Chapter 8

General discussion
Introduction

This thesis examined three elements in the treatment for depression and anxiety: screening, suicide prevention and early intervention. In this final chapter, the key findings are summarised and compared with other research results. Next, the main limitations of the conducted studies are discussed, as well as the implications for both future research and clinical practice.

Key findings and previous research

Screening
In Chapters 2 and 3, internet-based screening for common mental disorders and suicidal ideation has been examined. Internet-based screening instruments were compared with the Composite International Diagnostic Interview (CIDI; WHO, 1997) by telephone. Chapter 2 shows that the agoraphobia item of the Visual Screener for Common Mental Disorders (VS-CMD) has moderate sensitivity (0.81) and specificity (0.66). The VS-CMD is quick to complete, as it took the participants about 3 minutes to complete all 12 items of the VS-CMD. The Area Under the ROC Curve (AUC) of the VS-CMD agoraphobia item is about the same as a text-based screening item (0.73 and 0.68, respectively) of the Panic Disorder Severity Scale Self-Report (Houck, Spiegel, Shear, & Rucci, 2002). In comparison, the validation study of the WSQ (Donker, Van Straten, Marks, & Cuijpers, 2009) pointed out that the WSQ's sensitivity is adequate (0.72 to 1.00), but the specificity (0.44 to 0.77) of the instrument should be improved. The psychometric properties of the VS-CMD agoraphobia item are similar to the properties of the WSQ agoraphobia item.

The results of Chapter 3 reveal that 24% of the depressed sub-sample suffered from suicidal ideation according to the CIDI, while 53% of the sub-sample suffered from suicidal ideation according to the suicide item of the Web Screening Questionnaire (WSQ). The CIDI and the WSQ use different sentences and criteria to measure suicidal ideation, but the exact wording may not cause such a difference. The setting and the medium (i.e. the WSQ is an online self-report instrument, while the CIDI was conducted by telephone) can be a cause of the discrepancy between the proportions of individuals with suicidal thoughts detected by these two instruments. The WSQ suicide item is in line with the definition of suicidal ideation (e.g., Kerkhof, 2010), so our results may indicate that the CIDI by telephone could under-diagnose suicidal ideation.
Suicide prevention

Chapter 3 demonstrates the relevance of suicide prevention in internet-based treatment for depression and anxiety, as one in every two online help seekers with common mental disorders may have thoughts about suicide (Chapter 3). Common mental disorders such as depression and anxiety often coincide with each other and more comorbid mental problems increase the risk of suicidal thoughts. The high prevalence of suicidal ideation found in our study on individuals with common mental disorders, who were recruited online, is supported by the study of Leykin and colleagues (2012). In that study, internet users were invited to fill in a questionnaire about depression. Of these, 66.6% were depressed and 44.4% had suicidal thoughts (Leykin, Muñoz, & Contreras, 2012).

The Google search for suicide-related websites conducted in October 2007 (Chapter 4) reveals that there are many of these sites available in the Dutch language. Fifteen per cent of all hits (n = 23) were suicide prevention websites and 4% (n = 6) of all hits were suicide prevention websites that we considered to be of adequate quality. The most numerous of all hits were news reports, which made up 31% of the total. Pro-suicide websites were not found by our search strategy. Researchers using Google to find and classify websites about suicide in English language did find pro-suicide websites (Biddle, Donovan, Hawton, Kapur, & Gunnell, 2008; Recupero, Harms, & Noble, 2008), such as websites that describe suicide methods in detail and/or encourage suicide. Kemp & Collings (2011) used network analysis to find suicide related websites. They found 39% information/education websites, 10% suicide prevention websites and 2% pro-suicide websites. Although English language pro-suicide websites can be easily found using certain search strategies (Biddle, et al., 2008), they are only marginally visible compared with suicide prevention websites (Kemp & Collings, 2011). Suicide prevention websites often link to one another, while suicide methods websites and pro-suicide websites are often isolated (Kemp & Collings, 2011). In sum, pro-suicide websites are marginally visible, but suicide prevention websites are a minority of websites relating to suicide.

The quality of suicide prevention websites in the Dutch language is not optimal (Chapter 4), because most suicide prevention websites do not provide direct online help, moderated peer support, comprehensive evidence-based information or referrals to other sources of help. Little research has been conducted in this area. A study in Canada has found that the evidence base for suicide related information on Canadian websites is lacking (Szumilas & Kucher, 2009), even on websites that are supported by the government. Clearly, the quality of suicide prevention websites is in need of improvement.
Treatment

Chapters 5, 6 and 7 describe studies on internet-based treatment for depression and anxiety, with a focus on effectiveness and treatment adherence. The randomised controlled trial of the internet-based intervention Don't Panic Online (DPO) investigated the effectiveness of this intervention in participants with subclinical to mild panic disorder, compared with a waiting-list control group (Chapter 5 and 6). The inclusion and exclusion criteria were minimal, as the aim was to obtain a sample that would be representative of the population that would apply for internet-based treatment for panic symptoms. The eventual sample (Chapter 6) contained few participants with subclinical panic disorder in our sample, but the panic symptom severity was relatively low compared with samples in other studies (Carlbring, et al., 2006; Klein, Richards, & Austin, 2006; Wims, Titov, Andrews, & Choi, 2010). Most participants in our sample suffered from comorbid depression and anxiety disorders. The high level of comorbidity in our sample is not unusual for adults with panic disorder (Batelaan, De Graaf, Van Balkom, Vollebergh, & Beekman, 2007; Bystritsky, et al., 2010) and is common for people who suffer from anxiety disorders and depression in general (Kessler, Chiu, Demler, Merikangas, & Walters, 2005). The participants who completed at least 4 of the 6 lessons improved in terms of panic symptom severity, significantly more than the control group ($P = .12$, Cohen's $d = 0.73$). However, the treatment adherence was low (29% completed lesson 4 or more) and, overall, the treatment was not effective ($P = .25$, $d = 0.30$).

Our findings are contrary to the majority of internet-based treatment studies for panic symptoms, which show efficacy and a usually high treatment adherence (Andrews, Cuijpers, Craske, McEvoy, & Titov, 2010). Possible reasons for the inconsistency between our findings and previous trials are the following: we targeted a different group (i.e. individuals with mild panic symptoms); all participants were free to use medication and find other treatment; participants reported technical difficulties while working with DPO; and perhaps DPO is simply not as effective or attractive as those examined in other studies. Lastly, there may be trials with negative results that have not been published, because negative results have a smaller chance to be published (i.e. publication bias). While our study suggests that internet-based treatment for panic symptoms is not effective for all people who seek help for panic symptoms, it is too early to draw any conclusions. More studies that target mild panic symptoms and a heterogeneous group are needed.

Treatment adherence and the perceived low adherence of online patients is an issue of concern. The meta-analysis of studies on internet-based cognitive
behavioural therapy (iCBT) for depression (Chapter 7) elaborates on the subject of treatment adherence. Of all participants starting guided iCBT, 62.3% complete their treatment. This percentage is significantly lower than the percentage of participants who complete individual face-to-face cognitive behavioural therapy (CBT), which is 83.6% ($P < .001$). Moreover, the face-to-face CBT interventions included in our analyses consisted of more sessions (12-28) than the iCBT interventions did (5-9). Still, we can conclude that treatment adherence to iCBT may not be lower than adherence to face-to-face CBT when other variables are taken into account. Participants in the iCBT groups complete on average 80.7% of their treatment, which is little different from the face-to-face CBT groups (84.6%). Non-completers of guided iCBT complete on average about half of their treatment. Non-completers of face-to-face CBT drop out earlier.

The proportions of treatment completers of iCBT and face-to-face CBT are consistent with previous meta-analyses and reviews (Richards & Richardson, 2012; Swift & Greenberg, 2012). To date, adherence rates are often expressed as the percentage of a sample that completes an intervention. The percentage of completed sessions gives an indication of the adherence of all participants, including the non-completers. Therefore, the percentage of completed sessions may be a more accurate measure of adherence than the percentage of completers. Judging from our results, guided iCBT appears to be an acceptable treatment for depression, comparable with face-to-face CBT. Our meta-analysis contributes to the body of literature that suggests that internet-based treatment for depression is efficacious, cost-effective and acceptable for participants (Andersson & Cuijpers, 2009; Gerhards, et al., 2010; Kaltenhaler, et al., 2008).

Limitations

Screening
A major limitation of the study on the validity of the multi-media agoraphobia item (Chapter 2) is that all participants in the study suffered from panic symptoms (i.e. the sample described in Chapter 7). The results are, therefore, only generalisable to adults with panic symptoms.

The validity of the suicide item of the WSQ (Chapter 3) has not been studied in the validation study of Donker et al. (Donker, et al., 2009). The item was derived from the Screening Questionnaire (Gega, Kenwright, Mataix-Cols, Cameron, & Marks, 2005), which was investigated in an earlier study (Gega, et al., 2005), but the suicide item was not studied separately. Therefore, although it has
face validity, its predictive validity is unknown. Furthermore, the comparison between the WSQ suicide item and the CIDI suicide item is limited, because these items are phrased differently.

**Suicide prevention**

The search method we used in Chapter 4 was intended to find both official websites about suicide and any website a suicidal person would encounter on the web. The keywords that were applied to approximate the search of a suicidal person have face validity, but we cannot be sure these were the keywords a Dutch suicidal person would use. Probably the best method to retrieve such keywords is to interview suicidal internet surfers (Harris, McLean, & Sheffield, 2009), but this was not done in our study. A second limitation concerns the quality features we employed to assess the websites. Despite good interrater agreement and relevance to suicide related websites, the quality features are a subjective measure and cannot be compared with other research. Subjectivity is inherent to qualitative research and there are, to date, very few standardised measures that reliably assesses the quality of health related websites (Breckons, Jones, Morris, & Richardson, 2008; Hanif, Read, Goodacre, Chaudhry, & Gibbs, 2009).

**Treatment**

We experienced in our randomised controlled trial of DPO (Chapter 6) a high number of study drop-outs (42%). The missing values were imputed using a conservative imputation method and, therefore, the effect of the treatment may have been underestimated. A high study drop-out rate is not uncommon for studies on internet-based interventions (Melville, Casey & Kavanagh, 2010).

The meta-analysis of adherence (Chapter 7) is mainly limited due to the lack of studies that directly compared iCBT and face-to-face CBT in a single randomised trial. Nearly every treatment group is described by a separate study. Each study has its own design, instruments, inclusion criteria and treatment protocol. Our results point out that the heterogeneity among the included studies is large.

**Implications and future research**

**Screening**

The VS-CMD, which screens for common mental disorders with a combination of text, audio and images or animations, could be a promising instrument (Chapter 2).
Our study (Chapter 2) shows moderate psychometric properties for the VS-CMD agoraphobia item and our results are encouraging for future evaluation of the entire instrument. The agoraphobia item, and the other items of the VS-CMD, need to be validated in samples representative for anxious and depressed adults. Besides establishing the predictive validity with the CIDI or another structured diagnostic interview, the concurrent validity of the VS-CMD can be investigated by comparing the VS-CMD with validated online self-report instruments. The comparison of the VS-CMD with online self-report instruments has two advantages: self-report instruments are continuous scales and can validate the VS-CMD for subclinical as well as clinical mental disorders; and online self-report instruments are administered in the same setting as the VS-CMD, which would avoid a possible bias caused by non-equivalence of interviews and online self-report scales (Chapter 3).

Future research could also validate the VS-CMD in immigrant groups and adults who have difficulty reading. However, validity can be established only if an instrument can be compared with another measure that has already been tested in the group being studied. One reason why the VS-CMD has been developed is the lack of instruments suitable for these groups, so validation can be difficult. Validation research usually relies on structured diagnostic interviews as the ‘gold standard’, like the CIDI. The CIDI may be difficult to understand by immigrants (Smits, De Vries, & Beekman, 2005). Therefore, a different ‘gold standard’ may have to be found or established first.

When the VS-CMD has been validated and possibly adjusted following validation research, it can be applied and studied in practice, e.g. as part of an internet portal for common mental disorders. It can be implemented in an online portal to direct help-seekers to information appropriate to them or to screen applicants for eligibility for internet-based interventions.

*Suicide prevention*

One in every two online help-seekers for depression or anxiety may have thoughts about suicide (Chapter 3). It could be considered to target mild suicidal ideation in internet-based treatments for common mental disorders and study the effects. The results of our study underscore the importance of suicide prevention in internet-based treatment for depression and anxiety. Moreover, a suicidal person who seeks help on the internet is unlikely to seek face-to-face help (Harris, et al., 2009). Therefore, suicide prevention websites of good quality are recommended.

Our study into the quality of suicide prevention websites (Chapter 4) points out that this quality was lacking during the Google search in 2007. After our
research was conducted, a new Dutch website for suicide prevention has emerged (Mokkenstorm, Huisman, & Kerkhof, 2012). This website, 113Online, is currently the most comprehensive Dutch website for suicide prevention, according to the quality features described in Chapter 4 (Mokkenstorm, et al., 2012). It offers information, a crisis helpline by telephone and by chat, a self-test, email therapy, a moderated forum for peer support and an evidence based self-help intervention for coping with suicidal ideation (Mokkenstorm, et al., 2012; Van Spijker, 2012). While 113Online was initially difficult to find by search engine search, it is currently (September 4th 2012) the third sponsored link and fourth hit when searching Google.nl with the keyword 'zelfmoord' (common synonym for suicide). The quality of online suicide prevention in the Netherlands has, therefore, increased considerably.

113Online is temporarily funded by the Dutch Ministry (Department) of Health. Before 113Online existed, government-supported Flemish websites were the most professional websites for suicide prevention in the Dutch language (Chapter 4). Another study also found that government websites provided more evidence-based information regarding youth suicide than personal websites or media websites (Szumilas & Kutcher, 2009).

Future research could assess the effects of online suicide prevention. Additionally, as many suicidal individuals appear to search the internet for peer support (Harris, et al., 2009), further research into the risks and benefits of online peer support is advised as well.

Treatment
Our study of DPO (Chapter 6) suggests that it could be an efficacious treatment for intervention completers. Many of the study participants suffered from comorbid depression and anxiety disorders. Future research can investigate whether DPO could become a part of a transdiagnostic intervention that can treat panic symptoms as well as symptoms of other anxiety disorders and depression. Several studies show promising results for transdiagnostic self-help programmes that can be tailored to the anxiety and/or depressive symptoms of the participant (Carlbring, et al., 2011; Silfvernagel, et al., 2012; Titov, Andrews, Johnston, Robinson, & Spence, 2010).

The low adherence rate found in our randomised controlled trial may not be indicative for adherence to internet-based treatment for common mental disorders in general, as has been demonstrated by our meta-analysis (Chapter 7). While the average adherence to internet-based treatments for anxiety disorders still needs to be investigated, we have demonstrated that the adherence to iCBT for
depression appears to be adequate and not necessarily lower than adherence to face-to-face CBT. Future studies should compare face-to-face CBT and guided iCBT in randomised trials, preferably with interventions that are similar in content and length. A subsequent meta-analysis can point out the robustness of our results.

Future researchers are encouraged to report treatment adherence in more detail. If possible, causes for non-adherence should be reported as well.

Conclusion

Considering the high prevalence of depression and anxiety and the number of adults who have access to the internet, much can be gained by high quality evidence-based early intervention online. The studies in this thesis contribute to the growing body of literature on internet-based treatment and early intervention for depression and anxiety, raise questions for future research and recommend further development.

References


Swift, J. K., & Greenberg, R. P. (2012). Premature discontinuation in adult psychotherapy: A meta-


