

## Advantages and disadvantages of online and blended therapy: Replication and extension of findings on psychotherapists' appraisals

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### ABSTRACT

Therapists hold a key role for the uptake of digital mental health interventions (DMHI) within regular care services but have demonstrated cautious attitudes towards such interventions. It is relevant to explore in detail what factors may positively influence therapists' perception when considering DMHI implementation within routine care. We recently assessed therapist views towards Internet-based and blended treatment in Austria (low implementation level). The present study aims at testing the reliability of previous findings, and moreover, it compares therapists' appraisals to a country with advanced DMHI implementation (Sweden).

An online survey was conducted February through June of 2019. Respondents were recruited via email and social media. The survey assessed first-hand experience with Internet-based treatment (IT) and blended treatment (BT). To start, the survey presented a short informational video to half of the respondents, then assessed therapists' views on 17 advantages and 13 disadvantages of IT and BT on 6-point Likert scales.

In total  $N = 300$  therapists responded to the invitation, of which  $N = 165$  provided full survey data (Germany 114/220, 52%; Sweden 51/80, 64%). German therapists rated the advantages of IT and BT as neutral (IT,  $M = 3.6$ ; BT,  $M = 3.8$ ) and to some extent agreed with disadvantages of IT (IT,  $M = 4.5$ ; BT,  $M = 3.5$ ). In comparison, Swedish therapists rated significantly greater advantages (IT,  $M = 4.6$ ; BT,  $M = 4.5$ ) and less disadvantages (IT,  $M = 3.2$ ; BT,  $M = 2.8$ ). Effect sizes ranged from  $d = 0.89$  to  $d = 1.83$ ; all  $P$ 's  $< .001$ . Those with first-hand experience with DMHI reported more positive appraisals in both countries. No significant effect was found for exposure to the short informational video. The German sample represented essential characteristics of current German therapists; in comparison Swedish respondents skewed towards younger less experienced therapists ( $P$ 's  $< .001$ ). Those confounders accounted for a small non-significant proportion of variance (0.1–4.7%).

We found that therapists considered blended treatment to have less disadvantages than Internet treatment, and that first-hand experience with DMHI, but not exposure to an acceptance facilitating video clip, predicted greater acceptability on individual level. The responses among German therapists closely resembled findings from our preceding study in Austria, indicating that reliable results can be achieved in small survey studies if sample and population parameters correspond. Swedish therapists held significantly more favorable attitudes towards both interventions. The comparison between countries, however, is limited by a number of potential confounding variables.

### 1. Introduction

Beginning in the 80's to 90's with the development of palmtop computers, digital mental health interventions (DMHI) have been

subject to steep increase in research interest since the turn of the millennium (Andersson, 2018; Newman, 1999). The overall rationale for many DMHI is to address the large mental health treatment gap which includes shortage of therapists, long waiting lines, and individual

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barriers of stigmatization (Chisholm et al., 2016). DMHI span a wide range of interventions (Ebert et al., 2019), including virtual/augmented reality programs (e.g., Aboujaoude et al., 2015; Carl et al., 2019;), telehealth (Osenbach et al., 2013), conversational agents, and chatbots (e.g., Fitzpatrick et al., 2017), serious games (e.g., Fleming et al., 2012), feedback and reinforcement interventions (e.g., Schlicker et al., 2018), routine and outcome monitoring (Lutz et al., 2019; Kaiser and Laireiter, 2017). Internet-based treatment, provided as self-help or complemented with brief coach-support (Andrews et al., 2018; Richards and Richardson, 2012) comprises an important DMHI, with the potential to scale treatment to more individuals in need of mental health assistance. Internet-based treatments may also be applied as adjunct to standard in-person treatment to enhance treatment (Berger et al., 2018; Zwerenz et al., 2019; Schuster et al., n.d), or as free-standing alternatives to in-person treatment (Karyotaki et al., 2017) with promising results. Moreover, integrated blended treatment approaches, which merge in-person therapist sessions with mobile or Internet-based elements into one protocol, are emerging in research settings (Kleiboer et al., 2016; Kooistra et al., 2016; Ly et al., 2015; Romijn et al., 2015; Schuster et al., 2018b, 2019) as well as in the everyday settings of clinicians (Magnavita, 2018).

### 1.1. Acceptance of internet-based treatment and blended treatment

Findings for Internet-based treatment (IT) and blended treatment (BT) include the comparable effectiveness of Internet-based treatment with coach-support to face-to-face treatment (Carlbring et al., 2018), limited deterioration rates (6%) for Internet-based treatment with coach-support (Rozental et al., 2017), and non-inferiority of blended treatment protocols that include comparably less therapist time to standard in-person therapy (Thase et al., 2017; Kooistra et al., 2019). Studies have also indicated augmented effects for blended treatment for depression, compared to care as usual (Berger et al., 2018; Zwerenz et al., 2019; Sethi et al., 2010). Internet-based treatments have successfully been transferred into routine care practices in, for example, Australia, Sweden, and Canada (Titov et al., 2017, 2018, 2019). Despite the growing evidence for the effectiveness of Internet-based and blended treatment formats, implementation on a wider scale is however progressing slowly. Recently, Vis et al. (2018) identified six frequently investigated determinants of DMHI implementation (acceptance, appropriateness, engagement, resources, work processes, and leadership) several of which were found to be related to the group of mental health professionals, highlighting their important gate-keeper function in facilitating dissemination of IT and BT.

To this date, therapist perceptions towards IT have been found to be cautious to positive at best (cf. Cook et al., 2009; Gun et al., 2011; Kivi et al., 2015; Schröder et al., 2017; Stallard et al., 2010; Vigerland et al., 2014; Wangberg et al., 2007) and concerns have been raised regarding the therapeutic process and effectiveness of IT (Cook et al., 2009; Becker and Jensen-Doss, 2013). Studies that have extended the investigation to include BT have found similar neutral to cautiously positive attitudes (Becker and Jensen-Doss, 2013; Overholser, 2013; Kaiser et al., 2018; Titzler et al., 2018; Wangberg et al., 2007; van der Vaart et al., 2014). Factors that are indicated to affect appraisal of interventions are therapists' theoretical orientation (Schröder et al., 2017; Vigerland et al., 2014; Wangberg et al., 2007), first-hand experience with DMHI, or being from a country with comparably high level of DMHI implementation (Gun et al., 2011). A European level study conducted with care professionals and other mental health stakeholders found that respondents from countries with high DMHI implementation (The Netherlands, Sweden, U.K.) were more knowledgeable and accepting towards Internet-based and blended treatment than respondents from other countries (France, Poland, Spain, Germany, Switzerland). An overall preference for blended treatment over standalone Internet-based treatment to treat adult depression was also revealed (Topooco et al., 2017). We recently conducted a stakeholder

survey in Austria (a country with low DMHI implementation) with the aim to depict therapists' perceptions of advantages and disadvantages of Internet-based and blended treatment – in terms of global appraisal as well as to reveal potential contrasting profiles for both interventions (Schuster et al., 2018a). We found that therapists held a neutral perception of advantages with both interventions, but perceived IT to entail comparably more disadvantages than BT. At the individual item level, we furthermore found a mismatch between therapists' appraisals and the growing empirical evidence for IT.

The primary aim of the present study was to estimate the reliability and generalizability of our findings with Austrian therapists, by replication with a comparable population. Germany and Austria are neighbouring countries, sharing language and comparable culture. Furthermore, stand-alone Internet-based treatment is currently restricted by law in both countries. To further explore the generalizability of findings, and to test the relation between DMHI implementation level and appraisal of Internet-based and/or blended treatment, we extended the present survey to therapists in a country with a high level of DMHI implementation. In Sweden, coach-supported Internet-based treatments are at this time available to patients at the national level, through the statutory health care service system as well as from of private companies (for example, through partnership with insurance companies, or by reimbursement per patient interaction from patients' local districts). Thus, the present study surveyed therapists' attitudes towards IT and BT in Germany and Sweden in the year 2019. According to the discussion section of our first article, we assumed that: 1) Findings from our first survey would replicate in a country with comparable legal restrictions and DMHI level (Germany), 2) that therapists in a more advanced country (Sweden) would exhibit comparably more positive views, 3) that first hand work experience would relate to more positive attitudes, and, finally, 4) that random presentation of an acceptance-facilitating clip would not, or only to a minor positive extent impact therapists' attitudes.

## 2. Methods

### 2.1. Survey design

The applied questionnaire had previously been used to survey therapists in Austria (for details about the development of the original survey, please refer to Schuster et al., 2018a). The survey included demographic information and items that covered the following thematic areas related to Internet-based (IT) and blended treatment (BT): i) first-hand experience of IT and BT, ii) perceived advantages of Internet-based treatment (IT+), iii) perceived disadvantages of Internet-based treatment (IT-), iv) perceived advantages of blended treatment (BT+), v) perceived disadvantages of blended treatment (BT-), and, vi) perceived applicability of technology-delivered treatment components (e.g., psychoeducative videos, teletherapy) within a traditional care setting. In addition, the German survey included seven items on implementation of DMHI, (surveys in both countries included a few more country-specific items that are not reported here). Survey questions briefly described IT and BT to help ensure that respondents attributed the same meaning to interventions, and that respondents rated advantages and disadvantages in the form of six-point Likert scales (1 = Definitely disagree, 6 = Definitely agree). We used principles from Tailored Design Methods (Dillman et al., 2014) to minimize participant burden while taking the survey. For the Swedish version of the survey, we translated survey items (German—English—Swedish), though the process did not include formal back-translation. The survey Appendix 1 presents survey items.

Prior to items about IT and BT, the survey randomly presented a video about Internet-based treatment to half of respondents, to test whether the provided information would positively influence acceptance of interventions. The video clips were chosen to achieve a high degree of similarity between survey versions. The Swedish clip

contained information from a government-regulated health organization (with permission). The German clip contained a section from a public television documentary on Internet interventions. Both video clips included descriptions of basic intervention principles, together with expert statements (Sweden, licensed psychologist; Germany, researcher in Internet interventions). The non-video group was not shown any other video-clip or placebo. Following the video-clips, items of the cross-sectional survey were presented in random order in four blocks (IT+; IT-; BT+; BT-). Factor analysis from the principal study revealed a single factor structure, with positive loadings for perceived advantages and negative loadings for perceived disadvantages. There was high internal consistency for perceived advantages (Cronbach alpha = 0.931) and disadvantages (Cronbach alpha = 0.930).

## 2.2. Respondents and recruitment

The survey was conducted in Germany and Sweden February to June 2019. In Germany, psychotherapists were contacted via the registrar for licensed psychotherapists administered by the German Psychotherapist Association (*Deutsche Psychotherapeuten Vereinigung*; DPtV). In the total registry of  $N = 5633$  therapists, occupational email contact was available for  $N = 3585$  therapists. A subset of  $N = 1400$  therapists was selected at random to receive an email invitation to the study. The invitation included information on study aims, data handling, detailed contact information, and a link to the online survey. Two email reminders were sent out to each potential recruit. In Sweden, the study recruited participants in the form of social media posts by research team members to four closed Facebook groups intended for psychologists only (group size ranging from  $N = 232$ , to  $N = 7766$  at the time of postings; member overlap unknown). The information about the study was also posted in Facebook interest pages for Interpersonal psychotherapy and Psychodynamic clinicians ( $N = 1768$  and  $N = 2127$  at the time of postings). Posts described the opportunity to participate in an anonymous study about therapists' perceptions of technology-based therapy and included a link to the online survey. No reminders were sent since respondents were anonymous.

## 2.3. Data analysis

Data analysis was conducted using SPSS Statistics 24 (IBM SPSS Statistics). Items utilized a mandatory field completion feature, impeding missing data on item-level. Some responses were not normally distributed, indicating the use of non-parametric statistics. For better interpretability, and since parametric and non-parametric results corresponded almost perfectly, we present study findings in terms of  $t$ -tests with effect sizes in Cohen's  $d$  (Cohen, 1988). Relationships between binary demographic variables (e.g. nationality or therapeutic orientation) and reported appraisals were analyzed using point-biserial correlations. Whole sample correlations (e.g. impact of therapeutic orientation, or work experience) were controlled for nationality and randomization group (video yes/no). Whenever applicable, bootstrapped correlations with 1000 iterations were used. Impact of putative predictors was tested using multiple regression, with variance inflation factor (VIF), proportion of Eigenwert, and factor loadings testing multicollinearity. Results revealed high collinearity for CBT versus dynamic orientation, as well as age in years and years in profession. Therefore, separate regression models were calculated for therapeutic orientation, while therapist age was left out from analysis due to high correlation with years in profession ( $r = 0.889$ ,  $p < .001$ ). Due to the high number of non-completed surveys ( $n = 135$ ), non-completer analyses were indicated. However, we found that randomization of survey blocks resulted in very small non-completer subsamples, impeding inferential non-completer analyses. We therefore only provide descriptive information on corresponding scale means in Appendix 1. According to power analyses (G\*Power 3; Faul et al., 2007) for unequal sample sizes, completer analyses were sufficiently powered to detect

group effects of Cohen's  $d = 0.4$  with statistical power of 75%, and within-effects of  $r = 0.2$  with power of 87% for the smaller group of Swedish therapists. A distinction of the participating countries (with Sweden as frontrunner and Germany following) was made in line with previous literature (Topooco et al., 2017), to reflect the discrepancy across countries in terms of DMHI implementation. Detailed survey results for item-level analysis are provided in Appendix 1 (advisable because it provides the most fine-grained information, and because of heterogeneity between single items of a given subscale). Furthermore, specific interpretations may be drawn from this level of analysis.

## 3. Results

### 3.1. Sample properties and attrition

In Germany, a total of  $N = 1400$  respondents were invited,  $N = 300$  started the survey (response rate 21.4%), and from these,  $N = 114$  completed the full survey (38%), 114/300. In Sweden, although the total number of respondents who viewed the Facebook postings is unknown,  $N = 80$  started the survey of which  $N = 51$  completed the full survey (69%, 51/80). In the total pooled sample,  $N = 300$  respondents started the survey of which 165 respondents completed the full survey (55%, 165/300). The German sample resembled population characteristics of German psychotherapists in terms of gender, age, therapeutic orientation, and county, but respondents with psychoanalytic orientation were underrepresented compared to the distribution among German psychotherapists. While we did not have access to a public registry describing characteristics of Swedish psychotherapists, we found that Swedish respondents were significantly younger and reported less work experience in years compared with German responders ( $p$ 's  $< .001$ ). The impact of potential confounders is presented in the next paragraph. Table 1 presents demographic characteristics of the pooled sample.

The probability for dropping out from the survey was unrelated to main findings ( $r = -0.066$  to  $0.036$ ,  $p = .402$  to  $.715$ ). Respondents who reported CBT orientation, however, exhibited lower probability for dropout compared to other respondents (Odds ratio = 1.46,  $p < .001$ ). Moreover, a descriptive non-completer analysis of the German sample ( $n = 81$ ) indicated more critical views among CBT therapists ( $n = 4-7$ ) if they had dropped out from the survey (cf. Appendix 1). In contrast, psychodynamic therapists ( $n = 23$ ) tended towards positive views if they had dropped out

**Table 1**  
Demographic and profession characteristics of surveyed therapists.

| Characteristic                  | Germany ( $n = 114$ ) |                         | Sweden ( $n = 51$ ) |
|---------------------------------|-----------------------|-------------------------|---------------------|
|                                 | Sample                | Population <sup>a</sup> | Sample              |
| Gender (female, %)              | 70.1                  | 73.4                    | 84.3                |
| Age (years, SD)                 | 54.4 (10.8)           | 54.0                    | 37.6 (10.0)         |
| Years in profession (years, SD) | 21.8 (11.7)           | –                       | 8.6 (7.5)           |
| Therapeutic orientation         |                       |                         |                     |
| CBT (%)                         | 67.5                  | 64                      | 72.5                |
| Psychodynamic (%)               | 14.9                  | 13                      | 11.8                |
| Psychoanalytic (%)              | 4.4                   | 23***                   | –                   |
| Eclectic (%)                    | 13.2                  | –                       | 15.7                |
| No experience with ...          |                       |                         |                     |
| - IT (%)                        | 64.0                  | –                       | 43.1                |
| - BT (%)                        | 68.4                  | –                       | 47.1                |
| - Tele-therapy (%)              | 61.4                  | –                       | 49.1                |
| Frequently working with ...     |                       |                         |                     |
| - IT (%)                        | 4.4                   | –                       | 13.7                |
| - BT (%)                        | 4.4                   | –                       | 17.6                |
| - Tele-therapy (%)              | 5.3                   | –                       | 13.7                |

Note.

<sup>a</sup> Population parameter according to Schröder, 2014 ( $N = 428$ ).

\*\*\* Significant deviation from population after Bonferroni correction ( $p < .001$ ). Additional information on representativity of German sample is provided in Appendix 1.

( $n = 2-5$ ). Small subsamples (resulting from randomization of survey blocks) impeded any inferential interpretation of this pattern and reported tendencies must be interpreted with caution. The Swedish subsample was too small to provide any reliable information on impact of dropout as a function of therapeutic orientation.

### 3.2. Perceived advantages and disadvantages Internet-based treatment and blended treatment

Therapists were asked to indicate whether, in their opinion, a range of different aspects of IT and BT were advantageous or disadvantageous, and responded using a 6-point Likert-scale (1 = Definitely do not agree, to 6 = Definitely agree). Here we report the total mean for advantages and disadvantages respectively.

German respondents perceived a neutral degree of advantages of Internet-based treatment (IT) and blended treatment (IT:  $M = 3.61$ ,  $SD = 0.82$ ; BT:  $M = 3.77$ ,  $SD = 0.88$ ) and greater disadvantages for Internet-based treatment than for blended treatment (IT:  $M = 4.55$ ,  $SD = 0.74$ ; BT:  $M = 3.47$ ,  $SD = 1.01$ ). In comparison, their Swedish colleagues perceived greater advantages of IT and BT (IT:  $M = 4.55$ ,  $SD = 0.57$ ; BT:  $M = 4.45$ ,  $SD = 0.58$ ) as well as a lower degree of disadvantages of both (IT:  $M = 3.24$ ,  $SD = 0.81$ ; BT:  $M = 2.78$ ,  $SD = 0.81$ ). All applied independent sample  $t$ -tests indicated highly significant differences ( $t_{(163)} = 4.61-9.92$ ,  $p < .001$ ) after Bonferroni correction. Moreover, the perceived advantages of IT and BT in Germany differed slightly in favor for BT ( $t_{(116)} = 3.30$ ,  $p = .001$ ,  $d = 0.19$ ), while Swedish therapists attributed comparably marginal differences in favor for IT ( $t_{(50)} = 2.07$ ,  $p = .044$ ,  $d = 0.16$ ). This finding, however, needs to be interpreted with caution given the sample size. German therapists, however, perceived notably more disadvantages of IT than BT ( $t_{(116)} = 14.49$ ,  $p < .001$ ,  $d = 1.23$ ). A similar pattern of appraisal, although, with less pronounced differences, was found in the Swedish sample ( $t_{(50)} = 6.25$ ,  $p < .001$ ,  $d = 0.56$ ). An overview of given appraisals is presented in Fig. 1, which includes a comparison to our preceding survey with Austrian therapists (Schuster et al., 2018a).

Detailed survey results for item-level analysis are presented in Appendix 1. The top five rated advantages and disadvantages of IT and BT replicated considerably (80%). Perceived disadvantages of IT were found to be related to risks in the therapeutic evaluation and process (e.g. overlooking disease aspects, missing non-verbal signals, or higher dropout from treatment).

### 3.3. Predictors of therapist appraisals

Putative predictors and the impact of exposure to an informational video clip prior to questions on IT and BT was tested by multiple regression, applying four-fold Bonferroni correction for multiple comparison of advantages and disadvantages of IT and BT. Country (Germany versus Sweden) emerged as the strongest predictor, followed by therapeutic orientation (CBT versus psychodynamic orientation), and first-hand experience with IT/BT. The impact of an informational video failed to reach statistical significance. Corresponding standardized regression coefficients and level of statistical significance are presented in Table 2.

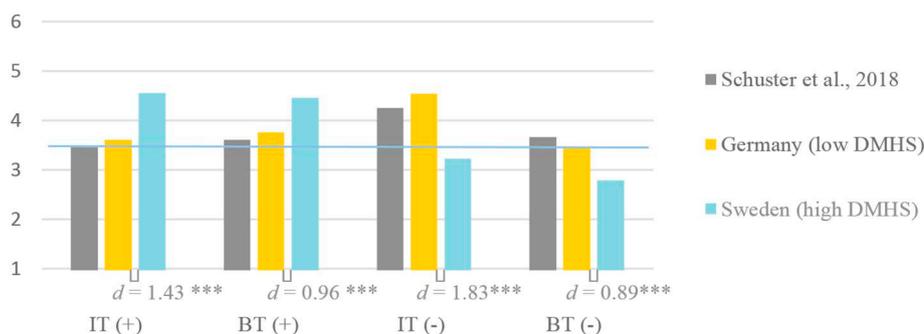


Fig. 1. Advantages (+) and disadvantages (-) of Internet-based (IT) and blended treatment (BT). Grey: Original survey study among Austrian psychotherapists (low DMHS) for comparison,  $N = 95$  (Schuster et al., 2018a). Blue line: scale mean; 4 = rather agree; 5 = agree; 6 = definitely agree. All  $p$ -values  $< .001$  after correction for multiple tests.

The German survey version included seven additional items on implementation of DMHI. Therapists were asked to indicate to what extent they agreed with statements concerning implementation, using a 6-point Likert-scale (negative items coded reversely). While the average agreement for IT was 43.6%, therapists agreed with 67.3% of implementation items for BT. This pattern also emerged on item-level, where all repeated  $t$ -tests indicated highly significant differences ( $t_{(113)} = 4.22-8.25$ ,  $P$ 's  $< .001$ ). About two thirds of therapists agreed that BT should be implemented and offered free of charge, while only about 40% agreed with these statements for IT. Reversely, as much as 55% of German therapists indicated willingness to sign a petition against IT ("I would sign a petition against pure online interventions"), while a proportion of 25% would sign a petition against BT. An overview of appraisals is presented in Fig. 2.

### 3.4. Complementary post hoc analyses

Finally, we tested whether significant differences in demographic variables between Germany and Sweden had an impact on main findings (appraisal of IT/BT). We found that therapist age and years in profession only accounted for a small proportion of variance (0.1-4.7%), with only one out of eight comparisons indicating a significant relationship (disadvantages of BT in Germany:  $r = 0.20$ ,  $p = .033$ ) when no Bonferroni correction for multiple tests was applied. Thus, analyses suggest that sampling differences could most probably not account for the large to very large differences in findings.

## 4. Discussion

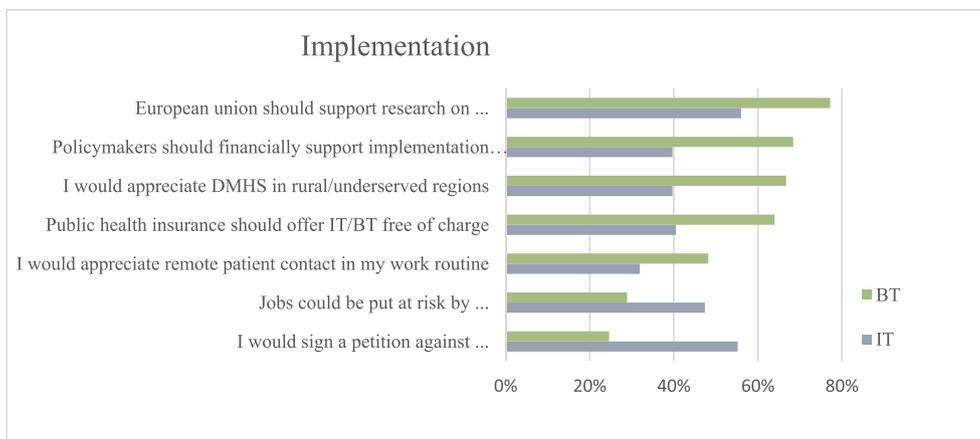
The present online survey study investigated German and Swedish therapists' perceptions of the advantages and disadvantages of Internet-based (IT) and blended (BT) psychological treatment. The aim of the study was to test the reliability and generalizability of recent findings drawn from therapists in Austria (Schuster et al., 2018a). Germany and Austria have similar levels of (low) DMHI implementation and IT is currently restricted by law in both countries. In addition, the present study extended to include respondents from a country with high DMHI implementation level (Sweden), to explore potential similarities and differences in appraisal as a function of DMHI implementation level. The survey contrasted perceived advantages and disadvantages of IT and BT, and tested putative predictors and the impact of an informational video clip (intended to facilitate acceptance) on IT/BT appraisals.

### 4.1. Main findings

On a global level, we found that German therapists held rather neutral attitudes towards advantages of IT and BT, and perceived IT to entail somewhat higher risks than BT. This pattern closely resembles our preceding study with therapists in Austria. The replication was also successful on item-level, with 4 out of 5 top ranked advantages and disadvantages corresponding to our first study. This included the bridging of geographic distances, facilitated repetition of therapy material, digitally facilitated psychoeducation, flexibility in terms of delivering treatment, and

**Table 2**  
Putative predictors and impact of an informational video on appraisals regarding advantages and disadvantages of Internet-based and blended treatment.

|                                | IT +  |         | BT +  |         | IT -  |         | BT -  |         |
|--------------------------------|-------|---------|-------|---------|-------|---------|-------|---------|
|                                | Beta  | p value |
| Constant                       |       |         |       |         |       |         |       |         |
| Informational video clip       | -0.12 | 0.063   | -0.10 | 0.142   | 0.11  | 0.054   | 0.13  | 0.070   |
| Country                        | 0.55  | 0.000   | 0.47  | 0.000   | -0.73 | 0.000   | -0.40 | 0.000   |
| CBT orientation                | 0.25  | 0.000   | 0.25  | 0.001   | -0.22 | 0.000   | -0.22 | 0.003   |
| Dynamic orientation            | -0.24 | 0.000   | -0.28 | 0.000   | 0.15  | 0.015   | 0.11  | 0.126   |
| Eclectic orientation           | -0.04 | 0.599   | 0.03  | 0.698   | 0.12  | 0.046   | 0.11  | 0.116   |
| Previous experience with IT/BT | 0.15  | 0.030   | 0.25  | 0.001   | -0.19 | 0.003   | -0.30 | 0.000   |
| Years in profession            | 0.00  | 0.957   | 0.04  | 0.640   | -0.09 | 0.214   | 0.02  | 0.849   |
| Gender (female)                | 0.06  | 0.376   | 0.08  | 0.277   | -0.02 | 0.745   | -0.08 | 0.247   |



**Fig. 2.** German therapists' ( $n = 114$ ) agreement (steps 4 to 6 of Likert-scale) on implementation of Internet-based and blended treatment. All differences  $p < .001$  after Bonferroni alpha correction.

contemporaneity of treatment being perceived as the top advantages of IT and BT. Moreover, perceived disadvantages with IT related to aspects of the therapeutic process (e.g., missing important information, increase in avoidance of difficult topics, and the lack of non-verbal signals). These findings are in line with our preceding study as well with previous reports on the neutral perception of IT and BT (cf. Carper et al., 2013; Kaiser et al., 2018; Schröder et al., 2017), and cautious views among therapists concerning the disadvantages with IT among therapists (cf. Becker and Jensen-Doss, 2013). Notably, therapists indicated a clear preference towards BT over IT in items of relevance for DMHI implementation: two thirds (64%) of therapists agreed that blended DMHI should be implemented and offered free of charge, while only about 40.5% agreed the same for IT. More than half of German respondents also indicated that they would sign a petition against the introduction of Internet-based treatment, which is a surprisingly high proportion given the meaning and potential implications of the statement. The correspondent rate for BT was comparably lower, indicating less willingness to take proactive steps against such formats. Taken together, the findings in the present study add to those reporting guarded views towards Internet-based treatments among therapists in low DMHI implementation-level settings. Furthermore, the inclusion of in-person sessions as part of treatment (BT) seems to facilitate acceptance for technology-based psychological treatments.

**4.2. Level of DMHI implementation**

The country comparison showed that Swedish therapists clearly held more positive views towards IT and BT. Swedish respondents agreed more with suggested advantages for IT and BT (about one scale point higher), and agreed less with disadvantages of IT (almost two standard deviations below the German sample). A consistent pattern of open views emerged, with the most striking result being the difference in perception of disadvantages of IT

( $d = 1.83$ ). While country-affiliation was the dominant explanatory variable in the regression analysis (explained variance = 40–73%), potential confounding variables (e.g., the significant difference in mean age between countries) accounted for only a little variance. Thus, it is probable that the reported pattern actually reflects country-related differences in attitudes. The differences across countries were expected and certainly speak to the role healthcare reimbursement structures play in the implementation of and attitudes towards DMHI. Swedish mental healthcare is mainly government-funded and includes dedicated funding for the implementation of internet-based therapy. Among other initiatives is a national web-based treatment platform and quality register for internet-based cognitive behavior therapy (Folker et al., 2018; Titov et al., 2018). This stands in stark contrast to many other countries, such as the investigated German speaking countries, where remote teletherapy or Internet interventions is restricted by law. The proposed association between DMHI implementation-level and therapists' perception of IT and BT is further supported by the positive effect of first-hand experience with DMHI within each country. Such a relationship has repeatedly been described in survey and interventional studies for IT (cf. Gun et al., 2011) and BT (cf. Månsson et al., 2017; Schuster et al., 2019). Interestingly, the effect of first-hand experience on appraisal in our study was higher for BT than for IT. Finally, due to considerable variation within perceived (dis-) advantages, it is recommendable to interpret findings on item level.

**4.3. The influence of acceptance-facilitating video information and therapeutic orientation**

It is of interest to investigate whether exposure to informational material is similarly helpful in facilitating accepting attitudes towards DMHI as, for example, first-hand experience. If so, it would have implications for implementation efforts. In the present study, we first

presented a video clip that informed participants about Internet-based treatment to half of survey respondents, prior to items about (dis)advantages of IT and BT. The video was intended to facilitate acceptance of DMHI, however, we found only a small non-significant effect of video exposure on views of IT and BT ( $r \sim -0.1$ , all  $P$ 's = n.s.). This result is in line with our preceding study in Austria, as well as previous mixed results with patient and general populations (Apolinário-Hagen et al., 2018; Baumeister et al., 2014, 2015; Lin et al., 2018). While the effectiveness of informational video clips to change therapist attitudes appears limited, it should be noted that the video clips used in the present study were not specifically developed for our study (and the video in our previous study featured an academic slide-show presentation with voice over). Hence, there is room for optimization in terms of enhancing and contextualizing information to suit the defined and targeted audiences. In contrast to the null-finding for video exposure, therapeutic orientation was revealed to predict perceived advantages and disadvantages of DMHI in the present study, with CBT orientation being related to more positive views and PDT orientation being related to more negative views. This pattern is in line with previous studies (Schröder et al., 2017; Vigerland et al., 2014; Wangberg et al., 2007). Interestingly, a descriptive non-completer analysis of German therapists suggested a reverse pattern for those dropping out from the survey, but it should be noted that the finding is of limited reliability due to very small subsamples.

4.4. Strengths and limitations

Strengths of the study include use of items that have previously been evaluated with a similar population, matching of sample and (available) population parameters, adequate power with regards to detecting the reported results, and the finding of detailed replication patterns to our previous study (Schuster et al., 2018a). Simultaneously, a number of limitations should be considered: Firstly, our findings rely on correlational observation which calls for caution when interpreting potential causes of observed differences. Secondly, many German therapists did not respond to the study invitation. In order to estimate representability of sampling, we provide information on demographic variables comparing the present sample with the population of therapists (with further details provided in Appendix 1). These data suggest relatively high fit between sample and population as only one parameter deviated significantly. However, selection by other variables cannot be estimated from the existing data; for example, the survey was applied online which excludes therapists without internet access or without e-mail in the registry. Relatedly, sampling strategies for both countries could not be held equal due to differences in information provision (availability of registries), which might have impacted selection of participants or motivation to participate. This resulted in substantial differences in demographic variables between countries (e.g. mean age of therapists). Furthermore, the way service is being

provided typically differs by country. For example, self-employment rate is higher in Germany, treatment provision by clinical psychologists is higher in Sweden. As far as we could analyze potential confounders, these indicated only minor impact on findings. Indeed, the many confounding variables and differences in information resources make country comparisons challenging. The interpretation of DMHI implementation level being a major influence, however, also seems to be supported by the relevancy of personal experience with DMHI for attitudes when analyzing both countries separately. Thirdly, the statistical power was limited for some of the subgroup analyses, and certain therapeutic orientations were underrepresented in the sample compared to the general population. For example, the subgroup of psychoanalytic therapists was very small (4.4% of German respondents) compared to the proportion of therapists with psychoanalytic orientation in Germany (23%). Additionally, non-completer analyses lacked statistical power since the randomization of survey blocks caused fractions of incomplete data, therefore we cannot rule out that differences between completers and non-completers exist. For therapists in Germany, descriptive data from small subsamples moreover suggested negative views among non-completing CBT therapists and more positive views among non-completing PDT therapists. Fourthly, as previously mentioned, the video clips used in the present study were not developed for the study and the impact of video information might have presented differently if videos had been specifically tailored to the purpose of our study. Lastly, it appears advisable to analyze potential effects on item-level, rather than on scale-level of a given survey.

5. Conclusion

This study was conducted with therapists in Germany and Sweden and aimed to replicate previous findings on attitudes towards Internet- and blended-treatment formats among therapists in Austria. We found that therapists held more positive views towards blended-treatment formats (Internet-based components in combination with face-to-face sessions) than pure Internet-based treatment, and that the preference for blended formats was associated with lower perceived risks and lower limitations for blended treatment. These results closely resemble our previous findings with therapists in Austria. In line with our expectation on the effect of level of DMHI implementation on appraisal, Swedish therapists' demonstrated more favorable views towards Internet-based- and blended treatment than their German counterparts. This finding was supported by more positive views among therapists with personal DMHI experience.

Declaration of competing interest

The authors report no conflicts of interest.

Appendix 1

Section A – Sample characteristics

Table 1  
Extended demographic and profession characteristics of surveyed therapists (Table 1).

| Characteristic                  | Germany (n = 114) |                         | Sweden (n = 51) |
|---------------------------------|-------------------|-------------------------|-----------------|
|                                 | Sample            | Population <sup>a</sup> | Sample          |
| Gender (female, %)              | 70.1              | 73.4                    | 84.3            |
| Age (years, SD)                 | 54.4 (10.8)       | 54.0                    | 37.6 (10.0)     |
| Years in profession (years, SD) | 21.8 (11.7)       | –                       | 8.6 (7.5)       |
| Therapeutic orientation         |                   |                         |                 |
| CBT (%a)                        | 67.5              | 64                      | 72.5            |
| Psychodynamic (%)               | 14.9              | 13                      | 11.8            |

(continued on next page)

Table 1 (continued)

| Characteristic                        | Germany (n = 114) |                         | Sweden (n = 51) |
|---------------------------------------|-------------------|-------------------------|-----------------|
|                                       | Sample            | Population <sup>a</sup> | Sample          |
| Psychoanalytic (%)                    | 4.4               | 23***                   |                 |
| Eclectic (%)                          | 13.2              | –                       | 15.7            |
| No experience with ...                |                   |                         |                 |
| - IT (%)                              | 64.0              | –                       | 43.1            |
| - BT (%)                              | 68.4              | –                       | 47.1            |
| - Tele-therapy (%)                    | 61.4              | –                       | 49.1            |
| Frequently working with ...           |                   |                         |                 |
| - IT (%)                              | 4.4               | –                       | 13.7            |
| - BT (%)                              | 4.4               | –                       | 17.6            |
| - Tele-therapy (%)                    | 5.3               | –                       | 13.7            |
| Region (%)                            |                   |                         |                 |
| - Bavaria                             | 15.4              | 15.3                    | –               |
| - Baden – Württemberg                 | 5.1               | 11.7                    | –               |
| - Saarland                            | 0                 | 1.1                     | –               |
| - Hessen                              | 9.4               | 9                       | –               |
| - Rheinland – Pfalz                   | 2.6               | 3.2                     | –               |
| - Berlin                              | 8.5               | 9.9                     | –               |
| - Nordrhein – Westfalen               | 24.8              | 23                      | –               |
| - Niedersachsen                       | 10.3              | 8.1                     | –               |
| - Bremen                              | 3.4               | 1.3                     | –               |
| - Hamburg                             | 6                 | 4.7                     | –               |
| - Schleswig – Holstein                | 4.3               | 3                       | –               |
| - Ostdeutsche Psychotherapeutenkammer | 10.3              | 9.5                     | –               |

Note.

<sup>a</sup> Population parameter according to Schröder, 2014 (N = 428).

\*\*\* Significant deviation from population after Bonferroni correction (p < .001).

Section B – Item-level analyses of advantages and disadvantages of IT and BT (displayed in Figs. 1–4)

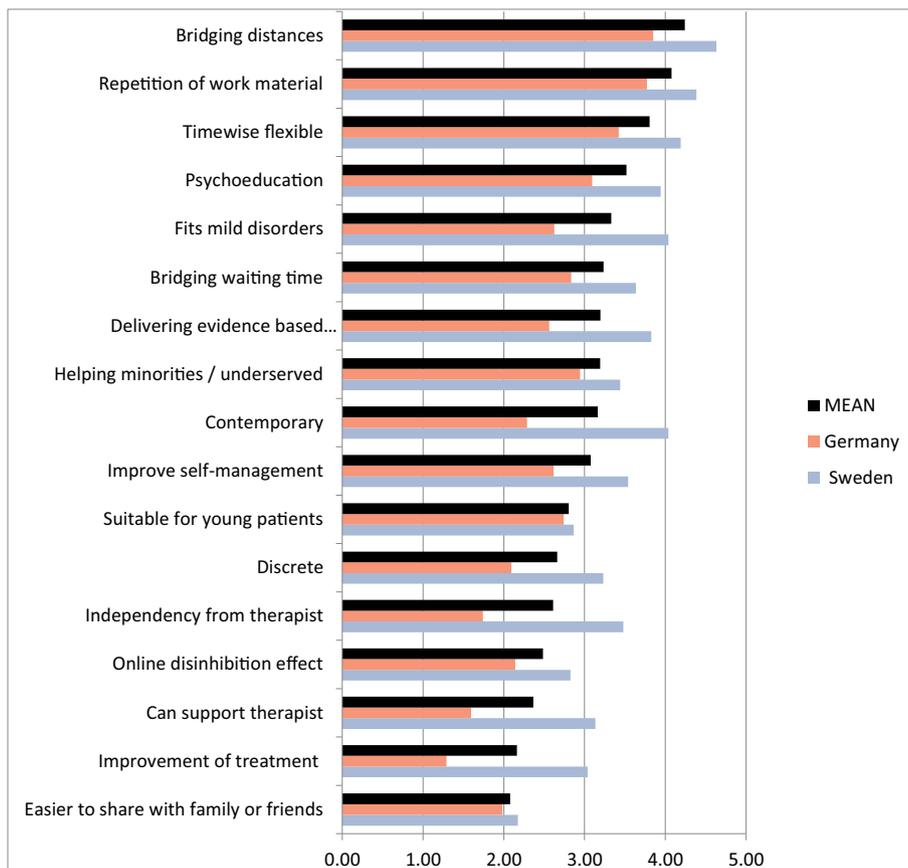


Fig. 1. Item-level analysis of advantages of IT. Note: 0 corresponds to Likert-scale step 1.

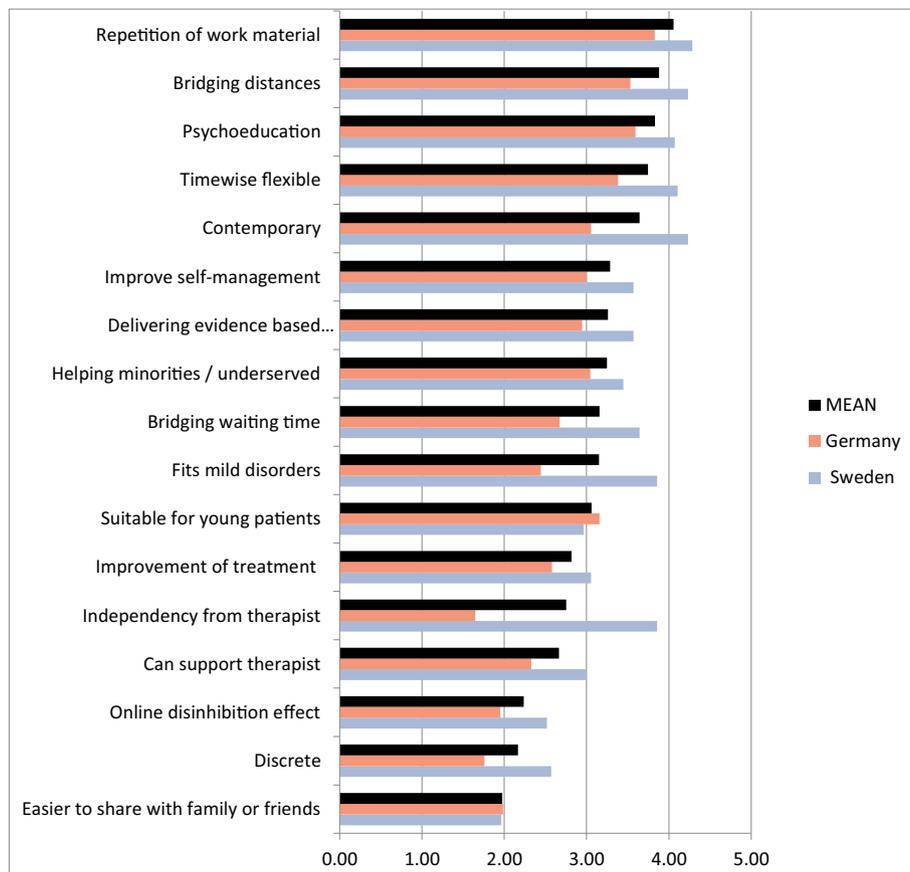


Fig. 2. Item-level analysis of advantages of BT. Note: 0 corresponds to Likert-scale step 1.

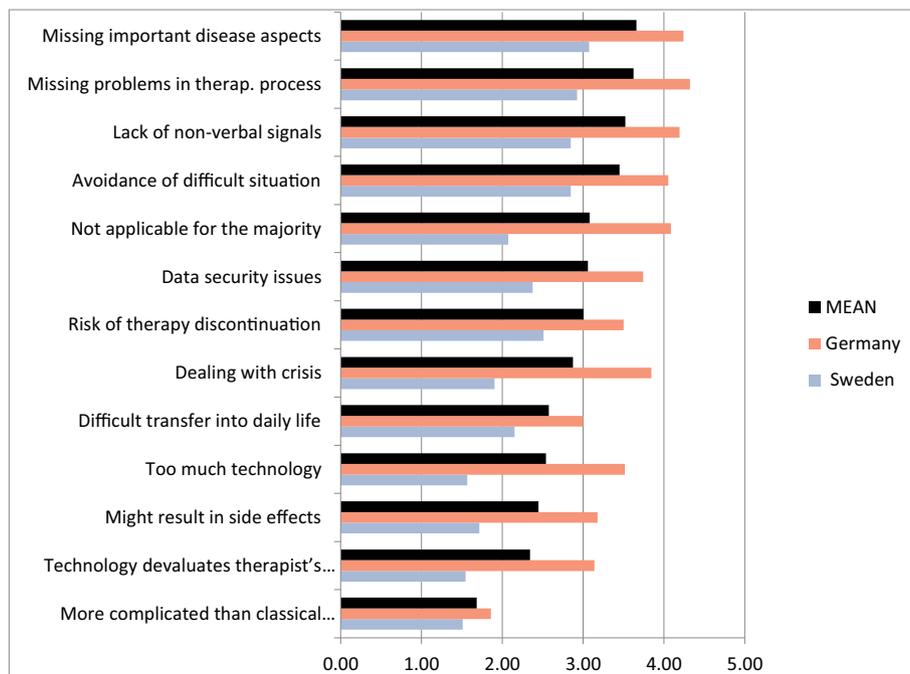


Fig. 3. Item-level analysis of disadvantages of IT. Note: 0 corresponds to Likert-scale step 1.

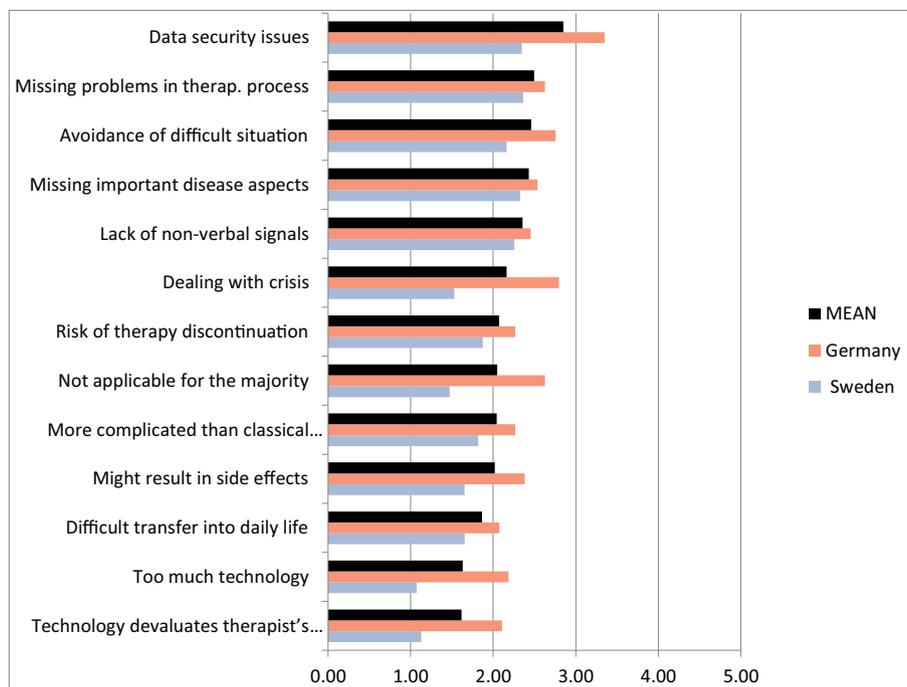


Fig. 4. Item-level analysis of disadvantages of BT. Note: 0 corresponds to Likert-scale step 1.

Section C – Non-completer analysis

Table 2

Views of non-completers in Germany (Table 2).

|                  | Complete | CBT |      | Psychodynamic |      | Eclectic |      |
|------------------|----------|-----|------|---------------|------|----------|------|
|                  |          | N   | Mean | N             | Mean | N        | Mean |
| Advantages IT    | No       | 7   | 2.5  | 4             | 2.8  | 1        | 2.5  |
|                  | Yes      | 77  | 2.8  | 17            | 2.0  | 15       | 2.6  |
| Advantages BT    | No       | 5   | 2.8  | 5             | 2.8  | 3        | 2.7  |
|                  | Yes      | 77  | 2.9  | 17            | 2.1  | 15       | 2.9  |
| Disadvantages IT | No       | 4   | 3.6  | 5             | 3.6  | 3        | 4.7  |
|                  | Yes      | 77  | 3.4  | 17            | 3.9  | 15       | 3.7  |
| Disadvantages BT | No       | 5   | 2.7  | 2             | 2.8  | 1        | 3.3  |
|                  | Yes      | 77  | 2.3  | 17            | 2.9  | 15       | 2.7  |

Section D – Questionnaire items of both samples

Sociodemographic data

- 1) Please choose a gender.
- 2) How old are you?
- 3) What is your source profession?
  - a. Psychologist
  - b. Physician
  - c. Social pedagogue (is there a qualification like that in Sweden?)
  - d. Educational scientist
  - e. Other \_\_\_\_\_
- 4) Which therapeutic orientation do you belong to? (single choice)
  - a. Behavioural therapy
  - b. Psychodynamic
  - c. Psychoanalytic
  - d. Systemic
  - e. Humanistic
  - f. I work eclectic
  - g. Possibility for writing a comment
- 5) If person choose "I work eclectic" -> Which therapeutic orientations do you rely on? (multiple choice)
  - a. Behavioural therapy

- b. Depth psychology – psychodynamic
  - c. Psychoanalytic
  - d. Systemic
  - e. Humanistic
- 6) How many years of professional experience as a therapist (without years of education) do you have?

The following questions respectively statements refer to any psychological forms in the context of e-mental-health.

- 7) Do you already have experience in applying online interventions? (*not at all; little; occasional; often, very much*)
- 8) Do you already have experience in applying tele-therapy (video-/telephone-intervention instead of personal therapy)?
- 9) Do you already have experience in applying blended interventions (personal therapy combined with online-intervention)?
- 10) Would you conduct online-interventions for the treatment of mild to moderate impairments?
- 11) What is your knowledge base regarding the above-mentioned interventions, e.g. concerning their effectiveness? (*not at all; rarely; slightly; much, completely*)
- 12) I am able to keep up with new technologies

The following questions refer to Internet-based AND blended interventions (personal therapy combined with Internet-based intervention)

- 13) Using an Internet-based intervention would reduce patients' mental health problems.
- 14) Using an Internet-based intervention for mental health problems would improve the patients' well-being.
- 15) Patients would receive help for mental health problems from an Internet-based intervention
- 16) Using an Internet-based intervention would help patients to cope with mental health problems.
- 17) An Internet-based intervention would be clear and easily comprehensible to patients.
- 18) I would recommend an Internet-based intervention to friends and relatives in case they would suffer from mental health problems
- 19) My colleagues would be sceptical if I would conduct Internet-based interventions for mental health problems (reverse scored)
- 20) I have the technical knowledge to execute an Internet-based intervention.

#### Video

- 21) How much of the video have you watched?
  - a. I have not watched the video.
  - b. ~0–25%
  - c. ~25–50%
  - d. 50–75%
  - e. 75–100%
  - f. I have watched the complete video.

Advantages of pure online interventions. Note: The expression "pure online interventions" refers equally to guided and unguided versions. Guided versions usually operate by means of asynchronous written communication, but they also can operate by other means (e.g. online chats).

- 22) Pure online interventions make it easier to bridge geographical distances.
- 23) With pure online interventions, patients need to fear less that others will find out about their therapy.
- 24) Pure online interventions offer temporal flexibility.
- 25) With pure online interventions, psychoeducation about causes of diseases, treatment strategies or medication could be realized well.
- 26) With pure online interventions, work material can be viewed repeatedly and worked on at different times.
- 27) Pure online interventions are especially interesting for younger generations.
- 28) With pure online interventions, underserved groups could also be helped.
- 29) Pure online interventions are contemporary.
- 30) With pure online interventions, waiting times can be bridged due to fast availability and accessibility.
- 31) With pure online interventions, low threshold care could be well implemented.
- 32) The anonymity with pure online interventions could lead to greater openness and sincerity (online disinhibition effect).
- 33) With pure online interventions, self-management is strengthened, because patients can work in the exercises and define the pace by themselves.
- 34) Pure online interventions provide the possibility to implement evidence based treatment strategies.
- 35) It could be easier for patients to speak to friends and family about the utilization of pure online interventions compared to classic therapy.
- 36) Pure online-interventions could improve the quality of the treatment.
- 37) Pure online interventions can support (unexperienced) therapists.
- 38) With pure online interventions, patients are dependent on the professional competence of their therapist (reverse).

Disadvantages of pure online interventions:

- 39) With pure online interventions, there is a suboptimal exchange between therapists and patients due to a lack of non-verbal signals.
- 40) With pure online interventions, it is easier to overlook important disease aspects.
- 41) With pure online interventions, problems in the therapy process might be overlooked.
- 42) Pure online interventions are not suitable for the majority of people with mental health problems
- 43) Pure online interventions hold the risk of data security issues.
- 44) With pure online interventions, difficult topics are easier to avoid by the patient.

- 45) Pure online interventions hold a greater risk of therapy discontinuation compared to classic therapy.
- 46) With pure online interventions, there is no therapist present during a crisis.
- 47) Pure online interventions are dehumanized and too technical.
- 48) Pure online interventions hold the risk of unwanted side effects.
- 49) It is probably harder to transfer suggestions of pure online interventions into daily life.
- 50) Pure online interventions devalue the work of therapists.
- 51) Pure online interventions seem to be more complicated than classic therapy.

Note. The same questions were assessed for blended treatment.

#### Applicability

- 52) Which of the following elements would be the best to integrate into Internet-based interventions? *Multiple choice*
  - a. Psychoeducation (e.g. video or audio files for the explanation of causes about impairments)
  - b. Mobile- or computer-based diaries for recording of moods or activities
  - c. Working on material and exercises on the computer/smartphone
  - d. Videos and multimedia (YouTube)
  - e. Meditation and relaxation exercises
  - f. Reflection about parts of the therapy
  - g. Introduction into the treatment
  - h. Debriefing of therapy session
  - i. Tele-therapy (therapeutic sessions via video-conference)

#### Implementation of pure online interventions (GERMAN SAMPLE ONLY)

- 53) I'd appreciate offering free pure online interventions by health insurances, e.g. interactive self-help for low until moderate depression or anxiety disorders
- 54) The implementation of pure online interventions into the health care system should be funded by policy-makers
- 55) The European Union should support innovative research projects of pure online interventions
- 56) Employments in the field of psychology/psychotherapy are at risk by/the technical development could cause reductions of jobs in
- 57) Distant exchange on pure online intervention could be a welcome alternation of my daily profession routine
- 58) I would sign a petition against pure online interventions
- 59) I support pure online interventions in structurally weak and underserved areas

Note. The same questions were assessed for blended treatment.

Here you can enter your personal opinion or general remarks (GERMAN SAMPLE ONLY).

## References

- Aboujaoude, E., Salame, W., Naim, L., 2015. Telemental health: a status update. *World Psychiatry* 14 (2), 223–230.
- Andersson, G., 2018. Internet interventions: past, present and future. *Internet Interv.* 12, 181–188.
- Andrews, G., Basu, A., Cuijpers, P., Craske, M.G., McEvoy, P., English, C.L., Newby, J.M., 2018. Computer therapy for the anxiety and depression disorders is effective, acceptable and practical health care: an updated meta-analysis. *Journal of Anxiety Disorders* 55, 70–78.
- Apolinário-Hagen, J., Fritsche, L., Bierhals, C., Salewski, C., 2018. Improving attitudes toward e-mental health services in the general population via psychoeducational information material: a randomized controlled trial. *Internet Interv.* 12, 141–149.
- Baumeister, H., Nowoczin, L., Lin, J., Seiffarth, H., Seufert, J., Laubner, K., Ebert, D.D., 2014. Impact of an acceptance facilitating intervention on diabetes patients' acceptance of Internet-based interventions for depression: a randomized controlled trial. *Diabetes Res. Clin. Pract.* 105 (1), 30–39.
- Baumeister, H., Seiffarth, H., Lin, J., Nowoczin, L., Lükking, M., Ebert, D., 2015. Impact of an acceptance facilitating intervention on patients' acceptance of internet-based pain interventions. *Clin. J. Pain* 31 (6), 528–535.
- Becker, E.M., Jensen-Doss, A., 2013. Computer-assisted therapies: examination of therapist-level barriers to their use. *Behav. Ther.* 44 (4), 614–624.
- Berger, T., Krieger, T., Sude, K., Meyer, B., Maercker, A., 2018. Evaluating an e-mental health program ("deprexis") as adjunctive treatment tool in psychotherapy for depression: results of a pragmatic randomized controlled trial. *J. Affect. Disord.* 227, 455–462.
- Carl, E., Stein, A.T., Levihn-Coon, A., Pogue, J.R., Rothbaum, B., Emmelkamp, P., ... Powers, M.B., 2019. Virtual reality exposure therapy for anxiety and related disorders: A meta-analysis of randomized controlled trials. *Journal of Anxiety Disorders* 61, 27–36.
- Carlbring, P., Andersson, G., Cuijpers, P., Riper, H., Hedman-Lagerlöf, E., 2018. Internet-based vs. face-to-face cognitive behavior therapy for psychiatric and somatic disorders: an updated systematic review and meta-analysis. *Cogn. Behav. Ther.* 47 (1), 1–18.
- Carper, M.M., McHugh, R.K., Barlow, D.H., 2013. The dissemination of computer-based psychological treatment: a preliminary analysis of patient and clinician perceptions. *Adm. Policy Ment. Health Ment. Health Serv. Res.* 40 (2), 87–95.
- Chisholm, D., Sweeny, K., Sheehan, P., Rasmussen, B., Smit, F., Cuijpers, P., Saxena, S., 2016. Scaling-up treatment of depression and anxiety: a global return on investment analysis. *Lancet Psychiatry* 3 (5), 415–424.
- Cohen, J., 1988. *Statistical Power Analysis for the Behavioral Sciences*, 2nd ed. Erlbaum, Hillsdale, NJ, pp. 1.
- Cook, J.M., Biyanova, T., Coyne, J.C., 2009. Barriers to adoption of new treatments: an Internet study of practicing community psychotherapists. *Adm. Policy Ment. Health Ment. Health Serv. Res.* 36 (2), 83–90.
- Dillman, D., Smyth, J., Christian, L., 2014. *Internet, Mail, and Mixed-Mode Surveys: The Tailored Design Method*, 4th ed. John Wiley & Sons, Hoboken, NJ, pp. 15–17.
- Ebert, D.D., Harrer, M., Apolinário-Hagen, J., Baumeister, H., 2019. Digital interventions for mental disorders: key features, efficacy, and potential for artificial intelligence applications. In: *Frontiers in Psychiatry*. Springer, Singapore, pp. 583–627.
- Faul, F., Erdfelder, E., Lang, A.G., Buchner, A., 2007. G\* Power 3: a flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behav. Res. Methods* 39 (2), 175–191.
- Fitzpatrick, K.K., Darcy, A., Vierhile, M., 2017. Delivering cognitive behavior therapy to young adults with symptoms of depression and anxiety using a fully automated conversational agent (woebot): a randomized controlled trial. *J. Med. Internet Res.* 4 (2), e19.
- Fleming, T., Dixon, R., Frampton, C., Merry, S., 2012. A pragmatic randomized controlled trial of computerized CBT (SPARX) for symptoms of depression among adolescents excluded from mainstream education. *Behav. Cogn. Psychother.* 40 (5), 529–541.
- Folker, A.P., Mathiasen, K., Lauridsen, S.M., Stenderup, E., Dozeman, E., Folker, M.P., 2018. Implementing internet-delivered cognitive behavior therapy for common mental health disorders: A comparative case study of implementation challenges perceived by therapists and managers in five European internet services. *Internet Interv.* 11, 60–70.
- Gun, S.Y., Titov, N., Andrews, G., 2011. Acceptability of Internet treatment of anxiety and depression. *Australasian Psychiatry* 19 (3), 259–264.
- Kaiser, T., Laireiter, A.R., 2017. DynAMo: a modular platform for monitoring process, outcome, and algorithm-based treatment planning in psychotherapy. *JMIR Med. Inform.* 5 (3), e20.
- Kaiser, T., Schmutzart, L., Laireiter, A.R., 2018. Attitudes of Austrian psychotherapists towards process and outcome monitoring. *Adm. Policy Ment. Health Ment. Health Serv. Res.* 45 (5), 765–779.

- Karyotaki, E., Riper, H., Twisk, J., Hoogendoorn, A., Kleiboer, A., Mira, A., ... Andersson, G., 2017. Efficacy of self-guided Internet-based cognitive behavioral therapy in the treatment of depressive symptoms: a meta-analysis of individual participant data. *JAMA Psychiatry* 74 (4), 351–359.
- Kivi, M., Eriksson, M.C., Hange, D., Petersson, E.L., Björkelund, C., Johansson, B., 2015. Experiences and attitudes of primary care therapists in the implementation and use of Internet-based treatment in Swedish primary care settings. *Internet Interv.* 2 (3), 248–256.
- Kleiboer, A., Smit, J., Bosmans, J., Ruwaard, J., Andersson, G., Topooco, N., ... Chevreur, K., 2016. European COMPARative effectiveness research on blended depression treatment versus treatment-as-usual (E-COMPARED): study protocol for a randomized controlled, non-inferiority trial in eight European countries. *Trials* 17 (1), 387.
- Kooistra, L.C., Ruwaard, J., Wiersma, J.E., van Oppen, P., van der Vaart, R., van Gemert-Pijnen, J.E., Riper, H., 2016. Development and initial evaluation of blended cognitive behavioural treatment for major depression in routine specialized mental health care. *Internet Interv.* 4, 61–71.
- Kooistra, L.C., Wiersma, J.E., Ruwaard, J., Neijenhuijs, K., Lokkerbol, J., van Oppen, P., ... Riper, H., 2019. Cost and effectiveness of blended versus standard cognitive behavioral therapy for outpatients with depression in routine specialized mental health care: Pilot randomized controlled trial. *Journal of medical Internet research* 21 (10), e14261.
- Lin, J., Faust, B., Ebert, D.D., Krämer, L., Baumeister, H., 2018. A web-based acceptance-facilitating intervention for identifying patients' acceptance, uptake, and adherence of internet-and mobile-based pain interventions: randomized controlled trial. *J. Med. Internet Res.* 20 (8), e244.
- Lutz, W., Rubel, J.A., Schwartz, B., Schilling, V., Deisenhofer, A.K., 2019. Towards integrating personalized feedback research into clinical practice: development of the Trier Treatment Navigator (TTN). *Behav. Res. Ther.* 120, 103438.
- Ly, K.H., Topooco, N., Cederlund, H., Wallin, A., Bergström, J., Molander, O., et al., 2015. Smartphone-supported versus full behavioural activation for depression: a randomised controlled trial. *PLoS One* 10 (5), e0126559.
- Magnavita, 2018. Using Technology in Mental Health Practice. American Psychological Association: APA Books, Washington DC.
- Månsson, K.N., Klintmalm, H., Nordqvist, R., Andersson, G., 2017. Conventional cognitive behavioral therapy facilitated by an internet-based support system: feasibility study at a psychiatric outpatient clinic. *JMIR Res. protocols* 6 (8), e158.
- Newman, M.G., 1999. The clinical use of palmtop computers in the treatment of generalized anxiety disorder. *Cogn. Behav. Pract.* 6 (3), 222–234.
- Osenbach, J.E., O'Brien, K.M., Mishkind, M., Smolenski, D.J., 2013. Synchronous telehealth technologies in psychotherapy for depression: a meta-analysis. *Depression and Anxiety* 30 (11), 1058–1067.
- Overholser, J.C., 2013. Technology-assisted psychotherapy (TAP): adapting computerized treatments into traditional psychotherapy for depression. *J. Contemp. Psychother.* 43 (4), 235–242.
- Richards, D., Richardson, T., 2012. Computer-based psychological treatments for depression: a systematic review and meta-analysis. *Clin. Psychol. Rev.* 32 (4), 329–342.
- Romijn, G., Riper, H., Kok, R., Donker, T., Goorden, M., van Roijen, L.H., ... Koning, J., 2015. Cost-effectiveness of blended vs. face-to-face cognitive behavioural therapy for severe anxiety disorders: study protocol of a randomized controlled trial. *BMC Psychiatry* 15 (1), 311.
- Rozental, A., Magnusson, K., Boettcher, J., Andersson, G., Carlbring, P., 2017. For better or worse: an individual patient data meta-analysis of deterioration among participants receiving internet-based cognitive behavior therapy. *J. Consult. Clin. Psychol.* 85 (2), 160.
- Schlicker, S., Ebert, D.D., Middendorf, T., Titzler, I., Berking, M., 2018. Evaluation of a text-message-based maintenance intervention for Major Depressive Disorder after inpatient cognitive behavioral therapy. *J. Affect. Disord.* 227, 305–312.
- Schröder, J., 2014. Psychotherapeuten und psychologische Online-Interventionen. *Psychotherapie Aktuell* 6 (3), 33–36.
- Schröder, J., Berger, T., Meyer, B., Lutz, W., Hautzinger, M., Späth, C., ... Moritz, S., 2017. Attitudes towards Internet interventions among psychotherapists and individuals with mild to moderate depression symptoms. *Cognitive Therapy and Research* 41 (5), 745–756.
- Schuster, R., Pokorny, R., Berger, T., Topooco, N., Laireiter, A.R., 2018a. The advantages and disadvantages of online and blended therapy: survey study amongst licensed psychotherapists in Austria. *J. Med. Internet Res.* 20 (12), e11007.
- Schuster, R., Sigl, S., Berger, T., Laireiter, A.R., 2018b. Patients' experiences of web-and mobile-assisted group therapy for depression and implications of the group setting: qualitative follow-up study. *JMIR Mental Health* 5 (3), e49.
- Schuster, R., Kalthoff, I., Walther, A., Köhldorfer, L., Partinger, E., Berger, T., Laireiter, A.R., 2019. Effects, adherence, and therapists' perceptions of web-and mobile-supported group therapy for depression: mixed-methods study. *J. Med. Internet Res.* 21 (5), e11860.
- Schuster, R., Laireiter, A. R., Berger, T., Moritz, S., Meyer, B., Hohagen, F., & Klein, J. P. (under 2nd rev.). Immediate and Long-term Effectiveness of Adding an Internet Intervention for Depression to Routine Outpatient Psychotherapy: Subgroup Analysis of the Evident Trial.
- Sethi, S., Campbell, A.J., Ellis, L.A., 2010. The use of computerized self-help packages to treat adolescent depression and anxiety. *J. Technol. Hum. Serv.* 28 (3), 144–160. <https://doi.org/10.1080/15228835.2010.508317>.
- Stallard, P., Richardson, T., Velleman, S., 2010. Clinicians' attitudes towards the use of computerized cognitive behaviour therapy (cCBT) with children and adolescents. *Behav. Cogn. Psychother.* 38 (5), 545–560.
- Thase, M.E., Wright, J.H., Eells, T.D., Barrett, M.S., Wisniewski, S.R., Balasubramani, G.K., ... Brown, G.K., 2017. Improving the efficiency of psychotherapy for depression: computer-assisted versus standard CBT. *American Journal of Psychiatry* 175 (3), 242–250.
- Titov, N., Dear, B.F., Staples, L., Bennett-Levy, J., Klein, B., Rapee, R.M., Andersson, G., Purtell, C., Beuzidenhout, G., Nielssen, O.B., 2017. The first 30 months of the MindSpot Clinic: evaluation of a national e-mental health service against project objectives. *Aust. N. Z. J. Psychiatry* 51, 1227–1239.
- Titov, N., Dear, B., Nielssen, O., Staples, L., Hadjistavropoulos, H., Nugent, M., ... Repål, A., 2018. ICBT in routine care: a descriptive analysis of successful clinics in five countries. *Internet interventions* 13, 108–115.
- Titov, N., Hadjistavropoulos, H., Nielssen, O., Mohr, D., Andersson, G., Dear, B., 2019. From research to practice: ten lessons in delivering digital mental health services. *J. Clin. Med.* 8, 1239.
- Titzler, I., Saruhanjan, K., Berking, M., Riper, H., Ebert, D.D., 2018. Barriers and facilitators for the implementation of blended psychotherapy for depression: a qualitative pilot study of therapists' perspective. *Internet Interv.* 12, 150–164.
- Topooco, N., Riper, H., Araya, R., Berking, M., Brunn, M., Chevreur, K., ... Kleiboer, A., 2017. Attitudes towards digital treatment for depression: a European stakeholder survey. *Internet Interventions* 8, 1–9.
- van der Vaart, R., Witting, M., Riper, H., Kooistra, L., Bohlmeijer, E.T., van Gemert-Pijnen, L.J., 2014. Blending online therapy into regular face-to-face therapy for depression: content, ratio and preconditions according to patients and therapists using a Delphi study. *BMC Psychiatry* 14 (1), 355.
- Vigerland, S., Ljótsson, B., Gustafsson, F.B., Hagert, S., Thulin, U., Andersson, G., Serlachius, E., 2014. Attitudes towards the use of computerized cognitive behavior therapy (cCBT) with children and adolescents: a survey among Swedish mental health professionals. *Internet Interv.* 1 (3), 111–117.
- Vis, C., Mol, M., Kleiboer, A., Bührmann, L., Finch, T., Smit, J., Riper, H., 2018. Improving implementation of eMental health for mood disorders in routine practice: systematic review of barriers and facilitating factors. *JMIR Mental Health* 5 (1), e20.
- Wangberg, S.C., Gammon, D., Spitznogle, K., 2007. In the eyes of the beholder: exploring psychologists' attitudes towards and use of e-therapy in Norway. *CyberPsychology & Behavior* 10 (3), 418–423.
- Zwerenz, R., Baumgarten, C., Becker, J., Tibubos, A.N., Siepmann, M., Knickenberg, R.J., Beutel, M.E., 2019. Improving the course of depressive symptoms after inpatient psychotherapy using adjunct internet-based self-help: follow-up results of a randomized controlled trial. *J. Med. Internet Res.* 21 (8), e13655.