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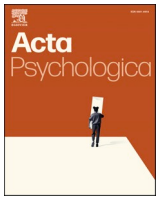

Psychometric properties of an online psychotherapy advantages and disadvantages instrument: Preliminary results of a multi-center pilot study

J.M. Santos [a,b,c], M.P.A. Fleck [a,b], S.P. Teche [a,b], I.C. Passos [a,b], M.H. Costa [a,c], N.S. Rocha [a,b,c,*]

[a] Center of Clinical Research and Center of Experimental Research, Hospital de Clínicas de Porto Alegre (HCPA), Brazil
[b] Graduation Program in Psychiatry and Behavioral Sciences, Universidade Federal do Rio Grande do Sul (UFRGS), Medical Faculty, Porto Alegre, Brazil
[c] I-QOL: Innovations and interventions for quality-of-life research group, Brazil

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ABSTRACT

We verified the need for instruments that could assess the perceptions of patients, therapists, and psychotherapy supervisors about online Psychotherapy. Objectives: to Build a scale of advantages and disadvantages of online psychotherapy. Method: A pilot cross-sectional multicenter sample collected from 2020 to 2021 of 129 patients, 20 therapists, and 35 supervisors. We used several analyses. The final scale contained 22 items divided into two domains: advantages and disadvantages. Results: Cronbach's alpha showed good internal consistency (0.88 and 0.85). The scale showed discriminative ability. Convergent validity showed significant correlations between WAI-SR domains (p ⟨0,001). The scale showed a good data fit in the confirmatory factor analysis ($X^2 = 255,859$; DF = 197; $p = .003$; CFI = 0.95; RMSEA = 0.047; GFI = 0.84 TLI = 0.94). Conclusion: This pilot study showed that the instrument proved preliminary good psychometric properties but needs to be evaluated in a larger sample.

1. Introduction

Psychotherapy is a tool applied by psychologists and psychiatrists whose effectiveness is recognized and empirically proven in treating mental illness (Schnyder et al., 2014). The continuity of psychotherapeutic treatments became even more necessary during COVID pandemic with the measures adopted, such as social distancing also fear of infection, poor food conditions, financial uncertainty, and abstinence from physical exercises are some of the consequences that showed a significant association with the increase in stress, anxiety, depression, and post-traumatic symptoms in the population (Khan., et al.; Pandi-Perumal et al., 2021). As a result, therapists had to adapt face-to-face treatment to online treatment to continue and meet the high demand for emotional burdens (Eichenberg, 2021). However, there is a great deal of discussion regarding the effectiveness of online psychotherapies.

Online psychotherapy was already being studied in the years before the pandemic, and its application proved helpful mainly in populations with difficult access to face-to-face treatment, such as the elderly, folks in rural areas, or people with disabilities and mobility difficulties (Lamb et al., 2019) Online treatment can deliver advantages to therapists and patients, including greater accessibility, anonymity, convenience, and better value for money (Christensen et al., 2014). On the other hand, there are concerns about its effectiveness, adaptability of techniques, applicability, and reliability (Fonagy, 2010; Gabbard et al., 2011).

Online Psychotherapy started to be delivered by most Psychiatry teaching centers with changes happening quickly, discussions about the risks and benefits of treatment emerged, given the vulnerability of the patients involved and the complete lack of experience in the area. As it is a relatively new subject, there is a gap in the literature on instruments that can assess the advantages and disadvantages of online treatment and indicate which disorders can benefit or are more viable for which clinical conditions it is. Validated tools capable of answering these questions could have facilitated initial discussions about online practice.

The study aims to identify the advantages and disadvantages of online treatment and to build and evaluate the preliminary psychometric properties of an instrument of advantages and disadvantages of online psychotherapy from the perspective of a multicentric sample of patients, therapists, and supervisors from 6 different teaching centers who have experienced the transition from face-to-face therapy to online modality. The initial quality of the instrument will be analyzed in terms of

* Corresponding author at: Avenida Ramiro Barcelos, 2400 - 2nd floor, CEP 90003-035, Porto Alegre, RS, Brazil.
E-mail addresses: steche@hcpa.edu.br (S.P. Teche), ipassos@hcpa.edu.br (I.C. Passos), nrocha@hcpa.edu.br (N.S. Rocha).

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reliability, factor structure, convergent validity and discriminant validity comparing the perception between patients, therapists, and supervisors, and between groups of patients who started face-to-face psychotherapy and were in online psychotherapy, groups that started face-to-face and chose not to undergo online treatment, and groups that started online psychotherapy. We will also check what influence other variables (sex and age) may have on our instrument. Our hypothesis is that the instrument presents adequate preliminary psychometric properties, that the samples present different perceptions according to each analyzed group, and that therapeutic alliance influences the patient's perception of online treatment.

2. Methods

2.1. Participants

All patients, therapists, and supervisors of the psychotherapy program at Hospital de Clínicas de Porto Alegre (HCPA), Fundação Mario Martins (FUMM), Hospital Nossa Senhora da Conceição (HNSC), Hospital Psiquiátrico São Pedro (HPSP), Hospital São Lucas da PUCRS (HSL) and Centro de Estudos Luis Guedes (CELG) were invited to participated of the study. All 6 institutions cited are reference centers for both psychotherapy assistance and training, being well structured services, counting with teachers and supervisors who mostly underwent specific training and formation in its area of supervision, master's, or doctorate's degree and/or Psychoanalysis formation. Therapists are residents in psychotherapy training. HCPA, HNSC and HPSP are hospitals linked to the Brazilian public health system, your patient's psychotherapy treatment is free of charge and patients are mainly in the low-income range. HSL is a private university hospital where treatment is delivered privately or by health insurance coverage. The other two institutions (FUMM and CELG) are non-profit scientific associations directed to teaching, assisting, and research in the mental health field. Patients get affordable psychotherapy depending on their financial resources.

2.2. Data collection

The HCPA coordinating center was responsible for inviting the participants. The center made de invite by email, messages, explanatory infographics, images, and videos on the electronic social media application WhatsApp, which is widely used in Brazil. All participants were invited to respond to the survey with a link to access the Survey Monkey platform where the instruments were available. All participants of the survey were instructed to read and accept consent form by electronic platform, which was approved by the HCPA Research Ethics Committee (GPPG–HCPA- CAAE 31680320.7.0000.5327), number of project (GPPG-2020-0242).

2.3. Instruments

Working Alliance Inventory -Shorted Revised (Horvath & Greenberg, 1989) is used to measure therapeutic alliance with consolidated psychometric aspects. Only patients responded this instrument. It assesses three key aspects of the construct: a) agreement on therapy tasks; b) agreement regarding the therapeutic goals; and c) development of affective bonds. It is a validated scale for Brazilian Portuguese and is widely used (Serralta et al., 2020).

Sociodemographic Data such as gender, age, education, marital status, ethnicity and were analyzed in patients, therapists, and supervisors too.

Questions about advantages and disadvantages of online psychotherapy were elaborated by the group due to the complete lack of self-applicable materials covering the subject. Construction of the instrument will be described below.

COSMIN (COnsensus-based Standards for the selection of health Measurement INnstruments) is the initiative of a multidisciplinary team made up of researchers with experience in the development and evaluation of measurement of instrument results (COSMIN, 2022). COSMIN's mission is to improve the selection of instruments for measuring outcomes in research and clinical practice, developing tools capable of selecting the most appropriate instruments (Mokkink et al., 2016). In this study, COSMIN was used to verify if the developed scale contemplates the norms indicated by the group.

2.4. Instrument development

A group of psychotherapy specialists was formed to develop guidelines and discuss the best measures and research direction. After online psychotherapy implemented in the centers, the need arose to evaluate the service provided and the experience of the different groups involved. A CAPES Emergency Notice (n°12/2020) to combat outbreaks, endemics, epidemics, and pandemics – telemedicine and medical data analysis was created to encourage research and the GPPG Project n°2020/0242 – the experience of patients, therapists, and supervisors in the implementation of online psychotherapy in the face of the covid-19 epidemic – was created in May/2020 and approved by the ethics committee of Hospital de Clínicas de Porto Alegre in the same period.

Procedures:

1) A Literature review showed the lack of instruments that could assess the advantages and disadvantages of online psychotherapy; 2) Expert group formed by five Psychiatrists (S.P.T), (N.S.R), (I.C.P), (M.P.A.F) professors from the Department of Psychiatry and Legal Medicine, and the Graduate Program in Psychiatry and Behavioral Sciences at the Federal University of Rio Grande do Sul (UFRGS) to elaborated the instrument; 3) Search for studies, and systematic reviews on online psychotherapy resulted in the initial aspects of the scale 4) Initial Structure covered the following aspects: a) Verbal and Non-Verbal Communication; b) Setting features; c) Improvement Results; d) Management in situations of risk and e) Bonding and therapeutic alliance; 5) From these aspects, expert group determined the scale items; 6) 34 questions were initially created and divided into the advantages and disadvantages of online psychotherapy in the initial model; The items were framed in 3 domains: a) Disadvantages; b) advantages and c) treatment conditions; 7) A Likert-type scale was defined for the instrument responses, constituted with an agreement scale (agree-disagree) of 5 points, being: 1- Completely disagree; 2- I partially disagree; 3- I neither agree nor disagree; 4- I partly agree; 5- I agree; 8) Exclusion of items and Treatment Conditions domain; 9) Evaluation of psychometric properties and final Scale with 2 domains and 22 items (see on Fig. 1).

2.5. Translation and back-translation

The original Portuguese scale was translated into English, translated back into Portuguese, and back translated into English. After this procedure, an independent translator compared the English versions and defined the final version in the second proposed language (see appendix 1).

2.6. Measure

The advantages and disadvantages scale comprise 22 items rated on a 5-point Likert scale. One item (Q001 There is better communication between patient and therapist) is reversed to compute scores. The scale is divided into two subscales: advantages and disadvantages. The score is separated by domains: the sum of the items in the domain of advantages is divided by the number of items (11). The same is done with the domain of disadvantages. Each domain will have a separate result. If the patient scores a higher average for advantages than for disadvantages, then this means there is a good perception of the online treatment and a good indication of the treatment and vice versa. If the averages are equivalent, a clinical assessment of the preference of those involved in the treatment is in order.

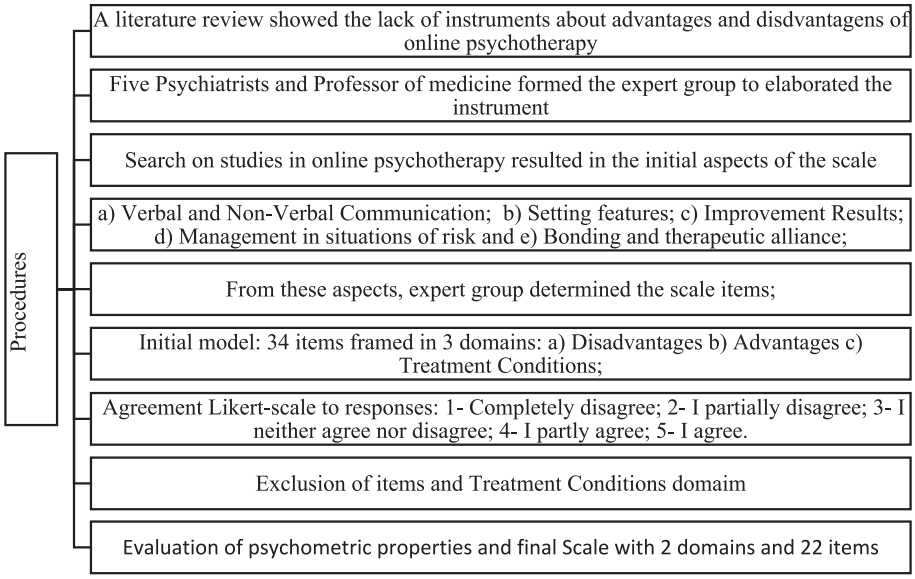

Fig. 1. Order of procedures for constructing the instrument.

2.7. Statistical analysis

The evaluation of psychometric properties comprised the description of reliability, validity, factor structure, and floor and ceiling effects analysis.

Exploratory factor analysis, the Kaiser-Meyer-Olkin (KMO) test and the Bartlet Spherality Test were used to verify if the data matrix could be factored. The Varimax rotation method, which maximizes the factor loadings within a factor, was used as an item exclusion criterion. Factor loadings should be at least 0.3 to contribute to the factor it belongs to (Hair et al., 2009).

Cronbach's alpha coefficient was calculated to analyze the internal consistency and reliability of the scale items and the items within the respective domains. The higher the coefficient, which must range from 0 to 1, the more reliable the instrument, and the lower limit for it to be acceptable is 0.7 (Fachel & Camey, 2008).

The Factor Structure was analyzed through Confirmatory Factor Analysis (CFA). Chi-square (where the ideal for the model is not to be significant $p > .001$); the CFI (Comparative Fit Index) (where values close to 1 indicate a good fit); the RMSEA (Root Mean Square Error of Approximation) (where a value of 0 indicates a perfect fit); the GFI (Goodness of Fit Index) (where values close to 1 indicate good fit); the TLI (Tucker-Lewis index) (values close to 1 are in agreement with a good fit) and RMSR (Root Mean Square Residual) (where the value 0 indicates perfect fit) were used to evaluate the fit of the model. (Hair et al., 2009; Chen et al., 2008; León, 2011). Since we calculated to validate the proposed factor structure, over all study centers combined, we also calculate measurement invariance for each center to confirm that the same structure apply to each individual center and to confirm that the factor loadings also equal (Hanel & Vione, 2016; Valencia López, 2023).

To compute an Intraclass coefficient and confirm the reability for de 6 centers we used the unconditional means model for each domain (advantages and disadvantages). the ICC shows how much of the behavior or outcome can be attributed to differences between groups. If the ICC > 0.10 then >10 % of the total variance would be related to differences between the 6 centers already, and thus calls for a multilevel adjustment and should be used, in order to prevent center-biased results."

Discriminant validity was assessed by comparing perceptions among patients, therapists, and supervisors according to each domain of the scale and depressive and non-depressive patients. Age and sex were also compared using the ANOVA test and *t*-test, respectively. It was expected that perceptions would be different mostly between patients and therapists/supervisors. We also expected that groups would not discriminate according to sociodemographic variables.

Pearson correlations were performed with the Therapeutic Work Alliance Inventory – Short Revised (WAI-SR), to verify the convergent validity. As no other instrument measures online psychotherapy's advantages and disadvantages, we understand that therapeutic alliance is a relevant measure that can influence psychotherapeutic treatment and is therefore considered an adequate measure to verify the convergent validation of the scale. We expect the higher the therapeutic alliance measures, the more advantages in online treatment the patient could perceive. It was expected to find positive correlations between the measures.

Statistical analyzes were performed using computer programs: R 4.2.0 for Exploratory Factor Analysis, Lavaan 0.6–11 for Confirmatory Factor Analysis and SPSS version 18.0 for other classical psychometric analyses.

3. Results

The study sample consisted of 184 adult participants. The study allowed participants not to respond to the sociodemographic questionnaire due to confidentiality issues, resulting in a loss of responses of 14.8 % in these data. Participants who responded to the sociodemographic questionnaire were divided into 129 patients, 20 therapists, and 35 supervisors. The general characteristics of the sample are described in Table 1. There are significant differences in the distribution of the sample in terms of sex ($p < .001$), ethnicity ($p < .002$), marital status ($p < .001$), and age ($p < .001$). Most patients were female, while supervisors and therapists showed a similar distribution between the sexes. (See Table 1).

Patients have a higher percentage (23.2 %) of non-white ethnicities than therapists (5 %) and supervisors (0 %). Most patients and therapists have a not-married marital status and are 20 to 30 years old. In contrast, the sample of supervisors was divided between married and divorced only, and most responded that they were over 60 years old.

3.1. Psychometric properties

3.1.1. Exclusion criteria

Exploratory factor analysis (principal components method, varimax rotation, Kaiser normalization, low (<0.30) factor loadings remaining

Table 1
General Description of the sample of patients, therapists and supervisors of online psychotherapy.

	Patients $N = 129$ (%)	Therapists $N = 20$ (%)	Supervisors $N = 35$ (%)
Sex			
Female	103a (79,8)	10b (50)	18b (51,4)
Male	26a (20,2)	10b (50)	17b (48,6)
Ethnicity			
Caucasian	99a (76,7)	19b (95)	35b (100)
Other	39a (23,2)	1b (5)	0b (0)
Marital status			
Not married	61a (47,3)	13a (65)	0b (0)
Married	52a (40,3)	6a (30)	31b (88,6)
Divorced	15a (11,6)	1a (5)	4a (11,4)
Widower	1a (0,8)	0a (0)	0a (0)
Age			
0 a 20	6a (4,7)	0a (0)	0b (0)
20 to 30	48a (37,2)	13a (65)	0b (0)
30 a 40	28a (21,7)	7a (35)	8a (22.9)
40 to 50	25a (19,4)	0a (0)	5a (14,3)
50 to 60	16a (12,4)	0a (0)	7b (12,5)
60 to 70	6a (4,7)	0a (0)	12b (34,3)
+70	0a (0,0)	0a,b (0,0)	3b (8,6)

a,b show significant differences in groups with different letters in teste.
chi-square Pearson, com comparações múltiplas ajustadas por Bonferroni.

after applying varimax are an exclusion criterion (León, 2011) was applied to the scale's initial version containing 34 items. As an exclusion criterion, we also used Cronbach's Alpha for loads that had a low correlation with the full scale. In all, seven questions from the original scale were excluded being (See Table 2).

"Q08: There is preservation of the patient 's anonymity".

"Q19 Not all patients have available time to undergo online therapy".

that showed factor loadings below 0.30 and.

"*Q07 There is greater probability of the patient to become dependent on the therapist.*

"*Q16 There is a reduction in treatment-related stigma*".

"*Q25 Patient and therapist protect each other physically*".

"*Q26 Online therapy may not be suitable for all clinical conditions*".

"*Q30 It is more economical due to the absence of displacement costs*".

with low item-total correlation in Cronbach's Alpha.

"*Q27 There is greater flexibility in the practical issuesle of treatment*" showed an acceptable factorial value both in the domain of treatment conditions and in the domain of advantages. Analyzing the semantics of the question, the group of experts chose to place it in the Advantages domain.

The third domain, the Treatment Conditions (TC), was also excluded through a semantic analysis in order to favor the final interpretation of the instrument.

The exclusion criteria phase totaled 22 items on the total scale divided into two domains: a) Disadvantages (D) (11 items) and b) Advantages (A) (11 items).

3.1.2. Factorial validity

Confirmatory factor analysis was used to evaluate the factor model of the scale of advantages and disadvantages of online psychotherapy. The model proved acceptable with an adequate contribution of the latent factor in each item ($X^2 = 255{,}859$; DF = 197; $p = .003$; CFI = 0.95; RMSEA = 0.047; GFI = 0.84 TLI = 0.94). (Fig. 2). We also calculate measurement invariance for each center to confirm that the same structure apply to each individual center and to confirm that the factor loadings also equal and there was no significant difference between center (See on Table 4.)

Table 2
Exploratory factor analysis - 34 items.

Question	D	A	TC
Q13 There is greater difficulty in verbal communication during therapy	0.744		
Q15 There is greater difficulty in nonverbal communication during therapy	0.727		
Q33 Online therapy is more tiring	0.719		
Q01 There is better communication between patient and therapist	−0.688		
Q04 There is difficulty in the relationship with the therapist	0.651		
Q17 There is difficulty in using the main techniques of face-to-face treatment	0.644		
Q31 There are problems associated with the privacy, confidentiality, and security of information	0.642		
Q11 There is greater difficulty in resolving emergencies during therapy	0.608		
Q02 There is a reduction in the intimacy between patient and therapist	0.596		
Q24 Online therapy is a treatment with less human aspects	0.542		
Q09 There is greater probability of unethical or abusive	0.461		
Q26 Online therapy may not be suitable for all clinical conditions	0.437 *****		
Q16 There is a reduction in treatment-related stigma	0.428 **		
Q30 It is more economical due to the absence of displacement costs.	−0.305**		
Q18 There is greater freedom in therapy.		0.759	
Q34 It is a treatment that brings more results		0.733	
Q03 Treatment is more convenient than face to face		0.680	
Q23 It is a more affordable treatment.		0.645	
Q14 There is an improvement in the relationship between therapist and patient.		0.641	
Q 32 It is more practical.		0.626	
Q 12 There are minor barriers to the treatment.		0.527	
Q 10 There is more privacy		0.505	
Q 05 The patient has more control over the therapy.		0.495	
Q06 The therapist has more control over the therapy.		0.471	
Q 25 Patient and therapist protect each other physically.		0.338**	
Q 07 There is greater probability of the patient to become dependent on the therapist		0.303**	
Q 08 There is preservation of the patient 's anonymity		0.194*	
Q 28 Not aAll patients feel able in using online technologies.			0.850
Q 21 Not all patients have a private place to undergo online therapy.			0.720
Q 29 Not all patients feel comfortable in using online technologies.			0.718
Q22 Not all patients have access to the necessary resources such as cell phone, computer, or internet.			0.652
Q 20 Not all patients are emotionally available to undergo online therapy.			0.615
Q 27 There is greater flexibility in the practical issues of treatment (e.g., time, place)			0.378
Q 19 Not all patients have available time to undergo online therapy.			0.267*

* Low item-total correlation Cronbach's Alpha.
** Excluded by factor loadings below 0.30.
*** D = Disadvantages domain, A = Advantages domain, TC = Treatment Conditions domain.

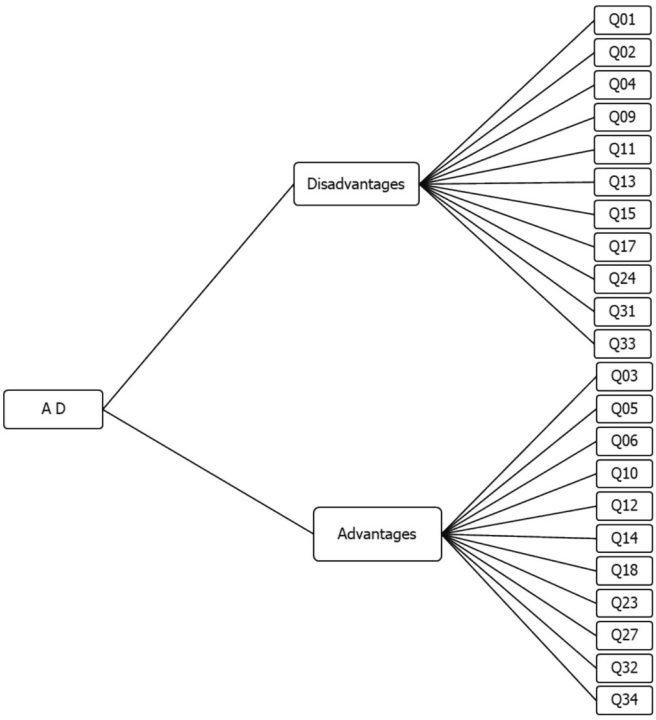

Fig. 2. Fit measures (X^2 = 255,859; DF = 197; p = .003; CFI = 0.95; RMSEA = 0.047; GFI = 0.84 TLI = 0.94).

3.1.3. Reliability

Cronbach's Alpha measured the internal consistency of the 22-item scale. The analysis attested good reliability. The value of α in each domain and per center is specified according to Table 3.

3.1.4. Intraclass correlation coefficient

To compute an Intraclass coefficient for de 6 centers we used the unconditional means model for each domain (advantages and disadvantages). The ICC indicates how much of the behavior or outcome can be attributed to differences between groups. The ICC result was 0.01 for the advantages domain and 0.03 for the disadvantages domain, with results <0.10, indicating that opinions on advantages and disadvantages are well distributed and there is no central group with behavior significantly different from the others.

3.1.5. Floor and ceiling effect

We analyzed the responsiveness assessment of the instrument by the existence of floor and ceiling effects, which occur when the distribution of scores is not symmetrical, and there is a concentration of >15 % of the responses in the extreme values of the scale (Terwee et al., 2007). Floor and Ceiling effects were calculated. As a result, 6 items had a Ceiling effect, and 9 items had a Floor effect. The domain of disadvantages presented most of the Floor effects.

Table 3
Internal Consistency – Cronbach's Alpha.

Center	Disadvantages (α)	Advantages (α)
General	0,88	0,85
HPSP	0,78	0,89
FUMM	0,72	0,82
GHC	0,84	0,77
HCPA	0,82	0,84
CELG	0,68	0,84
PUC	–	–

3.1.6. Discriminant Validity

Regarding the discriminant validity of the scale of advantages and disadvantages of online psychotherapy, we analyzed the ability of the scale to discriminate the differences in perception of patients (n = 88) when compared with therapists (n = 15), and supervisors (n = 31) as shown in Table 5. In the domain of disadvantages, patients (M = 3.37; sd = 0.96) showed significant differences (F = 16.60; df = 4128; $p \leq$ .001) in the comparison with therapists (M = 2.41; sd = 0.60) and with supervisors (M = 2.53; sd = 0.47). In the domain of advantages, the group of patients (M = 3.30; sd = 0.82) showed significant differences (F = 16.60; df = 134; $p \leq$ .001) in relation to the supervisors' perception (M = 2.69; sd = 0.59).

The patient subsample showed on average the highest amount advantages, and the highest amount disadvantages significantly higher than the therapist and supervisor group. The therapist group is the group that showed fthe least disadvantages. Supervisors and patients are the groups that, when compared, show different perceptions about online psychotherapy in both domains. Groups of patients who started face-to-face psychotherapy and were in online psychotherapy, groups that started face-to-face and chose not to undergo online treatment and groups that started online psychotherapy were compared. The domain of disadvantages was the only variable resulting from a discriminant difference ($p \leq$ .001) in this comparison. Patients who have started online psychotherapy see more disadvantages in online treatment, while patients who are not in psychotherapy see less (See Table 5).

To investigate whether other variables influence the findings of the studies, we analyzed the results of the scale of advantages and disadvantages by comparing sex using the t-test and age group using the ANOVA test of multiple comparisons. The differences showed no significance between the domains of advantages and disadvantages, when compared by sex or age group, indicating that these variables do not

Table 4
Chi-Squared Difference Test From 6 centers.

	Df	AIC	BIC	Chisq	ChisqDiff	RMSEA	Df	Diff	Pr(>Chisq)
Fit1	788	7739.0	8589.9	2033.0					
Fit2	848	7674.5	8361.8	2089.4	55.492	0		60	0.6410
Fit3	908	7612.2	8135.9	2147.1	57.727	0		60	0.5592

Table 5
Discriminant validity according to the perception of patients, therapists, and supervisors in each domain.

Domains	Patients $n = 88$		Supervisors $n = 31$		Therapists $n = 15$		Total $n = 134$		ANOVA		
	M	Sd	M	Sd	M	sd	M	sd	F	df	. sig
Disadvantages	**3.37 b,c**	0.96	**2.53 a**	0.47	**2.41 a**	0.60	3.06	0.93	16.60	4;128	**0.001***
Advantages	**3.30 c**	0.82	**2.69 a**	0.59	3.20	0.49	3.14	0.78	7.36	134	**0.001***

a = the mean difference is significant at the 0.05 level compared to patients; b = the mean difference is significant at the 0.05 level compared to therapists; c - The mean difference is significant at the 0.05 level compared to supervisors; * significant difference between groups in the ANOVA test.

influence the sample results, as shown in Table 6. Comparing age group and sex between patients, therapists and supervisors also did not show significance.

3.1.7. *Convergent validity*

Pearson's correlation test was used for convergent validity in our study. As no other instrument measures online psychotherapy's advantages and disadvantages. Results showed that the high levels of Therapeutic goals, tasks and affective bond, showed significant correlations only with the domain of disadvantages ($p \leq .05$). (See Table 7).

4. Discussion

According to the literature, this is the first developed instrument of advantages and disadvantages of online psychotherapy using a a multicentric sample of patients, therapists, and supervisors. The need to develop and to evaluate the psychometric properties of a scale to assess the advantages and disadvantages of online psychotherapy occurred due to the rapid change in treatments that were in person and started to be offered online after the social distancing measures were adopted to contain the COVID-19 infection after the outbreak year 2020 (Eichenberg, 2021; Khan et al., 2020; Pandi-Perumal et al., 2021).

With online psychotherapy being offered by teaching and research centers, several questions about this modality's ethical and appropriate issues also arise, thus creating the need to originate studies that make up the area.

Regarding the evaluation of psychometric properties of the developed instrument, our results suggest acceptable preliminary values for the instrument of advantages and disadvantages of online psychotherapy in terms of internal consistency, reliability, factor validity, discriminant validity and convergent validity.

The initial instrument version was developed through a review of the advantages and disadvantages of online treatment (Stoll et al., 2020) and a group of experts in psychotherapies. The initial scale contained 34 questions. After sample collection, the semantic analysis of the expert group and statistical analysis (Cronbach's Alpha, Exploratory Factor Analysis, Semantic Analisys) were a step important in deciding which items would remain on the scale (Hair et al., 2009; Fachel & Camey, 2008).

The final version instrument to be tested in a larger sample resulted in 22 questions separated into two domains: Disadvantages (11 items), and Advantages (11 items). Cronbach's Alpha values showed good internal consistency in each domain (0.88 and 0.85). This measure shows the importance of all items for the construction of the scale and the internal consistency values confirm that this is a measure with adequate preliminary reliability. Confirmatory factor analysis was indicated to present the preliminary factorial validity of the scale. It showed quality in the model fits that support the measure and the fit adequacy indices corresponding to the indicated reference of an ideal structured model (Hair et al., 2009; Chen et al., 2008 le & León, 2008).

It is a multicenter study; it is essential to verify whether there are significant differences in responses across groups to avoid biased results. Therefore, measurement invariance was calculated for each center, revealing no significant differences between them. Additionally, a multilevel analysis was conducted by calculating the Intraclass Correlation Coefficient (ICC) for each of the six centers across the domains of the instrument. The results showed ICC values below 0.10, indicating that opinions on advantages and disadvantages were well distributed

Table 6
influence of age and sex in each domain and global scale through the *t*-test for sex and ANOVA.

DOMAINS						
	Disadvantages			Advantages		
Variables	N	M	sd	N	M	Sd
Sex						
Male	41	2.82	0.91	41	3.08	0.82
Female	93	3.19	0.92	93	3.16	0.77
T-test for sex	**T**	**Df**	**. sig**	**T**	**df**	**. sig**
	−2.093	131	0.038	−0.565	132	0.573
Age						
0–30	46	2.98	0.92	46	3.19	0.64
30–40	28	3.09	1.02	28	3.11	0.99
40–50	23	3.20	0.98	23	3.33	0.77
50–60	18	3.35	0.87	18	3.11	0.78
+ 60	19	2.87	0.84	19	2.87	0.79
ANOVA (age/ domains)	**F**	**Df**	**. sig**	**F**	**df**	**. sig**
	0.83	4;128	0.506	0.94	4;129	0.403

M = Mean; sd = standard deviation; T = test t for sex; F = ANOVA for age; df = degrees of freedom; not significant values.

Table 7
Convergent validity of correlation between advantages and disadvantages instrument and Working Alliance Inventory – Short Revised (patient version).

DomainsWAI-SR	Disadvantages			Advantages		
	n	R	Sig.	N	r	Sig.
Therapeutic Goals	102	0.469**	0.001	103	0.187	0.058
Tasks	103	0.466**	0.001	104	0.121	0.219
Affective Bond	100	0.464**	0.001	100	0.150	0.135

* $p \leq 0{,}05$ ** $p \leq 0{,}01$; n = sample; r = Pearson correlation.

among the centers.

Regarding the convergent validity of the scale, there is no other validated instrument capable of measuring the same construct that the study scale proposes. We used the WAI-SR to assess the convergent validity between the therapeutic alliance measures and the advantages and disadvantages of online psychotherapy (Horvath & Greenberg, 1989; Serralta et al., 2020). Our initial hypothesis was that the greater the therapeutic alliance, the more patients could perceive the advantages of online treatment. However, we have seen the opposite happen: the higher the patient's levels of the therapeutic alliance, the more he tends to see disadvantages in online treatment. We found that the scale of advantages and disadvantages oppositely correlates with the WAI-SR than imagined. Our study has interesting findings to be investigated, as little is known about the impacts of the therapeutic alliance when including technological elements in psychological treatment (. Askjer & Mathiasen, 2021) Future investigations would verify if the more attached are the patient and the therapist, the more difficult would be the change from face to face to online psychotherapy.

The possibility of influence of other variables in the preliminary psychometric performance of the scale was verified by comparing the scores of the domains of advantages and disadvantages between sex and age group. From this comparison, it was possible to analyze that perceptions separated by sex and age have no influence on the results of the scale, corroborating the expectation that this is an instrument of heterogeneous capacity.

We expected to find more discriminating perceptions among the sample of patients who started face-to-face therapy and were undergoing online psychotherapy, patients who began face-to-face psychotherapy and were not undergoing online treatment, and those who started online psychotherapy. Only the domain of disadvantages was significant, pointing out that people not undergoing online treatment perceived fewer disadvantages. Results can be explained by the fact that having online experience can help to realize possible disadvantages of treatment. Although the differences were not significant, the group that started treatment online perceived more advantages in the treatment, followed by those who began face-to-face psychotherapy and started to perform it online after the pandemic. Results might be explained by the fact that having online experience can help to realize possible disadvantages of treatment. Although the differences were not significant, the group that started treatment online perceived more advantages in the treatment, followed by those who began face-to-face psychotherapy and started to perform it online after the pandemic.

The perception of patients, therapists, and supervisors was considered essential data in our sample. The study showed discriminative capacity and different perceptions between the three groups in the domain of disadvantages and differences between patients and supervisors in the domains of advantages. Patients are the group that sees the most advantages in online psychotherapy but also see the most disadvantages. Therapists see the minor disadvantages of online treatment, while supervisors perceive both advantages and disadvantages with lower average scores than the other groups.

The patient and therapist groups participate in the treatment, while the therapists mediate the supervisor's views, and this could explain why groups of therapists discriminate less against the other two groups that are at highly different poles. These findings agree with previous studies showing that, in post-pandemic studies, therapists were more willing to perform online psychotherapy than in samples collected before the pandemic (Londero et al., 2021; Cantone et al., 2021). Furthermore, although patients and therapists recognize quality and feel satisfied with the online treatment, they tend to prefer face-to-face care (Ebert et al., 2015; Musiat et al., 2014; Phillips et al., 2021; Sugarman et al., 2021).

About the limitations of the study, the instrument of advantages and disadvantages was created and tested in a sample located in the southern region of Brazil, which may influence the application of the scale in other cultural contexts. Also, there is no other validated instrument to compare our findings with previous studies, which may have impaired the convergent validity of the scale. The sample was collected through the internet during the pandemic and there was no obligation to answer to preserve the identity and comfort of the participants, which may have influenced some significant data to be lost throughout the questionnaires. That said, the instrument of advantages and disadvantages presents a reliable tool with good preliminary psychometric properties in terms of internal consistency, reliability, factor validity, discriminant validity and convergent validity. The future application of the instrument might be relevant to help identity which conditions can best benefit and perform the online treatment. The translation and back-translation throughout the study may indicate future directions for validating the scale in different cross-cultural samples.

CRediT authorship contribution statement

J.M. Santos: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **M.P.A. Fleck:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **S.P. Teche:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **I.C. Passos:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **M.H. Costa:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **N.S. Rocha:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

The authors do not have any conflicts of interest to report.

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Appendices

SCALE OF ADVANTAGES AND DISADVANTAGES OF ONLINE PSYCHOTHERAPY - ENGLISH VERSION.

Instruction: The following questions are a list of statements about advantages and disadvantages of online psychotherapeutic treatment. We are asking your perception about this treatment modality.

Instrument of advantages and disadvantages of online psychotherapy – Inglish Version					
	1 - I Completely disagree	2 - I partially disagree	3 - I neither agree nor disagree	4 - I partly agree	5 - I agree
	1	2	3	4	5
There is greater difficulty in verbal communication during therapy.					
There is greater difficulty in nonverbal communication (gestures, facial expressions, tone of voice) during therapy.					
Online therapy is more tiring.					
There is better communication between patient and therapist.					
There is difficulty in the relationship with the therapist.					
There is difficulty in using the main techniques of face-to-face treatment.					
There are problems associated with the privacy, confidentiality, and security of information.					
There is greater difficulty in resolving emergencies during therapy.					
There is a reduction in the intimacy between patient and therapist.					
Online therapy is a treatment with less human aspects.					
There is greater probability of unethical or abusive behaviors.					
There is greater freedom in therapy.					
It is a treatment that brings more results.					
Treatment is more convenient than face to face.					
It is a more affordable treatment.					
There is an improvement in the relationship between therapist and patient.					
It is more practical.					
There are minor barriers to the treatment.					
There is more privacy.					
The patient has more control over the therapy.					
The therapist has more control over the therapy.					
There is greater flexibility in the practical issues of treatment (e.g., time, place)					

TRANSLATED AND BACKTRANSLATED OF THE INSTRUMENT.

Portuguese Original Version	Translation to English	Back translation to Portuguese	Back translation to English	English Final Version
Desvantagens	**Disadvantages**	**Desvantagens**	**Disadvantages**	**Disadvantages**
Há uma maior dificuldade na comunicação verbal durante a terapia	There is a greater difficulty in verbal communication during therapy.	Há maior dificuldade na comunicação verbal durante a terapia.	There is greater difficulty in verbal communication during therapy.	There is greater difficulty in verbal communication during therapy.
Há uma maior dificuldade na comunicação não-verbal (gestos, expressões faciais, tom de voz) durante a terapia	There is a greater difficulty in non-verbal communication (gestures, facial expressions, tone of voice) during therapy.	Há maior dificuldade na comunicação não verbal (gestos, expressões faciais, tom de voz) durante a terapia.	There is greater difficulty in nonverbal communication (gestures, facial expressions, tone of voice) during therapy.	There is greater difficulty in nonverbal communication (gestures, facial expressions, tone of voice) during therapy.
A terapia on-line é mais cansativa.	Online therapy is more tiring.	Terapia online é mais cansativa.	Online therapy is more tiring.	Online therapy is more tiring.
Há uma melhora na comunicação entre paciente e terapeuta	There is a better communication between patient and therapist.	Há uma melhor comunicação entre paciente e terapeuta.	There is better communication between patient and therapist.	There is better communication between patient and therapist.
Há uma maior dificuldade na relação com o terapeuta	There is greater difficulty in the relationship with the therapist.	Há uma maior dificuldade no relacionamento com o terapeuta.	There is difficulty in the relationship with the therapist.	There is difficulty in the relationship with the therapist.
Há dificuldade em usar as principais técnicas do tratamento presencial	There is difficulty in using the main techniques of face-to-face treatment.	Há dificuldade em usar as principais técnicas do tratamento cara a cara.	There is difficulty in using the main techniques of face-to -face treatment.	There is difficulty in using the main techniques of face-to-face treatment.
Existem problemas associados a privacidade, confidencialidade e segurança das informações	There are problems associated with the privacy, confidentiality, and security of information	Existem problemas associados à privacidade, confidencialidade e segurança das informações.	There are problems associated with the privacy, confidentiality, and security of information.	There are problems associated with the privacy, confidentiality, and security of information.
Há uma maior dificuldade em resolver emergências durante a terapia	There is greater difficulty in resolving emergencies during therapy.	Há maior dificuldade em resolver emergências durante a terapia.	There is greater difficulty in resolving emergencies during therapy.	There is greater difficulty in resolving emergencies during therapy.
Há uma redução da intimidade entre paciente e terapeuta	There is a reduction in the intimacy between patient and therapist.	Há uma redução na intimidade entre paciente e terapeuta.	There is a reduction in the intimacy between patient and therapist.	There is a reduction in the intimacy between patient and therapist.

Data availability

No data was used for the research described in the article.

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Santos, J.M: Josiane Maliuk dos Santos, Psychologist graduated from Centro Universitário CESUCA (2020); Master in Psychiatry and Behavioral Sciences from the Federal University of Rio Grando de Sul (UFRGS). Specialization in Cognitive-Behavioral Therapy in Childhood and Adolescence from ELO (2020). Specialization in Psychotherapy and Family Intervention by ELO (2021). Professional experience as a Clinical Psychologist in a private practice. Member of the I-QOL Research Group (Innovations and interventions for Quality of Life) since 2017.

Rocha, N.S: Prof Neusa Sica da Rocha, M.D.; M. Sch; Ph.D.; Post-doc; Associate Professor of the Department of Psychiatry at UFRGS-Brazil; coordinator and supervisor of the residency in Psychotherapy; Coordinator of the I-QOL Research Group (Innovations and interventions for Quality of Life); Member of the Society for Psychotherapy Research; Winner of the New Investigator Award-ISOQOL; former editor of Brazilian Journal Of Psychotherapy; professor of the Post-graduation program in Psychiatry and Behavioral Sciences; author of numerous chapters of national and international scientific books and articles; reviewer of multiple national and international journals. Supervisor of several masters, PhD, post-doc and graduating students.

Fleck, M.P.A Marcelo Pio Almeida Fleck, Full Professor of Psychiatry - Department of Psychiatry and Forensic Medicine at the Federal University of Rio Grande do Sul. Graduated in Medicine from the Federal University of Rio Grande do Sul (1983), Master's degree in Medicine: Medical Sciences from the Federal University of Rio Grande do Sul (1991), PhD in Medicine: Medical Sciences from the Federal University of Rio Grande do Sul (1997) and post-doctorate at McGill University (Montreal - Canada) (2014). Former Chief Editor of the Brazilian Journal of Psychiatry, Member of the Coordinating Committee of the Postgraduate Program in Psychiatry at UFGRS. Coordinator of the Mood Disorders Program at Hospital de Clínicas de Porto Alegre, Coordinator of the WHOQOL Group (World Health Organization Quality of Life Group) in Brazil, temporary consultant for the World Health Organization. International Fellow of the American Psychiatric Association.

Teche, S.P - Stefania Pigatto Teche Graduated in Medicine from the Federal University of Santa Maria - UFSM (2007); Specialization in Psychiatry from the Hospital de Clínicas de Porto Alegre and Universidade Federal do Rio Grande do Sul - HCPA/UFRGS (2010). Title of Specialist in Psychiatry by the Brazilian Psychiatric Association - ABP. Specialist in Analytical Psychotherapy from the Department of Psychiatry and Forensic Medicine of the Faculty of Medicine-UFRGS (2011). Master in Psychiatry from UFRGS (2013) with a focus on Stress-Related Disorders. He was a Clinical Fellow at the Psychiatry Service of the Hospital de La Santa Creu I Sant Pau in Barcelona, Spain (2011). She works professionally as a Clinical Psychiatrist and Analytical Psychotherapist. Contracted Doctor of the Psychiatry Service of the Hospital de Clínicas de Porto Alegre - HCPA since 2013.

Passos, I.C: Ives Cavalcante Passos - Professor at the Department of Psychiatry and Legal Medicine at the Faculty of Medicine of the Federal University of Rio Grande do Sul (UFRGS). Permanent Professor of the Postgraduate Program in Psychiatry and Behavioral Sciences at UFRGS (Capes 7). Postdoctoral fellow at the University of Texas Health Science Center at Houston (UTHealth), USA. Coordinator of the Medical Residency Program in Psychiatry at Hospital de Clínicas de Porto Alegre (HCPA). Coordinator of the Bipolar Disorder Program at HCPA/UFRGS. Co-coordinator of the Molecular Psychiatry Laboratory at HCPA/UFRGS. Coordinator of the Alliance group (Artificial Intelligence in Neuroscience). Leader of the Big Data Task Force of the International Society of Bipolar Disorders. Between 2016 and 2021, he held the positions of Young Physician Leader by The Interacademy Medical Panel (Global Network of Medical Academies) and Young Physician Leader by the National Academy of Medicine. Member elected as new talent by the Rio-Grandense Academy of Medicine. Co-founder of the Thrive app and co-organizer of the Artmed +PSI app. He develops research focused on the pathophysiology and treatment of bipolar disorder and suicidal behavior, as well as the use of artificial intelligence techniques to improve clinical outcomes in the field of mental health.

Costa, M.H: Marta Haas Costa, Doctor from the Federal University of Rio Grande do Sul - UFRGS (2013); Medical Residency in Psychiatry at Hospital de Clínicas de Porto Alegre (HCPA) (2017). Specialization in Analytical-Oriented Psychotherapy from the Luís Guedes Study Center/Department of Psychiatry and Legal Medicine of the Faculty of Medicine-UFRGS (2018). Master in Psychiatry and Behavioral Sciences from UFRGS (2020). Professional experience as Professor of Medicine at the University of Vale do Rio do Sinos and as a Clinical Psychiatrist and Analytical Psychotherapist in a private practice. She provides specialized consultancy to a bariatric surgery group in the evaluation of patients who are candidates for the procedure and participates as a collaborator in a research group on Psychotherapies at the Hospital de Clínicas de Porto Alegre.