Summary
Chapter 1 is the general introduction to this PhD thesis. Internet-based treatment for depression and anxiety has been shown to be efficacious, and this opens doors for further research. This thesis investigates new developments in internet-based treatment for depression and anxiety disorders, and the related topics of screening and suicide prevention. First, the topic of online screening is discussed. Online screening instruments for depression and anxiety can indicate the type of disorder and the severity of the symptoms. Screening instruments could refer a help-seeker to suitable help, and can also have an educational value. Innovations in online screening include the use of other media than text. Next, I will address online suicide prevention. Someone who seeks suicide-related help and information online is unlikely to seek face-to-face help. High quality, accessible websites for suicide prevention are needed from a public health point of view. Finally, with regard to early intervention and treatment, internet interventions can be associated with a substantial proportion of participants who do not complete their treatment. Treatment adherence to internet interventions needs to be further investigated. Furthermore, current internet interventions usually focus on full-blown disorders. It would be useful to target subclinical and mild cases as well, i.e. early intervention, which could possibly prevent them from growing more severe.

In this thesis, the following topics are addressed. A new multimedia screening instrument for depression and anxiety disorders is developed and the validation of one of its subscales is described. On the topic of screening, we also investigate the prevalence of suicidal ideation in an online recruited sample of people with depression and anxiety disorders, when measured with an online screening item. Next, an overview is given of suicide-related information on the internet and the quality of suicide prevention websites. On the topic of treatment and early intervention, a randomised trial is conducted of an internet intervention for subclinical to mild panic disorder, to investigate its effectiveness to reduce panic, anxiety and depressive symptoms. Finally, the adherence to internet interventions for depression is investigated in a meta-analysis.

In Chapter 2, a new screening instrument for depression and anxiety disorders is described. This instrument, the Visual Screener for Common Mental Disorders (VS-CMD), consists of 12 items (typically 1 for every disorder) and each screening item is a combination of images, animations, sound and a single sentence. The item that measures agoraphobia is validated against a diagnostic interview by telephone. It is also compared with the text-based agoraphobia items of the PDSS-SR. The validation study concerned 85 subjects in a randomised controlled trial of the effects of an internet intervention for panic symptoms. The validity of the VS-CMD item was moderate (sensitivity .81, specificity .66, AUC
.734), as was the validity of the text-based items (AUC .607 – .697). Screening for anxiety disorders with a single multimedia item should be further developed and tested in the general population and in patient, illiterate and immigrant samples.

Chapter 3 examines the prevalence of suicidal ideation in a sample of online help-seekers with common mental disorders. In total, 502 participants completed nine internet-based questionnaires on common mental disorders, of which 120 were also interviewed by telephone to obtain a diagnosis. Logistic regression analyses were applied to investigate associations between disorders and suicidal ideation. Based on internet-based self-report, 53% of participants had some form of suicidal ideation. Fewer participants reported suicidal ideation during the interview by telephone. Depression (multivariate odds ratio 7.1), generalised anxiety disorder (2.1), social phobia (2.1), and post-traumatic stress disorder (1.7) were significantly associated with suicidal ideation, while a higher number of comorbid common mental disorders increased the risk. Researchers and clinicians should be aware that one out of every two help-seekers on the internet with common mental disorders may have suicidal ideation. Comorbidity of two or more disorders greatly increase the risk of suicidal ideation.

Chapter 4 gives an overview of Dutch suicide-related information on the internet and describes the quality of the websites for suicide prevention. By means of the Google search engine we found and categorised 153 Dutch language websites dealing with suicide. The websites relating to suicide prevention (n = 23) were scored for quality against a list of 17 quality features. Results indicate that the standard of Dutch language suicide prevention websites is not optimal. Improvement is needed particularly in the field of online help, and interactive possibilities need to be extended.

Chapters 5 and 6 concern a pragmatic randomised controlled trial of the effectiveness of an internet intervention for panic and agoraphobic symptoms. This intervention, Don't Panic Online, is aimed at both subclinical panic disorder and cases of full-blown panic disorder that are relatively mild. The protocol for this trial is described in Chapter 5. Chapter 6 reports the results of this trial in terms of effectiveness for anxiety and depressive symptom severity. Participants (n = 126) were recruited from the general population and randomised to either the intervention group or to a waiting-list control group. Inclusion criteria were a PDSS-SR score of 5-15 and no suicide risk. Panic symptom severity was the primary outcome measure, secondary outcome measures were anxiety and depressive symptom severity. Measurements took place at baseline and 12 weeks after baseline. Diagnostic interviews showed that many participants suffered from comorbid depression and anxiety disorders. Analyses of covariance (intention-to-
treat) showed no significant differences in panic symptom reduction between groups. Completers-only analyses revealed a moderate effect size in favour of the intervention group ($d = 0.73, P = .012$). Only 27% of the intervention group finished lesson 4 or more (out of 6). Non-respons at T1 was high for the total sample (42%). Don't Panic Online appears to be ineffective in individuals with panic symptoms. However, intervention completers did derive clinical benefits from the intervention.

In Chapter 7, the adherence to guided internet-based cognitive behavioural therapy for depression is investigated in a meta-analysis. The adherence rates of guided internet-based cognitive behavioural therapy are compared with the adherence rates of individual face-to-face cognitive behavioural therapy. We identified 20 studies that described 21 treatment conditions (8 guided iCBT, 13 face-to-face CBT), by means of the following inclusion criteria: targeting depressed adults, no comorbid somatic disorder or substance abuse, recruitment conducted in the community, published in the year 2000 or later. We did not find studies that compared guided iCBT and face-to-face CBT in a single trial that met our inclusion criteria. Results showed that guided iCBT interventions consisted of 5 to 9 sessions, and face-to-face CBT treatments ranged from 12 to 28 sessions. The percentage of completers of the total intervention was significantly lower in guided iCBT than in face-to-face CBT (guided iCBT: 62.3%, face-to-face CBT: 83.6%, $P < .001$), as was the percentage of completers of 80% or more of the intervention (guided iCBT: 65.1%, face-to-face CBT: 84.0%, $P = .002$). However, participants in guided iCBT completed on average 80.7% of their treatment, which did not differ significantly from participants in face-to-face CBT (84.6%, $P = .51$). Non-completers of guided iCBT completed on average 48.8% of their treatment, while non-completers of face-to-face CBT completed on average 6.1% of their treatment. Study drop-out did not differ between studies on face-to-face CBT and guided iCBT ($P = .37$). In terms of completers, adherence to guided iCBT is lower than adherence to face-to-face CBT, but in terms of exposure to the treatment, guided iCBT and face-to-face CBT appear to be equal. Adherence to guided iCBT appears to be adequate.

Finally, Chapter 8 summarises the main findings, limitations and implications of the studies discussed in this PhD thesis. The VS-CMD could be a promising screening instrument and needs to be validated further before any conclusions can be drawn. It could be difficult to validate this instrument among illiterate or immigrant groups, because there is a lack of established validated instruments for these groups. The topic of online suicide prevention is important in the field of online treatment for depression and anxiety, as one in every two online
help-seekers with depression and anxiety could suffer from suicidal ideation. The quality of Dutch suicide prevention websites was not found optimal in our study. However, a new website, 113Online, has emerged. This website is currently the most comprehensive website for suicide prevention in the Netherlands. Concerning internet-based early intervention for panic symptoms, the course Don’t Panic Online appears to be effective only for intervention completers, while adherence was low. Efforts need to be made to increase the adherence. Additionally, many participants in our trial suffered from comorbid depression and anxiety disorders and options should be investigated to include Don’t Panic Online in a transdiagnostic intervention. Our meta-analysis revealed that treatment adherence to internet-based cognitive behavioural therapy for depression appears to be adequate and may not be lower than treatment adherence to individual face-to-face therapy. Future studies should investigate the adherence to internet interventions for anxiety disorders. Direct comparisons between internet interventions and face-to-face interventions in a single trial are also advised. 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.