INTERNET INTERVENTIONS FOR MENTAL HEALTH: CURRENT STATE OF RESEARCH, LESSONS LEARNED AND FUTURE DIRECTIONS

LAURA LUISA BIELINSKI
University of Bern, Bern, Switzerland
ORCID: https://orcid.org/0000-0002-4145-6253,
e-mail: laura.bielinski@psy.unibe.ch

THOMAS BERGER
University of Bern, Bern, Switzerland
ORCID: https://orcid.org/0000-0002-2432-7791,
e-mail: thomas.berger@psy.unibe.ch

This article gives an overview of current research on internet interventions in the field of mental health. As a result of COVID-19, the implementation of internet interventions has been given a boost in the mental health sectors of several countries all over the world. With regard to these developments, a definition of internet interventions is provided and the current state of research on different formats, treatment contents, and settings of internet interventions is discussed. Current research on the therapeutic alliance in internet interventions and possible negative effects is also described. The review closes with lessons learned from the past decades of research on internet interventions along with possible implications and future directions.

Keywords: internet interventions, online interventions, e-mental health.

Funding. Department of Clinical Psychology and Psychotherapy, University of Bern, Bern, Switzerland.
ИНТЕРНЕТ-ИНТЕРВЕНЦИИ В СФЕРЕ ПСИХИЧЕСКОГО ЗДОРОВЬЯ: ОБЗОР ИССЛЕДОВАНИЙ, УРОКИ И ПЕРСПЕКТИВЫ

Л.Л. БЕЛИНСКИ
Бернский университет, Берн, Швейцария
ORCID: https://orcid.org/0000-0002-4145-6253,
e-mail: laura.bielinski@psy.unibe.ch

Т. БЕРГЕР
Бернский университет, Берн, Швейцария
ORCID: https://orcid.org/0000-0002-2432-7791,
e-mail: thomas.berger@psy.unibe.ch

Представлен обзор текущих исследований терапевтических вмешательств онлайн в сфере психического здоровья. В результате пандемии COVID-19 реализация интернет-интервенций получила поддержку в секторе психического здоровья разных стран во всем мире. С учетом этих событий дается определение интернет-интервенций и обсуждаются текущие исследования разных форматов, содержание терапии и сеттингов интернет-интервенций. Также описываются текущие исследования терапевтического альянса в рамках интернет-интервенций и возможные негативные последствия. Обзор завершается выводами, полученными на основе исследований интернет-интервенций, проведенных в последние десятилетия, наряду с возможными последствиями и будущими направлениями исследований.

Ключевые слова: интернет-интервенции, терапия в Интернете, психическое здоровье в Интернете.

Финансирование. Департамент клинической психологии и психотерапии, Бернский университет, Берн, Швейцария.

Research on internet interventions in the field of mental health problems is not a novel topic of interest. Decades of research in various countries have focused on a variety of internet interventions and their effects [1; 15; 20; 25; 30; 61; 78]. Hundreds of controlled trials have been conducted with internet interventions [1]. However, large scale implementation of such interventions has lagged behind [85]. Reasons for this lag in the implementation of internet interventions are assumed to be varied. They may include but are not limited to unsuccessful implementation attempts [35], resistance to change amongst healthcare systems [80] and resistance amongst therapists [85].

In January 2020, the World Health Organization (WHO) Director-General declared the novel coronavirus outbreak a public health emergency of international concern, and as of March 2020, COVID-19 was declared a pandemic by the WHO [86]. Resultantly, the way of life for individuals in various countries all over the world changed drastically. COVID-19 also impacted the mental health services with, for example, the need for social distancing requiring the provision of mental health services at a distance. With regard to Covid-19 and mental health care, Wind and colleagues use the term “black swan”, and mention “a turning point for e-health” [85]. “The virus seems a greater catalyst for the implementation of online therapy and e-health tools in routine practice than two decades of many brilliant but failed attempts in this domain” [85, p. 1].

In China, the widespread use of internet services and smartphones allowed mental health providers to use e-mental health services during the COVID-19 pandemic [50]. With regard to Australia, Zhou and colleagues [88] reported that the Australian government increased funding for the delivery of telehealth interventions as a result of COVID-19. Similar efforts have been made in several other countries. In Canada, millions of dollars have been invested in the provision of e-mental health since COVID-19 [55]. Similarly, in Scotland an increased government funding has been provided [72]. In Germany, health insurance providers gave approval for the unlimited provision of video-therapy as a result of COVID-19 [44]. In summary, the use of various types of internet interventions has increased as a result of COVID-19.

These recent developments pose an essential question, one which may be forgotten amidst the increasing efforts to implement internet interventions: based on research findings, what exactly should we be implementing? How can we make the best use of this catalyst situation occurring due to COVID-19, while also preventing a “wild west e-health” situation as previously described by Ruwaard & Kok [66, p. 47]? In their article, the authors describe how untested e-health interventions were implemented in the Netherlands without enough consideration of what was evidence-based [66].

In order to help answer these questions, and in light of recent developments with COVID-19 and the fact that an increased implementation of e-mental
health may be more than just temporary [85], this article aims to give an overview of the current state of research in the field of internet interventions. The objective is to provide important definitions and inform on the current state of research by including information from reviews and meta-analyses in the field of internet interventions, along with examples from studies conducted by our research group. Finally, lessons learned are summarized and implications and future directions for research on and implementation of internet interventions are considered.

Internet interventions: a variety of terminology

In the internet interventions literature, a variety of terms such as e-mental health, online interventions, online therapy, internet-interventions, iCBT (internet-based cognitive-behavioral therapy), telehealth, web-based interventions, etc., are used to describe various forms of intervention [10]. A recent article by Smoktunowicz and colleagues [73] describes in detail the terminology concerns in this field of research and proposes the idea of a common glossary to remedy the situation in the future. Some terms used in the literature focus on the content of the intervention (for example iCBT); the medium of communication used (e-mail, video, smartphone, etc.), or the format of the intervention (unguided interventions, guided interventions, or blended interventions) [14] (Table 1).

In this article, the term “internet intervention” will be used as an umbrella term, in accordance to Andersson [1], who credits Ritterbrand [61] with coming up with the term. Internet interventions refer to all psychosocial interventions, that by using the medium of the Internet, aim to aid affected individuals in the prevention and treatment of symptoms of mental disorders [14].

State of research

In the following section, the current state of research on internet interventions will be highlighted by discussing different formats, treatment contents, settings, therapeutic alliance in internet interventions, and negative effects. Overall, various reviews and meta-analyses show that internet interventions are efficacious for a variety of mental health disorders and symptoms [4; 5; 10; 20; 60]. Moreover, several effectiveness studies suggest that such interventions work in routine care settings [7; 31; 37]. However, the state of research should also be examined by looking at different treatment formats, contents, and settings.

Format. Internet interventions can be grouped into unguided, guided and blended formats that include a web-based self-help program combined with more or less online or face-to-face therapist contact. Moreover, there are on-
line therapies such as e-mail, chat or video-conferencing therapies, in which the Internet is used as a communication medium between the therapist and the patient (Table 1).

**Unguided treatments.** A large variety of unguided internet interventions exist that have not been tested for efficacy. This is evident when one takes a look at different app-stores such as iTunes or Google Play where a plethora of apps and programs are available. This article, however, will only describe unguided interventions where research has been conducted.

With regard to depressive symptoms, a meta-analysis by Cuijpers and colleagues [24] showed small but significant effect sizes for unguided self-help programs in comparison with control groups (Cohen’s $d=0.28$). At 4 to 12 months follow-up the between-group effect size was $d=0.23$. Control groups in the meta-analysis ranged from wait list to care-as-usual controls [24]. In a more recent meta-analysis of individual participant data by Karyotaki and colleagues [43], self-guided iCBT was more effective compared with controls for individu-

### Table 1

<table>
<thead>
<tr>
<th>Format of intervention</th>
<th>Definition</th>
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<tr>
<td>Unguided interventions</td>
<td>Unguided interventions are self-help programs that do not include actual contact with a therapist during the intervention. The Internet is used to provide information to the client. Often the client works on different modules within a specified timeframe, for example, one module a week. Such modules may include text, audio, and video content. Psychoeducative elements are common in unguided interventions.</td>
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<tr>
<td>Guided interventions</td>
<td>Guided interventions combine self-help programs with regular, often brief online contact with a therapist. This contact can be synchronous or asynchronous and often serves to motivate clients to continue the self-help program and to answer questions. There are also interventions in which longer emails are exchanged in the context of writing assignments [49].</td>
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<tr>
<td>Blended interventions</td>
<td>Blended interventions refer to a combination of internet interventions and face-to-face treatment. The type of combination can vary. Internet interventions can be used in direct combination with face-to-face treatment, before face-to-face treatment or after face-to-face treatment.</td>
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<tr>
<td>Chat / E-Mail / Videoconference</td>
<td>In these types of interventions, the Internet is used as a medium of communication between a therapist and a patient (for example, psychotherapy via Skype or Zoom or therapy solely per e-mail contact). The term “telemedicine” is sometimes used in this context [69].</td>
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als with depressive symptoms. Control conditions included usual care, waiting list, or attention control [43]. Medium-to-large effect sizes in comparison with controls for unguided treatments were found in other conditions such as social anxiety disorder [15] or insomnia [87].

Overall, the current literature suggests that unguided interventions with no human support at any stage (including no initial intake interview) tend to be associated with high dropout rates, lower adherence [23], and also lower effects [12]. However, although Baumeister and colleagues [12] report a superiority of guided over unguided interventions, they also mention the lack of generalizability as the studies examined focused mainly on depression and social anxiety disorder.

Guided treatments. Several controlled trials and meta-analyses suggest that guided treatments can be as effective as face-to-face psychotherapy in common mental disorders such as depression and anxiety disorders [20; 62]. Furthermore, guided interventions are most likely not associated with higher dropout rates compared with regular face-to-face psychotherapy [81]. The intensity of guidance can vary. Often, therapist guidance is minimal, timesaving and provided by e-mail; therapists spend around 10—15 minutes per week per client [6]. Examples of guidance that fall into this category often include feedback on exercises completed by the client, clarification of content or advice and support. Other examples of guidance require more time on behalf of the therapist. One such example is a treatment protocol called Interapy [49]. Guided interventions have been efficacious in the treatment of anxiety disorders [54], depressive symptoms [41], body dysmorphic disorder, problematic alcohol use, and insomnia [34; 75; 83], showing large effect sizes in comparison with control groups.

A study by Titov and colleagues [76] suggests that guidance does not necessarily need to be provided by a trained therapist. In many studies with promising results, the guides were psychology students under supervision. A further line of research has investigated guidance in a group format [68]. This study compared clinician-guided iCBT with guided iCBT in a group format and a waitlist control group for the treatment of social anxiety disorder. At post-treatment, both active conditions showed superior outcomes regarding symptoms of social anxiety disorder in comparison with the waitlist. According to the study, the two active conditions did not differ significantly in symptom reduction, diagnostic response rate or attrition. However, the group format reduced weekly therapist time per client by 71% [68].

Blended treatments. Blended treatment refers to a combination of internet interventions with face-to-face therapy. According to Schuster and colleagues [69], the beginnings of blended therapy can be traced back to the late 1980s and early 1990s. Compared to the research on guided interventions, fewer studies have investigated the efficacy and effectiveness of blended interventions [16; 46; 51]. Some available studies show feasibility, positive trends or positive effects of blended treatment [16; 33; 47]. A systematic review by Erbe and colleagues
[32] emphasizes how there is still a lack of studies investigating the superiority of blended treatments compared to face-to-face treatment. At the same time, Erbe and colleagues [32] mention possible advantages of blended treatments: cost-effectiveness, increased effectiveness of treatment, improved transfer to everyday life, and increased utilization of effective treatment. According to Ruwaard and Kok [66], however, it should also be taken into account that blended therapy may also include the disadvantages of both online and face-to-face therapy.

According to Van der Vaart and colleagues [82], blended therapy is viewed positively by therapists and patients. Therapists in Austria found blended therapy to have fewer disadvantages than web-based treatment [70]. This was replicated in a newer study with therapists from Germany [71]. A further interesting aspect of the study of blended therapy is its cost-effectiveness compared with face-to-face therapy. According to a pilot randomized controlled trial by Kooistra and colleagues [48], blended CBT was not considered cost-effective from a societal perspective in comparison with face-to-face therapy but had an acceptable probability of being cost-effective from the health care provider perspective.

E-Mail, Chat and Videotherapy. There has been less research on these types of intervention than on other forms of internet intervention [14]. However, recent developments with COVID-19 have seen an increase specifically in the use of e-mail and videotherapy in various countries all over the world. For example, there has been specific media coverage of services such as betterhelp.com, which offer therapy via chat or video-chat.

With regard to research, there is a large depression trial on online therapy delivered in real-time via text chats [45]. This study, conducted with patients in a routine care setting, showed that this way of delivering CBT proved to be effective, with treatment benefits being maintained for over 8 months. The authors mention that this type of delivery via chat could broaden access to CBT for patients. Furthermore, individualized e-mail therapy has been compared with a guided self-help approach, both based on CBT, for individuals with major depression [84]. Results showed significant symptom reductions in both treatment groups with moderate-to-large effect sizes in comparison with a waiting list control group. Overall, these findings indicate that both guided self-help and individualized e-mail therapy can be effective.

With regard to the use of video-conferencing for the treatment of mental health problems, several studies have been conducted with a variety of mental health disorders [9; 11; 74]. A systematic review including 65 studies showed that psychotherapy via videoconferencing led to similar clinical outcomes as face-to-face psychotherapy for a variety of disorders [9]. A more recent review by Rees and Maclaine [59] concerning anxiety disorders proved that videoconferencing was a valuable treatment option with outcomes comparable to face-to-face treatment. Most of the studies in the review concerned the treatment of PTSD. The authors also mentioned a lack of studies concerning the treatment
of generalized anxiety disorder [59]. With regard to the treatment of depression, a systematic review by Berryhill and colleagues [17] showed that videoconferencing was also a valuable treatment option. Out of the 33 studies included in the systematic review, 21 studies reported statistically significant reductions in depressive symptoms after videoconferencing therapy.

*Treatment content.* Most evidence-based internet interventions are based on CBT [3]. However, there are also trials on internet interventions based on other therapeutic approaches. For example, Johansson and colleagues [40] examined the use of an online, guided psychodynamic self-help intervention for depression, which showed good treatment effects. Zwerenz and colleagues [89] also examined the effects of a psychodynamic web-based intervention to support return to work. This intervention showed favorable effects, however small effect sizes were observed.

Furthermore, Boettcher and colleagues [18] examined a stand-alone, unguided mindfulness intervention for anxiety disorders. In comparison to the control group (an online discussion forum), individuals in the intervention group showed a larger decrease of anxiety symptoms, depressive symptoms and insomnia. The effect sizes for the intervention group were large in comparison to the effect sizes in the control group, which were small to moderate effects [18].

Donker and colleagues [27] compared an internet-delivered interpersonal therapy treatment (IPT) with an internet-delivered cognitive behavioral therapy (CBT e-couch) and an internet-delivered CBT (Moodgym). Results showed that self-guided IPT was effective at reducing depressive symptoms. Finally, several studies have also been conducted on internet-delivered acceptance and commitment therapy [21; 26].

Studies have also shown that tailored and transdiagnostic treatments are valuable options for patients [56], and they have been used to provide treatment for patients with comorbidity [8]. Transdiagnostic interventions refer to interventions that target the core symptoms and underlying vulnerabilities of several disorders simultaneously [79]. Tailored interventions allow both the therapist and the patient to influence the protocol [53] and interventions can be tailored to, for example, patient characteristics [22].

*Different settings.* Many internet interventions recruited participants from the community (Internet; newspapers; forums). In recent years, more and more studies have been conducted in routine care settings [36; 37; 52; 77].

A recent review by Dülsen and colleagues [29] has outlined the current research on internet and mobile-based interventions in different healthcare settings with diagnosed patients. Studies with outpatients analyzed in this review show that internet interventions can be effective forms of treatment in routine practice, and that blended approaches might also be effective ways to combine online and face-to-face therapy [29]. The review also suggests that studies with inpatient samples are still scarce.
A few studies have looked at internet interventions during inpatient treatment [28; 90], however most studies on internet interventions with inpatient populations have been conducted as aftercare studies [39]. One study investigating blended therapy for inpatients during inpatient treatment was conducted by Zwerenz and colleagues [90]. This study provided Deprexis, an online self-help program, as an add-on to inpatient psychodynamic psychotherapy and compared the intervention group with an active control group that received weekly information on depression in addition to psychodynamic psychotherapy. After treatment, depressive symptoms were significantly lower in the intervention group as compared to the control group with a moderate between-group effect size of $d=0.44$ [90]. A further study by Dorow and colleagues [28] investigated the acceptance of MoodGym among inpatients with depression, showing moderate-to-high user acceptance.

Concerning aftercare of inpatient populations, a systematic review by Hennemann and colleagues [39], which investigated web or mobile-based aftercare (mainly after inpatient treatment), revealed small-to-medium effects with regard to symptom severity in comparison with control groups. As far as recurrence and rehospitalization are concerned, study results were not consistent with regard to positive effects of internet interventions [39].

**Therapeutic Alliance.** Therapeutic alliance in internet interventions has been a topic of interest, especially among therapists new to internet interventions. *Can a therapeutic relationship occur in internet interventions?* According to a narrative review by Berger [13], research on therapeutic alliance in internet interventions is available but still limited and several questions remain concerning the methods used to assess the construct in internet interventions. The review concludes that an alliance from a patient perspective can be established in internet interventions, independent of the delivery mode or a mode of communication [13]. Similarly, a systematic review by Pilahja and colleagues [57] showed that therapeutic alliance in iCBT for depression and anxiety disorders was high. Moreover, alliance appeared to be associated with clinical outcomes in the review, but a lack of available studies was mentioned as only 3 out of 6 studies described alliance-outcome relations. A more recent correlational meta-analysis by Probst, Berger and Flückiger [58] showed a moderate relationship between alliance and treatment outcome.

According to Berger [13], new measures for alliance in internet interventions that take into consideration the specificities of internet interventions need to be developed. Also, observer rated and therapist rated alliance ratings are lacking and more studies are needed to complement available research on client ratings of alliance [13].

**Negative effects?** Negative effects of internet interventions have been the content of several publications in the past years [19; 42; 64; 65]. A meta-analysis by Rozental and colleagues [65] found that deterioration rates among
treated participants were 5.8% and 17.4% amongst controls. In a meta-analysis by Karyotaki and colleagues [42] examining the harmful effects of self-guided internet interventions, 7.2% of participants showed clinically significant deterioration (5.8% in the intervention and 9.1% in the control groups). The types of control groups included in the meta-analysis by Karyotaki and colleagues [42] were wait list, treatment as usual, attention placebo and no treatment. Both of these meta-analyses showed that internet intervention participants displayed lower rates of negative outcomes than control participants. A further negative effect can be defined as non-response to treatment. According to Rozental and colleagues, this occurs amongst a quarter of all patients in iCBT [63].

It seems that therapists and other healthcare workers specifically have more reservations with regard to the implementation of internet interventions than patients. For example, a study investigating attitudes of inpatient healthcare workers showed that acceptance of e-health interventions for inpatient treatment was rather low [38]. A further study by Schröder and colleagues [67] discovered that psychotherapists had more negative attitudes toward internet interventions than clients. According to Andersson [2], there may also be country-specific differences in positivity towards internet interventions.

**Lessons learned**

Internet interventions have been studied for several decades, in treatment of a variety of mental disorders. A plethora of terms for internet interventions exist in the literature. This article aimed to describe different treatment formats, contents, and settings and to provide information on therapeutic alliance in internet interventions and their negative effects. In summary, what are the key findings described in this article that are relevant for practitioners, specifically with recently increased implementation of these interventions due to COVID-19?

1. Many internet interventions are efficacious and effective. However there are also many interventions available, for example, in app stores or on the Internet, that have not been tested in randomized controlled trials or equal methodologies. They are not evidence-based. This seems a necessary distinction.

2. Guided internet interventions seem to be superior to unguided treatments.

3. More research needs to be conducted on the potential superiority of blended treatment compared to face-to-face treatments. Health-care professionals seem to prefer blended options in comparison to stand-alone internet interventions.
4. Therapy via videoconference seems to be a valuable treatment option for a variety of mental health disorders.

5. Most evidence-based internet interventions are based on CBT, but other approaches seem to be effective as well.

6. Studies on the use and efficacy of internet interventions for inpatients are scarce in comparison to efforts with community samples and outpatient samples.

7. A therapeutic alliance can be developed in internet interventions, although new forms of assessment for the alliance are needed to meet the specificities of internet interventions.

8. Negative effects also occur with internet interventions and can take different forms.

**Conclusion and Implications: Black swan in the wild west?**

The last few decades have seen huge research efforts in the area of internet interventions in several countries all over the world. COVID-19 has now confronted us with a “black swan moment”, a potential turning point for e-mental health [85, p. 1]. This article has tried to highlight that it is essential that the currently implemented interventions are informed by research efforts. In order to avoid a wild west situation as described by Ruwaard & Kok [66], they should not be implemented blindly. According to several authors, internet interventions are not and should not be seen as a panacea [80].

Moreover, recent developments seem to provide a chance to further advance research in the domain of internet interventions. Interesting topics for prospective studies include the combination of internet interventions and face-to-face therapy (blended treatment), the efficacy of internet interventions with inpatient populations, mechanisms of change and barriers and facilitators of intervention implementation in less studied countries. Finally, new studies taking into account the specific experiences of patients and therapists using internet interventions during the COVID-19 pandemic will provide an interesting and important complement to the already active and dynamic field of internet interventions research.

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Information about the authors
Laura Luisa Bielinski, Doctoral Student, Department of Clinical Psychology and Psychotherapy, University of Bern, Bern, Switzerland, ORCID: https://orcid.org/0000-0002-4145-6253, e-mail: laura.bielinski@psy.unibe.ch

Thomas Berger, PhD, Professor, Head of Department of Clinical Psychology and Psychotherapy, University of Bern, Bern, Switzerland, ORCID: https://orcid.org/0000-0002-2432-7791, e-mail: thomas.berger@psy.unibe.ch

Информация об авторах
Лаура Луиза Белински, магистр психологии, аспирантка, департамент клинической психологии и психотерапии, Бернский университет, Берн, Швейцария, ORCID: https://orcid.org/0000-0002-4145-6253, e-mail: laura.bielinski@psy.unibe.ch
Томас Бергер, PhD, профессор, глава департамента клинической психологии и психотерапии, Бернский университет, Берн, Швейцария, ORCID: https://orcid.org/0000-0002-2432-7791, e-mail: thomas.berger@psy.unibe.ch

Получена 30.06.2020 Received 30.06.2020
Принята в печать 30.07.2020 Accepted 30.07.2020