Preferences for e-Mental Health Interventions in Germany: A Discrete Choice Experiment

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A B S T R A C T

Objectives: Recent evidence suggests that e-mental health interventions can be effective at improving mental health but that there is still a notable hesitation among patients to use them. Previous research has revealed that they are perceived by patients as being less helpful than face-to-face psychotherapy. The reasons for this unfavorable perception are, however, not yet well understood. The aim of our study was to address this question by eliciting preferences for individual components of e-mental health interventions in a discrete choice experiment.

Methods: Using a stepwise qualitative approach, we developed the following 5 attributes of eMHIs: introductory training, human contact, peer support, proven effectiveness, content delivery, and price. Additionally, we asked questions about respondents' demographics, attitudes, and previous experience of traditional psychotherapy, as well as their distress level.

Results: A total of 1984 respondents completed the survey. Using mixed logit models, we found that personal contact with a psychotherapist in blended care, proven effectiveness, and low price were highly valued by participants. Participants were indifferent toward the mode of content delivery but showed a slight preference for introductory training via phone, as well as for peer support via online forum alongside coach-led group meetings on site.

Discussion: Our results suggest a clear preference for blended care that includes face-to-face contact with a psychotherapist. This preference remained stable irrespective of sociodemographics, previous experience of psychotherapy, distress level, and the 2 context scenarios used in our discrete choice experiment. Further investigations looking at the potential benefits and risks of blended care are needed.

Keywords: e-mental health, online interventions, preferences, acceptance, blended care.

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Introduction

The prevalence and awareness of mental health problems are increasing globally, creating challenges for health systems in their allocation of scarce healthcare resources.[1] In industrialized countries, people seeking psychological treatments often face long waiting times.[2,3] Germany, where the prevalence of mental health illnesses was estimated to be 27.8% in 2018,[4] is no exception in this regard, and individuals wait an average of 19.9 weeks after first contacting a provider before they receive psychological treatment.[5] In light of such challenges, e-mental health interventions (eMHIs), also called online- or web-based interventions (in the following, the terms *e-mental health interventions*, *online interventions*, and *online psychological treatment* are used interchangeably), are considered to be promising treatment options or add-ons thanks to their flexible modes of delivery, low costs, and low barriers to access.[2,3] Such interventions can be broadly defined as the use of information and communication technologies in the field of mental health.[6] eMHIs are delivered mostly through online platforms accessible via personal computers, tablets, or smartphones[7] and are commonly based on established psychotherapeutic approaches, such as cognitive behavioral theory, mindfulness-based cognitive therapy, or acceptance and commitment theory.[6,7] They typically aim to improve overall psychological well-being and treat psychological conditions, such as psychological distress, burnout, depression, anxiety, insomnia, eating disorders, or problematic substance use.[6,7] eMHIs are recommended mainly for mild to moderate symptoms across psychological conditions.[8] Although eMHI are designed primarily as self-help interventions, they often incorporate additional personal guidance from a therapist via email, text messages, chat clients, video chat, or telephone.[7,9] eMHIs may also be used alongside or after traditional face-to-face psychotherapy as part of so-called blended interventions.[10]

eMHIs have been found to be effective in improving mental health, and studies on the subject have reported effect sizes comparable to those seen for traditional, face-to-face psychotherapeutic interventions.[3,11,12] In addition, some studies have

found that blended interventions increase the overall effectiveness of treatment.[13] Although eMHIs offer certain advantages in accessibility and flexibility, their acceptability among patients is still limited compared to face-to-face psychotherapy.[14-18] Indeed, Musiat et al. reported that while patients were aware of the potential advantages of eMHIs, including convenient access and short waiting times, they perceived such interventions as being less helpful than treatment delivered face-to-face by a health professional.[16] Similar results were reported by Becker, who surveyed young adults in Germany and found that eMHIs were regarded as less effective than traditional psychotherapy and therefore as an inadequate replacement for it.[18] Similar conclusions have been drawn by Apolinario-Hagen based on the results of several other recent surveys in Germany.[19-21]

The reasons for these unfavorable perceptions of eMHIs are still unclear. One of the complicating factors is that there is no consistent understanding or definition of such interventions. Moreover, whereas most previous surveys have described eMHIs to participants in a general way,[16,18,21] only 1 to date has asked respondents specifically about their attitudes toward guidance.[19] Consequently, it is unclear what kind of eMHI the participants in such surveys had in mind when they were asked about their views on the subject. Furthermore, while previous research on the acceptance of eMHIs has collected data on the sociodemographic characteristics of participants,[19] it has not considered participants' previous experiences with face-to-face psychotherapy or mental health services—both of which might affect their perceptions of eMHIs.

To address these gaps in previous research, we conducted a discrete choice experiment (DCE) to identify which components of eMHIs are preferred by people with or without previous experience of psychotherapy. The DCE format entails a choice between hypothetical eMHI treatment options, thus making eMHIs more tangible to participants compared to conventional survey techniques. Knowing which characteristics of an eMHI are preferred by patients can help product developers, mental health practitioners, and policy makers understand why people still hesitate to use such interventions and what can be done to increase their acceptability.

Methods

We developed and administered the DCE in 4 main steps: (1) constructing attributes and levels for the experiment, (2) generating the experimental design and survey, (3) piloting the survey, and (4) collecting data.

Development of Attributes and Levels

We used a stepwise qualitative approach to develop attributes and levels for the DCE. First, we identified likely causes of positive attitudes and skepticism toward eMHIs by reviewing the relevant literature. We then employed the unified theory of acceptance and use of technology (UTAUT), formulated by Venkatesh,[22] to structure our findings and select a preliminary set of attributes and levels. Subsequently, we conducted semistructured interviews with 5 experts from research and practice (2 researchers on eMHIs, 2 psychotherapists with cognitive behavioral theory and existentialist therapy background, and 1 developer of eMHIs), and used the insights gained from these to validate and refine our selection of attributes and levels. According to the UTAUT, there are 4 core determinants of users' behavioral intention to use a technology: performance expectancy, effort expectancy, social influence, and facilitating conditions.[22] Performance expectancy is the degree to which individuals believe that using a technology

will help them reach their goal. According to previous research, this is the strongest and most robust predictor of behavioral intention.[22,23] Previous research has also shown that a perceived low performance expectancy, expressed in the belief that eMHIs are inferior to face-to-face treatment, is the main barrier to acceptance. For this reason, we included the attribute *proven effectiveness* in our DCE design.[16]

Effort expectancy is defined as the degree to which individuals perceive a technology as being easy to use. Because most eMHIs usually require only of a couple of hours of a patient's time per week, we did not consider the aspect of time further. Effort expectancy also depends, however, on individuals' learning styles, which can be described as the ways in which they retrieve, comprehend, and conceptualize information. According to the VARK model, there are 4 primary types of learners: visual, auditory, reading/writing, and kinesthetic.[24] Because different eMHIs might favor certain learning styles, and because this might influence an individual's intention to use an eMHI, we included the attribute *content delivery* in our survey.[25,26]

Social influence, in turn, is the degree to which individuals perceive that the people who are important to them believe that they should use a technology. We have excluded social influence from our considerations because the degree of familiarity with eMHIs in Germany is currently very low.[15,21]

Lastly, facilitating conditions are defined as organizational and technical infrastructure that support the use of technology.[22] Because an important facilitating condition identified in previous research on eMHIs is human contact,[16,20] we have included this as an attribute in our survey. It is important to bear in mind, however, that such contact does not need to take the form of human guidance, for example, through a psychotherapist. Online peer support can also play a critical, ongoing role in providing social connections for individuals with mental health problems, especially for those living in rural and remote areas.[27] There is some evidence that participating in web-based support groups increases adherence and motivation[14,28] and can also be beneficial in reducing symptoms of stress.[29] We therefore included the attribute *peer support* in our survey. Another facilitating condition is familiarity with technology, which alongside low comfort with using such interventions was mentioned as a barrier to acceptance.[14,21] We therefore also included the attribute *introduction training* in our survey.

Furthermore, we added the attribute *costs* to capture the individual costs associated with the intervention, to make the choice tasks more realistic, and give us the option of being able to estimate willingness to pay in our analysis.

The final experimental design included six attributes with 2 to 4 levels each (see Table 1). We selected the levels for attributes 1, 2, 3, and 5 to include the most common specifications of e-mental health apps. We chose levels for the price attribute based on the spread of current prices for eMHIs in Germany.

Choice Tasks and Experimental Design

We constructed the choice tasks using full-profile, unlabeled, paired comparisons. We did not include an opt-out option to increase the amount of information collected and to avoid interpretation bias.[30] We constructed 2 context scenarios to test for differences in preferences between a prevention group and a mental health condition group. Figure 1 presents an example choice task, including the 2 context scenarios, to which equal numbers of respondents were randomized. To reduce the choice tasks to a manageable number, we used a fractional factorial design.[31] To maximize the precision of the parameter estimates, we generated a D-efficient Bayesian design using the JMP software

Table 1. Description of attributes and levels.

Attribute	Level	Description
1. Introductory training	Online; via phone; face-to-face meeting in a group	Refers to a 1-hour introductory training session explaining how the therapy program works. The training can be offered in different formats: an online learning program (self-learning), individually by phone with a coach, or locally in a group of potential users facilitated by a coach.
2. Human contact	No human contact; via email; via phone; via video call, face-to-face in context of blended care	Refers to contact with a person with training in psychology during the online therapy session. The contact was defined as 1 phone call or video chat of 30 minutes' duration per week, or a 1-hour psychotherapy session once per week in the context of blended care.
3. Peer support	No peer support; online community; online community plus organized local meetings	Refers to the voluntary option to interact with other users of the online therapy program in a moderated online community or in a moderated online community accompanied by coach-led group meetings on site (once per month).
4. Proven effectiveness	Yes; not yet	Refers to whether the effectiveness of the online therapy program has been confirmed in scientific studies. Please note that if the effectiveness is set to "not yet," it may mean that the program is effective but there is not yet sufficient evidence this is the case.
5. Mode of content delivery	Predominantly text-based, audio-based, video-based, game-based	Refers to the predominant mode by which the content of the online therapy program is delivered; usually all modes are offered to varying degrees.
6. Costs	€0; €69.90, €99.90, €179.90	The price of the program per month. The price is €0 if the program costs are covered by health insurance. The minimum duration of the program was set to 1 month, but it could be extended as needed.

from the SAS Institute. The design was optimized for main effects, with all attributes coded categorically and priors based on a pretest. There were 16 choice tasks administered in 1 block.

Survey Design

The survey, which was generated using Unipark software (Unipark, Berlin, Germany), started by informing respondents about the aim of the study. Before presenting respondents with the DCE choice tasks, the survey asked questions about socio-demographics; attitudes and previous experience with traditional psychotherapy and online mental health interventions; and respondents' stress level, measured using the Kessler-6 questionnaire.[32] To familiarize respondents with the DCE elicitation format, the survey provided a detailed explanation of the types of questions that would be asked followed by a straightforward warm-up choice task. Additionally, each of the attributes and levels of the main DCE was explained in narrative fashion before the choice tasks. Modes of content delivery were also described narratively, because we did not want to influence participants with visual stimuli. After completing the 16 choice tasks, participants were asked to evaluate the difficulty of the tasks and whether there were components of eMHIs that they would have liked to have seen included in the experiment.

Study Pilot

We conducted a pretest of the experiment with 128 respondents recruited from the online survey platform Prolific.ac and used the data obtained doing so to assess whether respondents had understood the experiment and were able to handle the 16 choice tasks. Furthermore, we asked about the appropriateness of the attributes and levels used in the experiment and whether relevant elements of eMHIs were lacking. We subsequently used the results from the pretest to refine the survey and inform the priors of the Bayesian D-efficient design.

Data Collection

We administered the survey online through a market research agency (Norstat, Munich, Germany), and data collection took place in November 2019. A sample of 2000 respondents from Germany was targeted to provide sufficient statistical power for the main analysis and several subgroup analyses based on a rule of thumb calculation proposed by Johnson and Orme.[33] Differentiating between respondents who had experience of psychotherapy and those who were naïve to it was of special interest. Because we anticipated that there would be a low number of the former, we intentionally oversampled this group. We collected explicit and informed consent from respondents after providing them with a

Figure 1. Example of a DCE choice task. Respondents saw only 1 of the 2 context scenarios. Throughout the DCE.

Scenario "Prevention": Please consider the following scenario: You feel irritable, burnt out, and unmotivated. Your everyday life is dominated by feelings of exhaustion and fear of failure. To cope better with these feelings, you aim to improve your mental health. It is possible to learn mindfulness or relaxation techniques using preventive online therapy programs for PCs, tablets, or smartphones (apps). Please select which one of the two types of online therapy program you would prefer.

OR

Scenario "Depression": You have felt tired, depressed, and stressed over the past few months. You are irritable, moody, and have trouble sleeping. Your doctor has told you that you may develop depression. It is possible to treat mild and moderate depression effectively with online therapy programs using PCs, tablets, or smartphones (apps). Please select which one of the two types of online therapy program you would prefer.

	Option A	Option B
Introductory training	Live with a trainer on site	Via online self-learning tour
Human support	No contact	Via telephone
Proven effectiveness	Yes	Not yet
Peer support	Online community plus group meetings on site	Online community
Learning style	Mostly audio-based	Mostly game-based
Costs	179.90 EUR	99.90 EUR

DCE indicates discrete choice experiment.

detailed explanation of how their personal data would be used. The respondents received a small monetary compensation from the market research agency.

Statistical Analysis

We assessed the cognitive burden of the choice experiment based on self-reported difficulty. To examine choice heuristics in dominant attributes, we calculated lexicographic scores. This entailed counting the proportion of choices based on 1 attribute. Following previous literature, we considered a respondent to have dominant preferences for 1 attribute if the lexicographic score was 90% or higher.[34] As was discussed by Hess et al,[35] lexicographic responses can arise for different reasons, with true lexicographic behavior being difficult to detect, and no straightforward way of accounting for such responses in the analysis. To test whether responses from the 2 versions of the survey, as well as responses from individuals with experience of or naïve to psychotherapy, could be pooled together, we examined scale heterogeneity using the Swait-Louviere test.[36]

We analyzed DCE responses using main effects multinomial and mixed logit models, having chosen the latter to test for preference heterogeneity and circumvent the IIA assumption.[37]

Using the Akaike information criterion, we tested whether including the price attribute as a linear variable improved model fit. All categorical variables were dummy coded, with the most negative expected level defined as the reference category. Respondents with incomplete choice data were excluded from the analysis.

We specified the mixed logit model using 1000 Halton draws, setting all variables, except the cost levels, to be random and normally distributed because heterogeneity was found in these attributes. The cost levels were included as categorical variables because a linear specification reduced model fit. In the mixed logit, cost variables were furthermore specified as fixed parameters, because specifying them as randomly distributed would complicate the calculations of willingness to pay. To examine variation in preferences, individual-level preference estimates were calculated using the mixlbeta command in Stata. Marginal effects, that is, the change in probability of choosing 1 of the 2 intervention profiles if only 1 attribute level is changed, were calculated as the differences in the predicted choice probabilities, estimated using the mixlpred command in Stata. To investigate heterogeneity in preferences for certain sociodemographic, mental health (care) related, or attitudinal groups, we interacted subgroup indicators with all main effects parameters. The

interaction terms were specified as fixed parameters to retain feasible computation times. To assess whether preferences differed, we conducted χ^2 tests for joint significance. Standard errors were clustered at the respondent level throughout the analysis. We performed all calculations using Stata 15 (StataCorp, College Station, TX).

Results

Respondent Characteristics

A total of 1984 respondents completed the survey. Summary statistics of the study sample (N = 1984) are given in Table 2. The sample was well balanced regarding sex and age, while rather highly educated compared to the general population. Most respondents had a positive general attitude toward psychotherapy (83.0%). The proportion of respondents who could be classified as having low, moderate, or severe levels of mental distress was roughly equal in size. Of the 61.8% of sample respondents who had previous experience of psychotherapy, 72.3% evaluated this as very good or rather good. In total, 61.2% of respondents indicated that they would use an eMHI if they had a mental health problem. The main reasons reported for not opting for eMHIs were their "too impersonal" nature (52.5%), doubts regarding their effectiveness (9.2%), and a lack of interest or need (9.1%). When asked which components of the eMHI they felt were lacking in the experiment, 62.5% of respondents stated that they did not feel that any components were lacking, whereas 14% found that personal support and 3.6% found that emergency contact details were lacking. Only 10.4% of respondents considered the survey to be difficult and 0.7% very difficult to understand and complete. The average survey completion time was 15 minutes. The market research agency did not provide us with information on the response rate.

Preferences Results

Examining choice behavior revealed that 26.7% of respondents had lexicographic preferences, predominantly for the price attribute (90.2%). Because Swait-Louviere tests did not reject the null hypothesis of equal attribute level estimates, we were able to pool observations across the 2 outlined scenarios and from individuals with and without experience of psychotherapy. The mixed logit model provided evidence of preference heterogeneity for all attributes and was superior in model fit. Therefore, we report only the mixed logit preference estimates in the following, which are summarized in Table 3 and Figure 2. All but 1 of the attribute levels (audio content delivery) were significantly different from their respective reference categories at the 5% level, thus indicating that all attributes were relevant to respondents. Most preference estimates behaved as was to be expected a priori: Regular face-to-face contact, evidence of an intervention's effectiveness, a higher degree of peer interaction, and lower costs were preferred by respondents compared with the respective reference categories. The largest preference estimates were found for the cost levels (1.25, 2.10, 4.33), the face-to-face level of the mode of contact attribute (1.34), and the proven effectiveness attribute (1.00). The type of introductory training, peer interaction, and mode of content delivery were of less relevance to respondents, with small coefficient estimates and low preference heterogeneity. The degree of preference heterogeneity, as indicated by the boxplots in Figure 2, which show the interquartile range of the individual level preference estimates and the 95% confidence interval of the SDs, was largest at the following group levels: face-to-face contact, proven effectiveness, introductory training, and peer

Table 2. Summary statistics of survey sample.

	N = 1984 (%)
Mean age in years	51.2, SD 13.3
Female	1157 (58.3)
Highest level of educational attainment	
Secondary general school (Hauptschulabschluss)	327 (16.5)
Secondary school (Realschulabschluss)	813 (41)
Academic secondary school (Abitur)	416 (21)
University degree	428 (21.5)
Satisfaction with monthly income	
Highly satisfied	105 (5.3)
Satisfied	590 (29.8)
Neither satisfied nor dissatisfied	597 (30.1)
Dissatisfied	467 (23.5)
Very dissatisfied	221 (11.1)
No response	4 (0.2)
Experience of psychotherapy or mental health counseling	1226 (61.8)
Evaluation of previous psychotherapy (for those with previous experience)	
Excellent	320 (26.1)
Fine	566 (46.2)
Neither good nor bad	227 (18.5)
Bad	81 (6.6)
Very bad	32 (2.6)
K6 mental distress scale	
Low distress (0-7)	745 (37.6)
Moderate distress (8-12)	520 (26.2)
High risk of psychological distress (13-24)	719 (36.2)
Used an online therapy app before	133 (6.7)
Willing to use a therapy app in the future if needed	1222 (61.2)

interaction. Only a small variance in preferences was found in general at most attribute levels. The largest marginal effects—that is, the changes in the probability of choosing an alternative compared to the respective reference level—were found for face-to-face contact (18.0%), proven effectiveness (14.8%), and the cost levels, reaching 56.9% when monthly costs of €169.90 were shifted to €0.

Sensitivity to Excluding Lexicographic Behavior

The large share of individuals with near-lexicographic behavior (26.7%) deserved further attention, because this could be indicative of respondents not trading off between attributes, which could bias our estimates. Lexicographic heuristics in our study could have originated from forcing respondents to choose between interventions they would not consider to begin with, leading them to select the lowest cost option. To test the sensitivity of our main estimates to such behavior, we interacted a dummy variable identifying respondents with lexicographic behavior with all main effects. Plotting the nonlexicographic estimates against our main estimates (Fig. 2) revealed certain differences, especially regarding the importance of the cost levels. Nevertheless, these differences were rather small and did not contradict the main implications of the base model.

Scenario and Subgroup Results

Preferences for the different characteristics of eMHIs did not differ between the 2 context scenarios (see Fig. 1), as was evident from a nonsignificant χ^2 test for joint significance of all interaction

Table 3. Mixed logit estimates and marginal effects for the full sample.

Attributes and levels	Preference estimates				Marginal effect (%)
	Coefficient	95% CI	SD	95% CI of SD	
Introductory training					
None	Reference				Reference
Phone	0.22	0.17-0.27	0.15	−0.05 to 0.35	3.4
Group	−0.11	−0.18 to −0.04	1.07	0.99-1.15	−1.2
Form of regular contact					
None	Reference				Reference
Email	0.31	0.24-0.37	-0.01	−0.03 to 0.01	4.5
Phone	0.56	0.48-0.64	0.00	−0.03 to 0.04	8.2
Video	0.10	0.01-0.19	0.02	−0.06 to 0.10	1.5
In person	1.34	1.12-1.56	2.24	2.07-2.40	18.0
Proven effectiveness					
No evidence (yet)	Reference				Reference
Evidence	1.00	0.89-1.11	1.21	1.11-1.30	14.8
Peer interaction					
None	Reference		0.00		Reference
Online	0.15	0.11-0.19	−0.02	−0.06 to 0.03	2.3
Group	0.19	0.11-0.26	0.68	0.60-0.75	2.9
Form of content delivery					
Text	Reference				Reference
Audio	−0.12	−0.17 to −0.07	0.00	−0.02 to 0.02	−1.8
Video	0.16	0.10-0.21	0.02	−0.01 to 0.04	2.4
Game	−0.10	−0.17 to −0.03	0.48	0.39-0.57	−1.4
Monthly costs					
€ 169.90	Reference				Reference
€ 99.90	1.25	1.17-1.33			18.6
€ 69.90	2.10	1.98-2.21			31.6
€ 0	4.33	4.01-4.64			56.9
Constant	−0.187	−0.24 to −0.13	0.37	0.30-0.44	
Log likelihood	−18 358				
AIC	36 774				
BIC	37 036				
Observations	1984				

Attributes were dummy coded. Coefficients refer to the mean preference estimates and SDs to the distribution around the means. Uncertainty around mean and SDs is shown using 95% CIs.
AIC indicates Akaike information criterion; BIC, Bayesian information criterion; CI, confidence intervals.

terms (χ^2: 14.37(15), P=.498). Preference estimates for individuals with and individuals without previous experience of psychotherapy (Fig. 3) deviated to a larger extent, although the χ^2 test was not significant on the 5% level (χ^2: 23.58(15), P=.073). The experienced group put greater emphasis on having any form of regular contact during online therapy with a person trained in psychology, in general, and personal contact in particular. Regression results for this subgroup analysis can be found in Appendix Table 1 (see Appendix Table 1 in Supplemental Materials found at https://doi.org/10.1016/j.jval.2020.09.018). Further subgroup results are presented in Appendix 2 (see Appendix 2 in Supplemental Materials found at https://doi.org/10.1016/j.jval.2020.09.018). Respondents who were dissatisfied with their financial situation and those who were aged 50 years or older put greater emphasis on the cost levels. Only small differences were found between women and men. Being a frequent user of electronic devices reduced the importance of the effectiveness attribute. Nonsignificant χ^2 tests statistics for the subgroup interactions were found for the following groups: (1) individuals who were experiencing moderate to high levels of mental distress (K6 scale above 7) compared to their less distressed counterparts (χ^2: 22.11 (15), P=.105), and (2) individuals with higher levels of education (academic secondary school or university) compared to individuals with lower levels of education (χ^2: 21.62 (15), P=.118).

Discussion

This article reports on the development and analysis of a DCE that elicited preferences toward e-mental health interventions in Germany. We selected relevant characteristics, or attributes and levels, for the experiment based on a stepwise qualitative approach, drawing upon a review of the related literature, the UTAUT, and expert interviews. The design and analysis of the DCE followed published good research practices and employed a Bayesian D-efficient design, and we analyzed choice data using mixed logit models and provided subgroup results. The study's main contributions are the following: First, the DCE format allowed us to provide information on possible causes of the unfavorable perception of eMHIs in the German population. Second, in contrast to previous studies on eMHIs, our analysis was able to differentiate between those with and those without previous experience of psychotherapy or counseling, and 2 context scenarios. Third, as part of a stepwise qualitative approach to generating attributes and levels for the DCE, we used a framework for product development (ie, the UTAUT) to structure the process. Fourth, this study is the first DCE that has investigated preferences for different components of eMHI in the German population.

The results of our analysis suggest a strong preference for blended care including face-to-face contact with a psychotherapist. This preference remained stable across respondents with different characteristics, including the presence or absence of past experience of psychotherapy. Our results are in concordance with those of previous research, in which participants disagreed that guided internet interventions were comparable to face-to-face psychotherapy in effectiveness and the ability to develop a good therapeutic relationship.[16,19] Musiat et al. hypothesized that the perceived helpfulness of an intervention for mental health problems and the preference for personal contact might be correlated, and that the perceived superiority of face-to-face treatment could be explained with this unique component of traditional psychotherapy.[16] A clear preference for conventional face-to-face treatment was also found by Eichenberg et al. in a survey of a national sample representative of the general population in Germany in 2013.[15] The strong emphasis on personal contact could be the result of traditional approaches to mental healthcare in Germany, which involve long and extensive treatments.[4] Similar tendencies have been identified in a survey on attitudes toward digital treatment of depression in 8 European countries (France, Germany, The Netherlands, Poland, Spain, Sweden, Switzerland, and the United Kingdom) in which stakeholders showed greater acceptance of blended treatment compared to standalone internet treatments,[38] as well as in a recent study in the United States where 44.5% of respondents preferred in-person psychotherapy over an eMHI.[39] The preference for face-to-face contact is also in line with empirical research on psychotherapy, which has found the quality of the therapeutic relationship, the so-called therapeutic alliance, to be the strongest predictor of therapeutic

Figure 2. Preference estimates for eMHI. Point estimates of full model are diamonds bounded by 95% CIs. Box plots indicate distribution of individual preference weights in the population with vertical lines representing 95% CIs using the SD. Red circles indicate point estimates of model for respondents without lexicographic behavior.
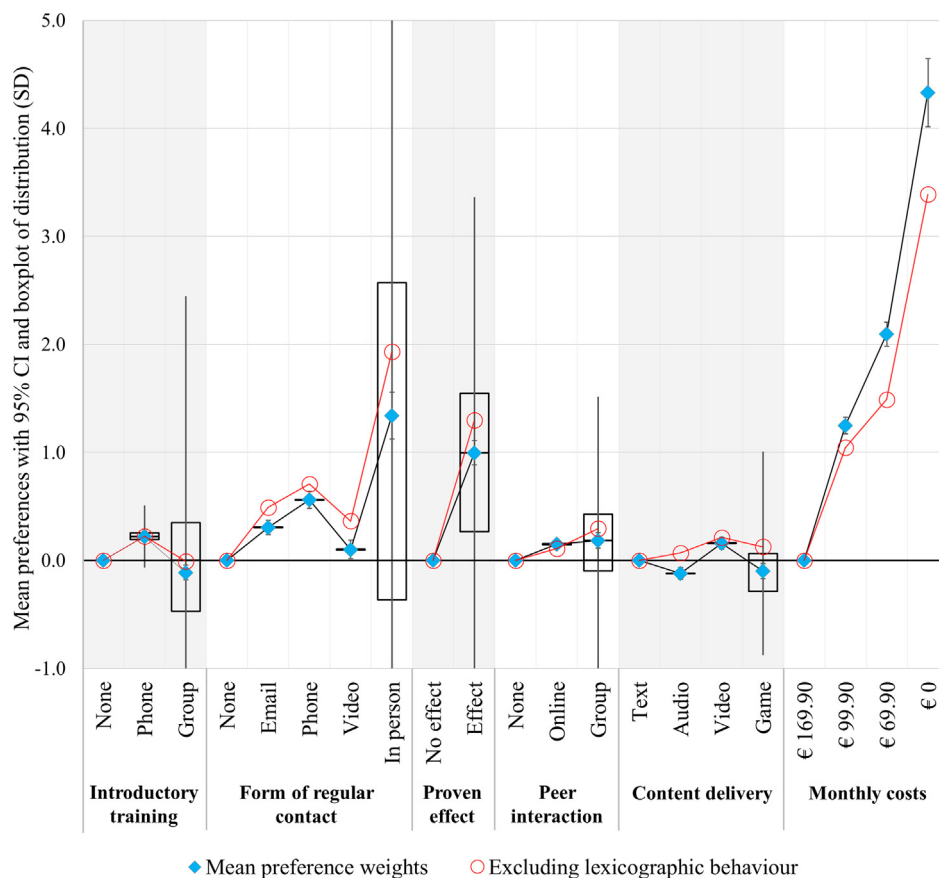
CI indicates confidence interval; eMHI, e-mental health intervention.

Figure 3. Preference estimates comparing individuals with and individuals without previous experience of psychotherapy. Significance levels of subgroup interaction terms: ***P<.001; **P<.01; *P<.05.
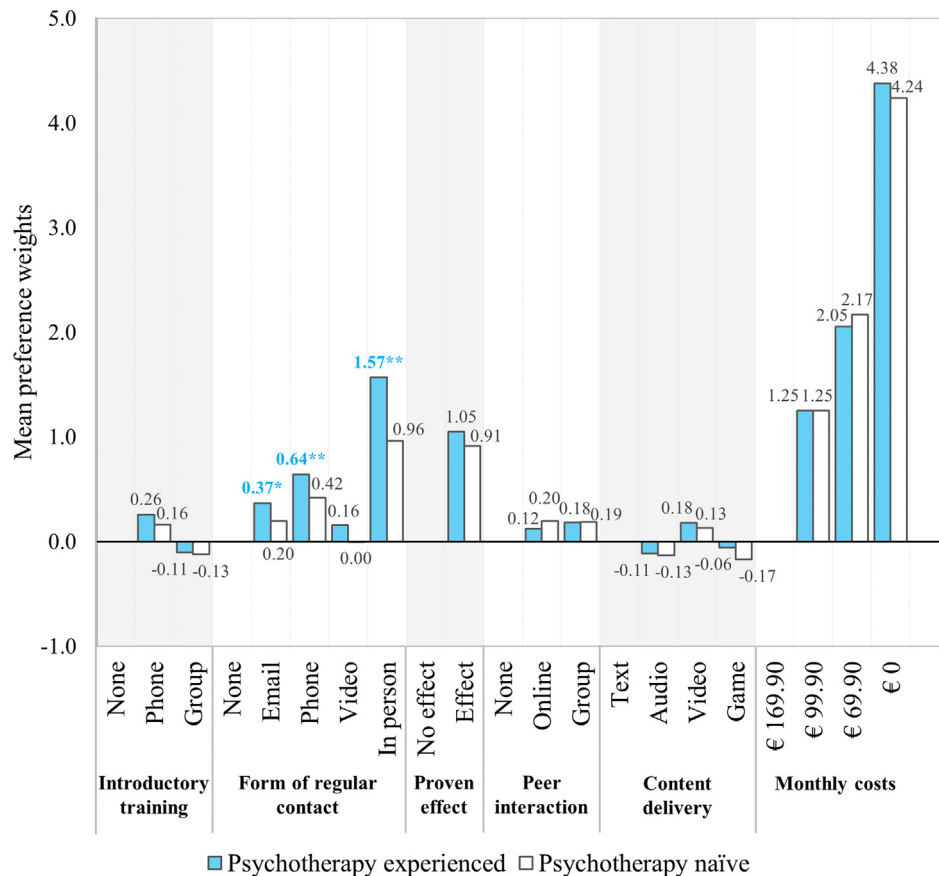
success.[40,41] Nevertheless, first evidence on client's perceptions toward therapeutic alliance using eMHI suggests that a therapeutic relationship can also be formed in digital formats.[42]

The preference in our sample for phone communication over other forms of electronic interaction might be explained by it being more personal compared to asynchronous email communication, and more traditional compared to video chats or video conferencing. Given the dramatic increase in video conferencing seen in the wake of the coronavirus disease 2019 pandemic, both in the personal and professional spheres, it will be interesting to see whether this hesitation to use video chats has diminished since we conducted our experiment. Our results also suggest that the availability of evidence on the effectiveness of eMHIs is another important driver of people's attitudes toward such interventions. This highlights the need for scientific support and monitoring during the development and rollout of such programs.

We also found strong preferences for lower or no monthly costs. This is probably owing to 2 characteristics of the German (mental) healthcare system. First, upon access, regular psychotherapy treatment is fully reimbursed by statutory health insurance and provides quite intensive care (ie, short-term therapy comprising 25 sessions, which can be extended up to 2 years)[43] compared for example to the English NHS (6-12 sessions).[44] Second, there is almost no copayment for ambulatory care in Germany, and considerable out-of-pocket spending is uncommon.

The form of the introductory training and the mode of content delivery, while relevant, were of less importance to our respondents. We found only little difference in preference estimates for video compared to purely textual content delivery. Our finding that online peer interaction is a desired feature, although of less importance, is in concordance with previous research, which has found that peer interaction is perceived as beneficial in continuous support, sense of community, personalized advice, and encouragement.[45,46] Although preference estimates were somewhat stable across most subgroups, respondents with previous experience of psychotherapy put greater emphasis on having regular contact (of any form) during online therapy with a person trained in psychology. This finding may be relevant for customizing eMHIs and thus improving their acceptance in this subgroup.

Limitations

The results of our analysis and subsequent conclusions must be interpreted in light of several important limitations. First, the share of participants in our sample who had contact with psychotherapists before the survey was 61.9%, which is a considerably higher than would be expected of a sample that is representative of the general population. Considering the largely similar result from the corresponding subgroup analysis, however, this should not have a substantial impact on the generalizability of our estimates. Nevertheless, it is likely that the high share of respondents in our sample who preferred face-to-face contact represents an overestimate of this preference in the general population. A second limitation concerns the way in which the different levels of the content delivery attribute were introduced and presented. The short and solely

textual descriptions may have resulted in respondents paying less attention to this attribute because differences between delivery modes may not have been as tangible as the difference between other attributes. This may have resulted in the small preference estimates we observed for the content delivery levels. In general, having a delivery mechanism that suits an individual's needs should be a relevant factor, at least for future adherence to a program. Using visual representations of the different delivery modes might have yielded larger preference estimates. A third limitation is related to our decision not to provide respondents with an opt-out option. This forced them to choose between eMHIs with relatively high monthly costs (which were based on the prices of existing eMHIs). With 38.3% of the population stating that they would not consider using such interventions in general, this may have led to an exaggerated focus on the cost attribute while clouding preference estimates in other dimensions.[47]

Conclusions

We set out to examine the underlying factors contributing to the unfavorable perception of eMHIs and their hesitant uptake in Germany. Our results suggest a clear preference for blended care including face-to-face contact with a psychotherapist. This preference remained stable irrespective of sociodemographics, previous experience of psychotherapy, distress level, and the 2 context scenarios used in our DCE. This implies, in part, that the unfavorable perception of such interventions reflects more the wish for face-to-face contact than a lack of trust in the effectiveness of online treatments. Although the findings of the few studies on this topic to date suggest that combining online interventions and face-to-face psychotherapy increases the overall effectiveness of treatment, this area of study is still in its infancy.[10,13] Further research is needed to investigate whether a favorable therapeutic relationship can be established via information and communication technologies. Furthermore, our results indicate that people in Germany are not willing to spend considerable amounts out of pocket for such interventions, implying that services asking prices similar to those in our experiment are too expensive. It will be interesting to observe developments in the field of eMHIs in Germany now that digital health apps can be prescribed by providers and reimbursed by statutory health insurers following the enactment of the Digital Health Act on January 1, 2020.[48]

Supplemental Materials

Supplementary data associated with this article can be found in the online version at https://doi.org/10.1016/j.jval.2020.09.018.

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