MoodGYM during the trial period. The questionnaires also included measures of depression stigma, personality, coping and substance use, not relevant for the current study.

Statistical analysis

The evaluation of the intervention included analysis of intervention effects, intervention uptake and effects of automated e-mails on adherence. Effects of the intervention on depressive symptoms and self-esteem were tested in the sample as a whole and in a subsample of participants with elevated symptoms (CES-D > 16) using a multivariate analysis of

variance. A possible association between intervention uptake and self-reported current need of help and automated e-mails were analysed using logistic regression analysis, testing whether the two latter variables could predict uptake. An ordinal regression analysis was used in order to test whether automated e-mails could increase adherence.

2.3 Study II

The study was conducted from November 2010 to December 2012 in the municipality of Tromsø. It aimed to be an initial evaluation of guided self-help with MoodGYM, before setting out to do a naturalistic study in general practice. The intervention required attendance to sessions at the clinic, thus, participants had to live in Tromsø or the surrounding area. In the following, the study design, participants, procedure and measure are presented briefly. Expanded descriptions are presented in paper II.

Design

The study was a randomized controlled trial including an intervention group and a waitlist control group. The control group commenced treatment after the waiting period of seven weeks.

Participants and recruitment procedure

Participants were recruited via general practice clinics in Tromsø. The patient would submit the consent form to the researchers by mail, not needing to involve their doctor in their decision. The purpose was to ensure a proper, informed and autonomous consent, avoiding any perception of pressure from the doctor. However, experience from the trial showed that in some cases the consent was to some degree influenced by the doctor due to a lack of other treatment options.

Procedure

Potential participants were invited to a screening session in the clinic. The session lasted approximately for one hour and included the patients' problem presentation, a clinical interview (Mini-International Neuropsychiatric Interview; MINI (Sheehan, Lecrubier, Sheehan, Amorim, Janavs, Weiller et al., 1998)), questionnaires measuring depression (Beck Depression Inventory; BDI-II (Beck et al., 1996)), alcohol and substance use (Alcohol Use Disorders Identification Test; AUDIT, (Saunders, Aasland, Babor, De la Fuente, & Grant, 1993) and Drug Use Disorders Identification Test; DUDIT, (Berman, Bergman, Palmstierna, & Schlyter, 2005)), and recording of demographic variables and medication use. In line with recommendations to include a clinically representative sample in randomized controlled trials to enhance ecological validity (Hollon & Wampold, 2009; Sartorius, Ustün, Lecrubier, & Wittchen, 1996), it was decided not to exclude persons currently on antidepressant medication or participating in other non-CBT treatment. Patients currently on antidepressants were eligible for participation when medication could be considered as stabilized after 4 weeks. Furthermore, co-morbid conditions are common in primary care samples (Sartorius et al., 1996), thus only conditions that were in need of immediate attention or will substantially reduce the individuals' ability to participate in a self-help intervention lead to exclusion from the trial, i.e severe depression and suicidality, severe substance abuse or psychosis.

Patients eligible for participation were randomized to the intervention or control group. The intervention included homework with MoodGYM and sessions between each module. The purpose was to have weekly sessions, but delays were allowed. The sessions included a) evaluation of current symptom level, also with BDI-II, b) discussion of homework and c) preparation for the next module. Each session was scheduled to last between 15-30 minutes. The final session included post-test questionnaires, administered by a research

assistant blind to the allocation assignment of participants. At 6-months post treatment, a follow-up data were collected via online survey software.

Measures

The Beck Depression Inventory (BDI-II) was the primary outcome measure (Beck et al., 1996) administered at every session. Secondary outcome measures were the Beck Anxiety Inventory (BAI, (Beck & Steer, 1993); Hospital Anxiety and Depression Scale (HADS, (Zigmond & Snaith, 1983), Satisfaction With Life Scale (SWLS, (Diener, Emmons, Larsen, & Griffin, 1985) and a measure of quality of life - the EuroQol Group 5-Dimension Self-Report Questionnaire (EQ-5D; (EuroQol Group, 2013). These were administered at baseline, post treatment or waiting (for control group) and at 6 months follow-up.

Statistical analysis

The effectiveness of the treatment was assessed by performing linear mixed models analysis of primary and secondary measures, and analyzing the clinically significant change on the primary measure.

2.4 Study III

The purpose of conducting a qualitative study of participants' experiences with guided self-help with MoodGYM was to explore experiences of helpfulness in the treatment of depression. The efficacy of the treatment compared to a control condition was to be investigated deductively in study II. However, what is helpful may not be fully explored in randomized controlled trials, helpfulness as we experience it may refer to more than mere symptom reduction as measured by psychometric scales. Thus, it was also eligible to obtain a richer description of experiences from people entering the treatment. We set out to collect participants' narratives of being in treatment, which in turn can expand our knowledge and

contribute to further development and practice of self-help. The phenomenological hermeneutical method was regarded suitable to this end.

Phenomenological hermeneutical method

The practical and analytical parts of the study were guided by the phenomenological hermeneutical method outlined by Lindseth & Nordberg (2004) for researching lived experience. It draws on the methodology of phenomenology with an emphasis on elucidating the meanings of lived experience through hermeneutics, i.e. the interpretation of text material.

Phenomenology is a philosophy (Van Manen, 1990) or methodology (Carter & Little, 2007) oriented towards a person's unique experience, trying to grasp the nature or meaning of phenomena, catching the invariable across variations. Phenomenology does not try to explain or seek to make inferences about the world, rather it offers insights and a deeper understanding of everyday phenomena that brings us in touch with the world, through the lived experience of human beings. At the core of phenomenology is the theory of intentionality, the inseparable connection between consciousness and the world, and the fact that human consciousness always has direction, - it is conscious of something. The lived experience is the subject matter of phenomenology, acknowledging that the world is only available to us through our conscious experience of it (Van Manen, 1990). Phenomenological research, similarly to other approaches in qualitative research, does not expect the enquirer to be a "blank slate" or an objective observer to the phenomena of interest. In studying the nature of phenomena, our preexisting assumptions and understandings, referred to as our natural attitude, need to be explicated (bracketing), and our perspective must be opened up (taking on a phenomenological attitude), in order to be able to describe the phenomena outside of one's own knowledge of it.

Narratives of peoples lived experiences gives access to their inner world and how they begin to move away from depression. These narratives obtained from interviews must be

fixed in text and subjected to analysis. Hermeneutics provide us with theory of text interpretation. Ricoeur (1976) relates language and the lived experience that occupy phenomenologists. Experiences are private and cannot be transferred to another person, but its' meaning can be transferred and become public through language and communication. "Language is the exteriorization thanks to which an *impression* is transcended and becomes an *ex-pression*" (p.19, italics added). The dynamic of interpretative reading is theorized as a circular process, moving between the text as a whole and its' parts. Understanding the text as a whole implies guessing its' meaning, which then is explained and validated through structural analysis of its parts. The phenomenological hermeneutical method of Lindseth and Norberg (2004), inspired by Ricoeur`s theory of interpretation, reflect this movement from the whole of a text, to its parts, and again a comprehensive understanding of the whole.

Relation to the research topic

This study were closely linked to study II in this thesis, as all informants were recruited from and during the course of the clinical trial in which I, the author of this thesis, acted as both researcher and therapist together with a close colleague (Høifødt). Although the process of research in all circumstances are influenced by the motivation, interests and knowledge of the researcher, this dual role as both researcher and therapist warrants particular awareness of one's own position in relation to the research topic. Although limited clinical experience at the outset of this study, my background as being trained in clinical psychology, with an emphasis on cognitive behavioral therapy, has taught me about the importance of the therapeutic alliance and other common factors of therapy, as well as the specific therapeutic ingredients. The role as a therapist in the clinical trial in study II surely provided inside information that would influence the preconceptions concerning the research topic of the present study, which has the possibility to hinder or enrich research. On one hand, it could be considered a bias to the research, particularly if the preconceptions pass unnoticed in the mind

of the researcher and shape the questions posed in the interviews, influence the interaction with participants during the interview and the interpretations of interview transcripts. On the other hand, at its' best, such in-depth knowledge can enrich the process of research, for instance through asking relevant questions and follow-up questions to participants. Nevertheless, awareness and critical reflection of our preconception is essential to limit the influence of it on the data collection and analysis.

Interview protocol

The interviews were semi structured, guided by a protocol covering their general experience of the treatment and various themes of interest. The participants were asked to reflect upon their experiences of treatment motivation, experiences during treatment and changes in their lives related to depression or the treatment. The interview protocol is included in appendix 1.

Data collection and participants

The participants in the present study were recruited during the clinical trial in study II. The participants received oral and written information about study III and an invitation to participate in their final consultation with the therapist. Recruitment was continuous until the desired, pragmatically reasoned number of 14 participants was reached. The recruitment was strategic in the sense that it included both genders, participants in various age ranges and both treatment completers and non-completers. It turned out difficult to recruit non-completers, as many were unavailable after ending treatment prematurely, hence, the sample of informants mainly consist of treatment completers. Interviews were conducted by either the author of this thesis (interviews 8-14) or a colleague (M. Wilhelmsen, second author of the study III publication; interviews 1-7), and lasted for approximately 60 minutes. The author of this thesis, also being a therapist in the clinical trial, did not interview her own patients. Interviews were recorded and transcribed verbatim by either the first or second author or a research assistant. The initial coding procedure comprised separate coding by the first and second

author and the supervisor in this particular study (M. Risør) which was subsequently checked for consensus. The process of data analysis, from initial coding through to the extraction of themes was subject to discussion and reflection among the researchers (Lillevoll, Wilhelmsen and Risør).

The characteristics of the participants are summarized in table 1.

Table 1

Gender, age, depression severity at baseline, treatment outcome, modules completed and number of consultations in interviewees.

	Gender	Age	BDI-II diagnosis (BDI-II score)	Outcome (BDI-II score)	Completed MoodGYM	Number of consultations
1	Female	26	Moderate (22)	Recovered (7)	Yes	8
2	Male	26	Moderate (23)	Recovered (14)	Yes	8
3	Male	48	Mild (17)	No change (15)	Yes	9
4	Female	56	Mild (19)	No change (15)	Yes	9
5	Female	36	Moderate (25)	No change (18)	Yes	9
6	Female	22	Moderate (25)	Recovered (14)	Yes	8
7	Male	51	Moderate (22)	Recovered (5)	No	8
8	Female	28	Mild (15)	No change (16)	No	3
9	Male	26	Moderate (22)	Recovered (4)	Yes	8
10	Male	33	Moderate (28)	Recovered (5)	Yes	11
11	Female	39	Minimal (11)	Improved (5)	Yes	8
12	Female	61	Minimal (13)	Recovered (2)	Yes	8
13	Female	41	Minimal (10)	No change (7)	Yes	8
14	Female	44	Mild (14)	No change (15)	No	6

Id: K1-7 = first author interview, M1-7 = second author interview. BDI-II = Beck Depression Inventory-II

Analysis

Guided by the method outlined by Lindseth and Norberg (2004), analysis of the interview transcripts began with a naïve reading, in which one opens up ones' perspective and switching from a natural attitude to a phenomenological attitude. A naïve understanding, or in Ricoeurs terminology – a guess, of the meaning of the text is formulated. The structural analysis was conducted by dividing the text into meaning units, which are then condensed. The condensed

meaning units form up themes and sub-themes based on their similarities and differences. The naïve reading and structural analysis is part of a circular process in which the former is repeated if the latter invalidates the naïve understanding. The resulting interpretation of the text in terms of themes, are then reflected on in relation to context, e.g. associations with relevant literature.

3. Summary of results

3.1 Paper I: Uptake and adherence to a self-directed Internet-based mental health intervention with tailored e-mail reminders in senior high school students in Norway

Aim:The aims of this study w a) to evaluate the feasibility of disseminating a self-directed Internet-based mental health intervention (MoodGYM) in senior high schools, and b) to investigate possible effects of tailored e-mail reminders on initial uptake and adherence.

Method: 707 students were randomized into four groups: 1) tailored weekly e-mail reminders (n = 175), 2) standard weekly e-mail reminders (n = 176), 3) no e-mail reminders (n = 175) and 4) control group (n = 180). Logistic regression was used to test for effects of e-mail and self-reported need of help on initial uptake. Ordinal regression was used to test for effects of weekly e-mails on adherence to the intervention.

Results: There was a low initial uptake of the intervention (8.54 %) and a substantial non-usage drop-out. Tailoring e-mails did not significantly predict uptake, nor did weekly reminders predict adherence. Having a higher average grade in high-school predicted initial uptake.

Discussion: Disseminating a self-directed Internet-based intervention among high-school students proved difficult due to substantial non-usage. Alternative strategies of increasing interest, involvement and commitment in students might have increased uptake. Guided interventions rather than self-guided approaches may be a more suitable model for delivery of mental health interventions to adolescents.

3.2 Paper II: The clinical effectiveness of web-based cognitive behavioral therapy with face-to-face therapist support for depressed primary care patients: Randomized controlled trial.

Aim: The aim of this study was to evaluate the effectiveness and acceptability of a therapist supported Internet-based intervention (MoodGYM) for mild to moderate depression.

Method: 106 participants recruited from primary care were randomized into an intervention group or a delayed treatment group. Treatment comprised 6 weeks Internet-based cognitive behavioral therapy, weekly brief consultations with a clinical psychologist and e-mail reminders. Primary outcome measures was depressive symptoms measured by Beck Depression Inventory-II (BDI-II). Secondary outcomes were Beck Anxiety Inventory (BAI), Hospital Anxiety and Depression Scale (HADS), Satisfaction with Life Scale (SWLS) and quality of life measured by EuroQol Group 5-dimension Self-Report Questionnaire (EQ-5D). All outcome measures were based on self-report at baseline, post-treatment and 6-month follow-up. Linear mixed models were used to test for treatment effects.

Results: There was a significant difference in time trends between the groups on the BDI-II, HADS depression and anxiety subscales and SWLS. There were no differences between the groups on the BAI and EQ-5D. Significantly more participants recovered from depression in the intervention group compared to the delayed treatment group. Treatment effects on depression and anxiety were largely sustained at 6-month follow-up, and gains in satisfaction with life were partly sustained. Sixty per cent of the intervention group adhered to the program, and overall treatment satisfaction was high.

Discussion: MoodGYM combined with brief therapist support can be effective in alleviating symptoms of depression and anxiety in primary care patients. Adherence rates and treatment satisfaction indicate treatment acceptability. This treatment has the potential to be implemented in routine care within a stepped-care approach, but still remains to be tested in regular primary health care.

3.3 Paper III: Patients' experiences of helpfulness in guided Internet-based treatment for depression: Qualitative study of integrated therapeutic dimensions

Aim: The aim of this study was to explore participants' experiences of being in ICBT treatment with a focus on the treatment dimensions that they considered helpful.

Method: We interviewed 14 participants in a randomized controlled trial testing an intervention featuring an Internet-based CBT program (MoodGYM) and brief supportive consultations with a therapist (paper II). Choosing a phenomenological-hermeneutical approach we sought to elicit their understanding of helpful dimensions in this treatment.

Results: The analysis identified five themes relating to meaning of this mode of treatment in terms of helpfulness. Two related to treatment in general: 1) Taking action to address one's problems, and 2) the value of talking to a professional. Two themes addressed this particular treatment with MoodGYM: 3) acquiring relevant knowledge, and 4) restructuring new knowledge acquired trough MoodGYM. A fifth theme concerned 5) actual changes in patients' perceptions and interactions, following their experience with either MoodGYM or consultations with the therapist.

Discussion: The findings pointed to 1) the role of MoodGYM as a source of new and relevant knowledge, 2) the patients' role as the primary agent of change through adapting acquired knowledge from MoodGYM to their specific situation, and 3) the dialogue with the therapist as a trusting relationship in which to share thoughts and feelings, receive feedback and advice, and assisting the patient in making use of the MoodGYM content.

4. General discussion

4.1 MoodGYM in high-schools

The purpose of study I was to evaluate the use of MoodGYM as a self-directed intervention program for students in high school, mainly aiming at preventing and reducing depressive symptoms and strengthening self-esteem. The results did not find changes in the desired directions regarding depressive symptoms or self-esteem. Previous studies of prevention interventions for depressive symptoms in adolescents have yielded mixed results. Overall, there are some studies providing support for the effect of universal programs (Jané-Llopis et al., 2003; Merry et al., 2012), but recent rigorous studies have failed to replicate these findings (Araya, Fritsch, Spears, Rojas, Martinez, Barroilhet et al., 2013; Stallard, Phillips, Montgomery, Spears, Anderson, Taylor et al., 2013), or they find effects limited to high-risk subgroups (Kindt, Kleinjan, Janssens, & Scholte, 2014). The interventions studied are mainly based on CBT and were delivered in classrooms by teachers or trained personnel, but they were not Internet-based. Findings from studies using Internet-based programs for depression in schools are inconsistent, ranging from no significant effect (Wong, Fu, Chan, Chan, Liu, Law et al., 2012) to small or moderate effects (Calear, Christensen, Mackinnon, Griffiths, & O'Kearney, 2009; O'Kearney, Gibson, Christensen, & Griffiths, 2006; O'Kearney, Kang, Christensen, & Griffiths, 2009). It should be noted that Internet-based interventions in previous studies have been administered in classrooms, led by either a teacher or other personnel, whereas the intervention in the current study was self-directed. Considering the inconsistent findings in school-based and Internet-based depression prevention, the results of this study adds to the evidence casting doubt over the potential usefulness of this approach.

The lack of intervention effects can be explained by the high non-usage attrition rate in the trial, compromising the power of the study and hence the ability to detect smaller differences. However, the non-usage attrition is a finding in itself, with approximately 8.5 %

(45/527) of all participants logging on to MoodGYM, and only 9.6 % (19/198) of participants with elevated depression scores. This occurred, despite the fact that two intervention groups were receiving weekly e-mail prompts, even with tailored messages for one group. Presuming that the e-mails were read by the participants (one cannot rule out the possibility of e-mails being stopped by spam filters or adolescents rarely checking their e-mail account), one can conclude that the e-mail prompts did not enhance uptake or adherence.

One explanation for the low usage might be that adolescents themselves do not recognize symptoms as signs of depression, an explanation as to why help-seeking is low in this group, as reported in previous studies (Gulliver, Griffiths, & Christensen, 2010). This is a challenge for self-guided interventions in general, - how to reach the individuals in need. The e-mails were intended to promote the use of the Internet program, and tailoring e-mails were particularly aimed at making at-risk individuals aware of the potential relevance of the program, but this approach was unsuccessful. Another likely explanation to the non-usage attrition is that students perceiving themselves in need of help prefer informal sources of help, such as friends and family (Rickwood, Deane, Wilson, & Ciarrochi, 2005). Furthermore, Internet-based interventions may still be disadvantaged by a lack of knowledge of possible benefits (Bradford & Rickwood, 2014) causing reluctance to usage.

Possible implications

The poor adherence among all participants, as well as among those with elevated scores, raises the question if there is sufficient motivation among high school students for an Internet-based depression program. A universal delivery for Internet-based programs will inevitably be dependent on individual motivation and perceived benefit. In this study 83.23 % indicated that they *did not* have a current need for help due to psychological or social issues. The majority of students will not be presently depressed (2-month prevalence of adolescent depression in Norway being 9.3 % (Sund et al., 2011)), and most will not develop a

depression by the time they finish high school (life time prevalence at age 19 is 28 % (Lewinsohn, Rohde, & Seeley, 1998)).What would be the perceived benefit of undertaking a depression prevention program for this majority of students? The MoodGYM program is based on principles of cognitive behavioral therapy and focuses on depression and, to some extent, anxiety. According to the cognitive theory of depression, depression is related to depressogenic schemas activated by stressors, and which may not be overtly accessible to the individual ready for inspection and testing. It may be unrealistic to expect healthy students to commit to a CBT program for depression, considering that depression and negative thinking bears little reflection to them. It is an ethical consideration as well, if one should initiate large-scale universal prevention programs with mixed empirical support, taking up precious teacher and student time. Programs focusing on risk factors at an individual level, such as cognitive patterns, might serve well as targeted or indicated interventions embedded within the school environment. They can be administered by teachers or local school nurses who have the possibility to provide individual follow-up. Such an approach draws on the benefits seen in research on guided self-help with lower attrition rates and better outcomes.

It is still an unresolved question whether universal efforts for preventing depression in individuals through principles of CBT are worth the cost and effort, or what the optimal way to reach out to youth is. Research to date has yielded mixed results, but cautiously points in favor of targeted interventions. Internet-based programs can be suitable to this purpose, as they are associated with low levels of stigma and high availability. However, as our study shows, elevated levels of depressive symptoms may make people interested in Internet-based prevention and treatment, but they will not necessarily be motivated to sustained use of a program. Internet-based programs have the possibility of tailoring the content to the needs of the user, and thereby enhancing the relevance of information provided and the motivation of users.

Internet-based depression prevention in high schools should in addition rely on teachers, counsellors or school nurses to support uptake and sustained usage of the program. Communication could be solely web-based if an appropriate platform is developed and tested, or the nurse may schedule short follow-up sessions. School nurses in Norway often serve several different schools and can only be present on the premises a limited time, thus, web-based communication can be feasible and practical for supporting usage, but this remains to be tested.

4.2 Guided self-help with MoodGYM

Study II focused on the potential of MoodGYM as a low-intensive intervention that could be offered by doctors in general practice without extensive training in CBT. The study aimed to be a first step to assess the effect of MoodGYM with face-to-face sessions within a context similar to that of primary care. Firstly, a brief summary of the main strengths and limitations of the study are reviewed, before discussing the results of the study.

The study sample was relatively heterogeneous, including people with subclinical levels of depression as well as moderate to severe levels, and with various comorbid diagnoses (anxiety disorders were most common). The diversity of the sample was ensured by the broad inclusion criteria, with the purpose of increasing the generalizability of the findings to general practice populations. The treatment was designed to fit into the context of primary care, which could be offered as a structured, time-limited intervention within a stepped-care approach. These are characteristics that strengthen the external validity of the study, and the findings merits further efforts to research Internet-based treatment in routine care.

There are questions concerning possible sources of bias, that is, issues that threaten the internal validity of the study. As these are discussed thoroughly in paper II they will only be briefly recaptured here. Some main problems include lack of placebo control, lack of blinding

and researcher allegiance. The design of the study does not control for placebo effects, although this could have been possible, albeit difficult. It is not common for studies on Internet-based interventions or psychotherapy to have placebo control groups, due to the fact that a mock treatment is difficult to create (Hollon et al., 2009). Rather, new treatments are compared to established treatments known as effective, or, as in this study, compared to a wait list control to establish whether the treatment outperforms "nothing", i.e. spontaneous recovery. Although the control group in the current study did not receive entirely "nothing" (they did have the screening consultation with their therapist) it cannot be ruled out that a substantial placebo effect influence the results.

The next issues, lack of blinding and researcher allegiance are related, and caused by pragmatic and resource conditions. The lack of blinding therapists (the author of this thesis and first author of paper II) to group allocation may unintendedly have affected the treatments given to the intervention and the control groups, and hence have biased the results. Furthermore, it is well known that researcher allegiance can influence the results of studies in favor of the experimental treatment (Hollon et al., 2009).

Effects of the treatment

Given the limitations of the study, the results are modestly encouraging. There were significant improvements in depressive symptoms (BDI-II and HADS), anxiety (HADS) and satisfaction with life (SWLS). Table 2 gives an overview of effect sizes for measures of depression in paper II and studies relevant for comparison. Regarding the primary outcome, both the intervention group and the control group reported decline in depressive symptoms from pre- to posttest. The decrease in the control group can be explained by spontaneous improvement, or the screening consultation before group allocation may have had an impact. The within-group effect size in the intervention group is considered large, although lower than other studies (see table 2), (Johansson, Sjöberg, et al., 2012; Perini et al., 2009; Wagner et al.,

2014). At follow-up, the BDI effect size is still large, although it is considerable lower than effect sizes reported in other studies (Johansson, Sjöberg, et al., 2012; Wagner et al., 2014). The between-group effect size is considered in the medium range, which is in accordance with other studies using control groups for comparison, but somewhat below average for other studies (see table 2), (Christensen, Griffiths, & Jorm, 2004; Farrer et al., 2011; Ruwaard et al., 2009). The relatively low between-group effect size may be explained by the decline in BDI-II scores in the control group. Early studies of Internet based or computerized CBT with primary care patients, yielded moderate effect sizes (Cavanagh, Shapiro, Van Den Berg, Swain, Barkham, & Proudfoot, 2006; Hickie et al., 2010). The current study, along with a recent study by Kivi et al (2014) extends this research, adding to the evidence supporting the effect of ICBT among primary care patients.

Table 2

Within group and between group effect sizes for measures of depression in studies of Internet-based or computerized CBT

				Post-treatment		Follow-up
	Intervention groups	Population	N	Within-group ES	Between-group ES	Within-group ES
Høifødt, Lillevoll et al., 2014 (paper II)	MoodGYM + short f2f vs delayed treatment control for 7 weeks	Adults recruited from primary care with depressive symptoms (BDI-II ≥ 10)	106	ICBT: *d* = -0.98[ǂ] Control: *d* = -0.65	*d* = 0.65	*d* = -0.81
Farrer et al., 2011	MoodGYM + telephone tracking vs MoodGYM only vs control for 6 weeks	Callers to a national helpline with psychological distress (K10 ≥ 22)	155	n/a	*g* = 0.76[d] *g* = 1.04[e]	n/a
Christensen et al., 2004	MoodGYM + telephone tracking vs control for 6 weeks	Adults with psychological distress (K10 ≥ 20) – subgroup CES-D ≥ 16	369	n/a	*d* = 0.90	n/a
Hickie et al., 2010	MoodGYM + enhanced GP care vs enhanced GP care for 8 weeks	Primary care patients with psychological distress (K10 ≥ 20)	56	n/a	*d* = 0.40[a]	n/a
Cavanagh et al., 2006	Beating the Blues in routine care clinics, naturalistic study	Routine care patients with poor psychological well-being (GHQ-12 ≥ 4)	219	ES = 0.56[c]	n/a	n/a
Hedman et al., 2014	ICBT + e-mail therapist support in a clinic offering ICBT as routine care	Routine care patients with depression (MINI)	1203	*d* = 1.27[f]	n/a	*d* = 1.28[f]
Kivi et al., 2014	Depressionshjälpen® with therapist guidance vs TAU for 12 weeks	Primary care patients with diagnosis of mild to moderate depression (MINI + MADRS < 35)	90	ICBT: *d* = 1.09[b] TAU: *d* = 1.27[b]	*d* = .00[b]	n/a
Ruwaard et al., 2009	ICBT + e-mail therapist support vs WLC for 11 weeks	Adults with depressive symptoms (BDI between 10-29)	54	n/a	*d* = 0.70[b]	n/a
Perini et al., 2009	Sadness program + e-mail therapist support vs WLC for 8 weeks	Adults with depressive symptoms in an online clinic (PHQ > 5)	45	ICBT: *d* = 1.15 Control: *d* = 0.50	*d* = 0.63[b]	n/a
Wagner et al., 2013	ICBT + e-mail therapist support vs f2f CBT for 8 weeks	Adults with depressive symptoms (BDI ≥ 12)	62	ICBT: *d* = 1.27[b] f2f: *d* = 1.37[b]	*d* = .00[b]	*d* = 2.00 *d* = 1.04
Johansson et al., 2012	Tailored ICBT + e-mail therapist support vs Standard ICBT + therapist support for 10 weeks	Adults with depressive symptoms (MADRS between 14-36)	121	TA: *d* = 1.48[b] ST: *d* = 0.98[b]	*d* = 0.84[b] *d* = 0.57[b]	*d* = 1.55[b] *d* =1.01[b]

[ǂ]Negative value indicates decrease in BDI-II scores at posttest.

[a]measured by SPHERE-12. In favor of MoodGYM + enhanced care. [b]measured by BDI-II. [c]Uncontrolled pre-post effect size, measured by self-report in CBT program. [d]MoodGYM only vs control, in favor of MoodGYM. Measured by CES-D. [e] MoodGYM + telephone tracking vs control, in favor of MoodGYM. Measured by CES-D. Measured by MADRS.

ES = Effect size; F2f = face-to-face consultations with a therapist; BDI-II = Beck Depression Inventory II; GP = general practitioner; TAU = treatment as usual; K10 = Kessler Psychological Distress Scale; SPHERE-12 = Somatic and Psychological Health Report; MINI = Mini International Neuropsychiatric Interview; MADRS = Montgomery Åsberg Depression Rating Scale; CES-D = Centre for Epidemiological Studies Depression Scale. WLC = wait list control

Within a stepped care model for depression treatment, clinically significant changes in depression scores may indicate the rates of stepping up or stepping down treatment. Patients that are recovered or significantly improved may be eligible to maintenance treatment, or have no further treatment needs. Patients that experience no change or even deteriorate should receive high intensity treatment, in the Norwegian primary care this would imply referral to specialist care and/or pharmacological treatment. In the full sample, 48.1 % of patients in the treatment group did improve or recover, compared to 18.6 % in the control group.

Research on ICBT to date has encouraged immense optimism, but some recent reviews are reminders that one should not cheer too early. Arnberg and colleagues (2014) point to the fact that few comparisons of ICBT to established treatments are conducted, and they conclude that the evidence so far is insufficient to support widespread implementation. So and colleagues (2013) draw a similar conclusion, arguing that their meta-analytic review were unable to find long-term effects and improved functioning in ICBT patients. Further research need to respond to this critique, and assess treatment effects in a long term perspective and by means of other measures.

The role of support in guided self-help

An issue debated in the literature is the necessary and sufficient degree of support in guided ICBT. In terms of support, the intervention in study II falls into the category of ICBT with a moderate to high degree of support, based on the amount, frequency and type (Barak et al., 2009; Titov, 2011). The purpose of the sessions with the therapist was to monitor symptom development through the course of treatment and support the participant in the use of MoodGYM and application of skills and techniques. The participants were supported through discussions of general principles presented in the program and motivation to sustained use of MoodGYM in a fashion that therapists without particular training in CBT could provide. It is possible that the amount of support exceeds the optimal amount, and that

similar outcomes are achievable with less therapist time. Indeed, studies with 10-15 minutes therapist time per participants have yielded strong effects e.g. (Farrer et al., 2011; Kivi et al., 2014). The most common support type provided in ICBT is e-mail or similar asynchronous communication. There are few direct comparisons of different support modalities (e.g. face-to-face vs. e-mail), although some evidence suggest equal benefits (Pier, Austin, Klein, Mitchell, Schattner, Ciechomski et al., 2008). In addition to amount and type of support, the content of the support varies across interventions. Some aim to support sustained usage of the Internet program by acting as reminders, offer practical/technical help, providing generic feedback and reinforcing participant engagement with the program. On the other hand, some interventions provide therapist contact as an additional therapeutic element that offer more individualized feedback or engage in topics raised by the participants. The design of the current study with only one intervention group does not allow for investigation of the relative contribution of the different intervention elements. The treatment satisfaction reported by participants were overall positive to the treatment as a whole, but indicate that the perceived benefit of the Internet program was less than the benefit from the sessions. In other words, the participants perceived the Internet program as beneficial, but the sessions with the therapist as more beneficial. The interviews in study III sheds light on the participants' experiences with the treatment.

4.3 Participants' experiences of helpfulness

Study III raised the question "What does the patients find helpful in alleviating the depressive symptoms?" The findings from the interviews pointed to different meanings attributed to the treatment elements and the involvement of the participants. The Internet program provided information relevant to their situation that involved recognition ("this has to do with me") and an extension of their current knowledge (psychoeducation). The participants' own efforts in addressing the problem by seeking help, engaging with the

Internet program and practicing skills in everyday life gave a sense of relief and helped to break the negative cycles of depression. The consultations with the therapists emerge as important, both as a conversation partner to share thoughts and experiences, and in terms of working with Internet program material. The treatment protocol refrained therapists from delivering CBT separately from MoodGYM, but the discussions of CBT principles during consultations were enhancing the participants' understanding and application of the MoodGYM content.

In relation to the discussion in the field of ICBT research regarding the type, amount and content of support the study shed light on what contributes positively from the perspective of the participant. A recent review by Baumeister et al. (2014) supports the findings by several previous reviews, that guided Internet-based interventions outperform self-directed or unguided interventions. Although the difference found by Baumeister and colleagues was smaller than previous estimates, guided ICBT yields better outcomes relative to unsupported ICBT. The mechanisms for this difference in effect are poorly understood, but one suggested explanation is that guidance reinforces adherence to the Internet program, that again affects outcome. Findings also suggest that support need not be provided by a clinician, but may be provided by students, technicians or coaches (Baumeister et al., 2014). A study by Mohr et al (2013) compared ICBT with and without telecouching, - a manualized telephone intervention aimed at improving adherence. The telecouch intervention was successful in improving adherence, but intriguingly, the change in depression severity scores across groups did not correspond to the difference in adherence. In fact, both groups displayed a significant decline in depression compared to the control group. Similar findings appeared in other studies by Farrer et al (2011) and Berger et al (2011). There are some common features of these studies in the content of the support provided. The support addressed issues with program usage, reinforcing the participants' work, but did not engage in discussions regarding

CBT content. The findings of study III of this thesis indicate that the discussions with the therapist facilitated the understanding and practice of skills and knowledge from the Internet program, by helping to bridge the gap between theoretical concepts and participants' everyday living. This kind of support differs from other kind of support merely aimed at keeping users "in the program". As of today, research can provide us with few answers regarding the content of support, as this topic has received little attention. The underlying mechanisms resulting in therapeutic change in ICBT require further investigation to be understood, and theories of psychotherapeutic change in general may offer a framework. In closing the discussion of the studies in this thesis, some limitations of study III will be considered, before a learning framework is applied to organize the findings.

Limitations of the interview study

The phenomenological approach provides insights into the participants internal work as they go along with the treatment, and what dimensions are perceived as meaningful in this work. The results tell us about the interaction with the therapist, the meaning of MoodGYM, and the engagement of the patient, - dimensions that can be organized within the perspective of different kinds of learning as attempted in the previous section. This perspective can be valuable for therapists engaging in guided self help in their practice, by encouraging reflection on the individual needs of patients undergoing treatment and how to support the patient in their work towards recovery. It is, of course, important to point out that there will be needs specific of each individual situation that must be taken into consideration, and that the aim of this research is to discover the commonalities across individual experiences.

Setting out to uncover the invariables across subjective experiences of the given treatment, semi structured individual interviews were conducted. The interviews capture well the conscious perceptions and experiences of the participants. This is, after all, the material of interest in studies taking on a phenomenological stance, - the life world of the person.

However, it presumes that participants are able to verbalize and express these experiences at the time of the interview. Subtle processes that may be of importance can be difficult to convey at this one occasion. Timing of the interview could also influence what the participant remember or consider important. Perceptions expressed immediately after treatment completion can differ from later opinions, when the treatment is at a distance.

Also, the social context of interviews and the unequal relationship between interviewer and participant are likely to influence the study. Few participants directly expressed negative views of MoodGYM, the therapists or the treatment model as a whole, hence, one cannot rule out the effect of social desirability. Potential participants may have abstained from consenting to interviews to avoid expressing negative experiences, or the respondent may have refrained from expressing views they perceive as undesirable. Indeed, several participants interviewed did not experience the treatment as sufficient for their needs, as is also evident from table 1 in the previous method section showing several individuals with no symptom change. As reported in paper III, some participants came to realize that they desired a regular face-to-face treatment because the sessions with the therapist were most meaningful to them. Others did not experience the material of MoodGYM as suited for their needs, and hence, they did not acquire relevant knowledge, whereas others found it difficult to make use of the knowledge. Although there were few participants directly expressing negative views, they actually did report difficulties that were along the dimensions presented in the results.

ICBT in a learning perspective

The efficacy of psychotherapy has been well established since Eysenck's 1952 critical review that dismissed any therapeutic efficacy and even suggested deleterious effects (Lambert, Bergin, & Garfield, 2004). Numerous studies and reviews support the superior effect of psychotherapy to no-treatment or placebo, but the mechanisms by which the effect is produced is not fully understood. It is, more or less, commonly accepted that multiple factors

contribute to therapeutic change, as implied by the contextual model (Scaturo, 2010; Wampold, 2015). Psychotherapy is not merely the application of "techniques" or "method" to cure a disorder, but factors relating to the therapist, individual patient and relationship between them are critical contributors to outcome. Another conceptualization of psychotherapy through a learning perspective (e.g. Scaturo, 2010) may be of use in understanding different processes at work, and perhaps is well suited to the research on ICBT. A learning framework also seems natural due to the strong emphasis on patient psychoeducation and learning of self-therapeutic skills in ICBT.

Building on educational psychology, Scaturo (2010) argue for a tripartite learning conceptualization of psychotherapy, in which three progressive phases are outlined, incorporating three types of learning, labelled emotional, cognitive and behavioral learning. Firstly, tacit emotional learning happens within the alliance building phase, within the facilitative conditions of the therapeutic alliance and the security of the treatment context. Secondly, cognitive or instrumental learning involves acquiring new declarative knowledge and skills that are comprised by for instance, specific CBT techniques. Thirdly, a behavioral process is outlined in which the individual operates in his/her natural environment, rehearsing knowledge and skills from therapy, gradually increasing adaptive functioning. The findings of study III and the contribution of the various treatment elements (the Internet program, the relationship with the therapist and the patient himself) can be viewed in light of such a conceptualization, as organized in table 3.

Table 3 *Organization of themes emerging in study III in a learning framework.*

Treatment element	*Emotional learning*	*Cognitive learning*	*Behavioral learning*
MoodGYM		Providing new knowledge	
Participant	Addressing the problem	Restructuring new knowledge	Changing interactions and perceptions in everyday life
Relationship/dialogue with therapist	Sharing thoughts and feelings.	Supporting the use of MoodGYM	
	Receiving feedback and advice		

Emotional learning

Participants emphasized the mere act of help-seeking and initiating treatment as giving a sense of relief and positive affect. They were fulfilling a need to move forward and had positive expectations and hope for change. This readiness for change is described in the stages of change theory (e.g. Prochaska & Norcross, 2001) as a preparation that includes intention and action, and is reflecting an emotional readiness within the participant. The emotional learning also includes the trusting relationship and dialogue with the therapist as a vital part of treatment that in itself cultivated the healing process. The basis of the trusting relationship is the therapeutic setting building on principles of professional ethics and integrity and the emotional security influenced by the therapeutic alliance (Scaturo, 2010). This enabled participants to express their thoughts and feelings without fear of judgement and to receive confirmation and support.

Cognitive learning

Cognitive learning concerns the acquisition of declarative knowledge, in this study, elements of cognitive theory of depression (e.g. the depressive triad and negative automatic thoughts) and principles of CBT for depression (e.g. cognitive restructuring and behavioral activation). In the participants accounts, cognitive learning is reflected where participants report gaining

new insights and knowledge from MoodGYM, even if not all of the program content were of use to them. The participants themselves showed an ability, at times impressively creative, to interact with the material, adapting it to the best of their use. The dialogue with the therapist also facilitated this adaptation that helped to enhance the understanding of the theoretical concepts presented in the program.

Behavioral learning

Knowledge acquired from the Internet program was integrated into everyday life through the practice of skills (e.g. reality checking negative assumptions) and behavioral changes. This corresponds to the behavioral learning process (Scaturo, 2010), that again served to break negative cycles and increase mastery and empowerment.

Avenues for future research

It can be argued that the learning experiences in psychotherapy can be initiated by interaction with a computer program as well as a psychotherapist (Miclea, Miclea, & Ciuca, 2008), and that the therapist and the computer program contributes to the patients' work towards recovery through complementary processes. The different types of Internet-based or computerized treatments (guided vs self-directed; e-mail vs face-to-face vs telephone guidance) may facilitate the forms of learning in different ways. Treatment packages differ in their presentation of program content (some rely heavily on text presentations, others provide videos and animations) and support content (therapeutic vs non-therapeutic), and this may influence learning experiences and thereby outcome. Interesting questions arise from such a perspective. How can Internet-based interventions best stimulate emotional, cognitive and behavioral learning in users? Can emotional learning occur only in the presence of a therapist, or can it be stimulated from interaction with technology? Some research suggest a relationship can be formed to unguided computerized programs (Purves et al., 2013), and the therapeutic alliance in guided interventions is not well understood. Further, patients may have different

needs regarding emotional support and other forms of learning, and hence, different needs of support in Internet-based treatments.

Which elements of ICBT are necessary and sufficient to achieve therapeutic change is an area of future study. A learning perspective on self-help treatments may aid in understanding which processes are supported by the self-help program and therapist (if present), and the role of the patient during the course of treatment.

Conclusion

The studies point to some challenges and possibilities of Internet-based CBT for depression. As a means for a universal prevention of depression in high-school, the evidence does not support effectiveness of the MoodGYM intervention. However, the study is hampered by power issues, - it might not be able to detect relevant changes, due to the very low number of adherent participants. This, in it self, points to a notable challenge for particularly unguided interventions, namely poor adherence. With adherence problems in mind, and the inconsistent findings in previous research regarding universal depression prevention using CBT, the value of large scale dissemination is questionable. Using ICBT for high-risk subgroups with guidance given by school nurses or counsellors seems a more fruitful way to go, and is more in line with the rational of CBT aiming to alter the negative thinking of depressed individuals.

As an initial treatment choice for depressed primary care patients, guided ICBT with MoodGYM bears some promise. There was a significant reduction in symptoms of depression and anxiety and an increase in life satisfaction in the intervention group compared to the control group. These findings are in line with other studies of ICBT for depression. The participants' accounts of what caused positive changes elucidated the dynamic involving the active engagement of the participant, the relevant content of MoodGYM and the sessions with the therapist.

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Appendix I

Intervjuguide

Dato/sted
Alder
Sivilstatus

Generell oppfatning:

-**Fortell historien** om din depresjon og behandlingen du har vært gjennom.

Motivasjon:

-Hva fikk deg til å **delta** i Moodgym?

-Beskriv hvordan har du **gjennomført** behandlingen?

-Hvilke momenter i behandlingen var **viktigst** for deg? Hvordan påvirket dette framgangen i behandlingen?

-Hva har vært **vanskelig** og hvordan **løste** du det?

-Hva vil du si var **drivkraften** for deg i behandlingstiden?

-Kan du fortelle om noen **spesielle personer/hendelser** som har vært sentrale for deg i denne siste tiden?

-Hvilken betydning hadde **e-mailene** du fikk underveis?

Behandlingen

-Hvordan **opplevde** du behandlingen?

-Fortell om et **minne** du husker godt fra tiden du gjennomgikk Moodgym-behandlingen? Hvorfor dette minnet?

-Måtte du gjøre noen **praktiske endringer** i ditt hverdagsliv for å gjennomføre behandlingen?

-Hvordan tror du noen som er **deg nær** oppfattet behanlingen?

-Hvis du fikk være med å **vidreutvikle** Moodgym etter erfaringene du har gjort deg, hva ville du forandre, ta bort eller legge til?

-Hvordan opplevde du kontakten du fikk med **din terapaut**?

-Hadde du mulighet til å **påvirke** behandlingsopplegget? På hvilken måte?

-Kan du fortelle om noe du **liker** spesielt med denne måten å behandle depresjon på?

-Hvis du skulle anbefale dette **til en venn**, hva ville du framheve?

Endringer i livet:

-Kan du beskrive noen **endringer** i livet ditt som har oppstått i denne perioden?

-Kan du huske en konkret episode som du tror du **taklet annerledes** som et resultat av behadlingen?

-Kan du fortelle om noe du **gjør mindre eller mer** av etter gjennomgått behandling?

-Ville du **beskrive deg selv** på en annen måte i dag enn før påbegynt behandling?

-Hvis vi **spurte din nærmeste**, for eksempel din mann/kone, hva tror du han eller hun ville beskive som endret i ditt liv etter gjennomgått behanling?

Avslutning

-Er det noe du har tenkt på som du vil **tilføye**?
-Er det noe jeg ikke har spurt om som du gjerne vil fortelle?

TUSEN TAKK☺

Interview protocol
Date/place
Age
Relationship status

General opinion
-Can you tell me the story of your depression and the treatment you have been through?

Motivation
-What made you participate in MoodGYM?
-Describe how you went through with the treatment.
-What was most important to you in treatment? How did this influence the progress in treatment?
-What has been difficult, and how did you solve this?
-What would you say was the driving force to you during treatment?
-Can you tell me about any particular persons/events that have been important to you during this time?
-What importance did the e-mails you received have?

The treatment
-How was your experience with the treatment?
-Can you recount a memory that you remember well from the time you underwent treatment with MoodGYM? Why this memory?
-Did you have to make any practical changes in your everyday life in order to undergo treatment?
-How do you think a person close to you would perceive treatment?

-If you could contribute to develop further MoodGYM, what would you change, remove or add to it?
-How did you experience the contact with the therapist?
-Was it possible for you to influence the treatment? In what way?
-Is there anything in particular that you like about this way of treating depression?
-If you were to recommend it to a friend, what would you emphasize?

Changes in life:
-Can you describe any changes that has happened in your life during this time?
-Can you remember an event that you dealt with differently as a result of treatment?
-Is there anything that you do less or more of after treatment?
- Would you describe yourself differently today than before treatment?
- If we asked your closest family members, e.g. husband/wife, what do you think he or she would note as changed after treatment?

In closure
-Did you think of anything that you would like to add?
-Is there anything that I did not ask about that you would like to tell me?

Thank you ☺