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Articles

Telepsychology: Acceptability of online assessment and treatment in users and professional psychologists

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Abstract

Background: The article deals with issues related to telepsychology, i.e. assessment and treatment interventions using online tools. Historical stages of the assessment and treatment at distance are described, citing methods and instruments and the empirical evidence on their feasibility and validity.

Methods: The study regarded the acceptance of remote intervention by two samples of professional clinical psychologists (n = 100) and potential users (n = 200). An online survey was used, including attitudes questionnaires, the UTAUT (*Unified Theory of Acceptance and Use of Technology*) model, a *Semantic Differential,* and the *Big Five Inventory* (only for users).

Results: The professionals appear more convinced than users that the online assessment and therapy intervention is useful and can be spread more. With regard to tests, they suppose greater difficulties for the responders than the users themselves perceive. At the same time, the psychologists think that diagnostic tools should be adapted to be applied online, so specific training is needed to effectively use assessment and clinical support in telematic mode.

Conclusions: The study confirms the trust of both psychologists and potential users towards online testing and interventions. Specific tools are needed to carry out the psychological intervention at distance, and specific training should be assured of psychologists who intend to use it.

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1. Introduction

Technological innovation and accessibility to means of communication have become increasingly sophisticated and efficient, and this has led technology - and telecommunications in general - to develop a prominent role both in the private life of people and in many health professions.

In psychological practice, technology offers a series of opportunities aimed at facilitating the access of clients and patients to psychological services, shortening the waiting-list times, overcoming barriers such as the difficulties of moving from particular geographical areas, economic limitations (saving time and expenses), or particular medical conditions that prevent the use of services in presence, reducing difficulties related to mobility (Nelson & Bui, 2010; Pietrabissa et al., 2015; Simpson & Reid, 2014).

In defining telepsychology and its development possibilities, the American Psychological Association already in 2013 developed guidelines for the assessment and treatment of remote patients. The guidelines underlined that, to ensure adequate standards of quality of services, it is essential that psychologists are aware of both the potential benefits and the limitations of online interventions and technological tools. Their application must be adapted to specific customers and specific situations, taking care to identify the medium (email, chat, telephone, videoconference, etc.) and the mode – e.g., synchronous or asynchronous - most suitable for the design of an intervention of effective telepsychology.

Several research assessed the effectiveness of internet-delivered therapies (Andersson et al., 2019; Backhaus et al., 2012; Mallen et al., 2005). Turvey and Roberts (2015) underlined the practical aspects of online counseling; more recently, Martin, Millán, and Campbell (2020) proposed a primer for telepsychology practice, evidencing the clinical, technical, and ethical aspects needed for overcoming barriers and increasing skills and standards of care.

Specific associations (e.g., the *International Society for Mental Health Online*) and several scientific Journals have been founded to share research and experiences on E-Health, including telepsychology.

Even before the Covid-19 pandemic, studies had highlighted the effectiveness and usefulness of psychological interventions online. A review on the therapeutic alliance in online psychotherapeutic intervention (Simpson & Reid, 2014) reported that both therapists and clients have positively evaluated the therapeutic alliance even in online mode, also with respect to the presence of limiting factors such as poor Internet connection or low picture and sound quality. Other studies demonstrated that an effective relationship and therapeutic alliance can be established online (Cipolletta et al., 2018; Manfrida et al., 2017).

Online psychotherapy interventions have also proved useful in treating patients according to both cognitive-behavioral and psychodynamic approaches, including the treatment of panic attacks (Abbott et al., 2008), albeit raising doubts about their effectiveness in treating the most

severe pathologies (De Bitencourt Machado et al., 2016; Théberge-Lapointe et al., 2015), and in positive psychology interventions (Walsh et al., 2018).

The possibility of effective online supervision of therapists was also affirmed (Jordan & Shearer, 2019; Inman et al., 2019; Martin et al., 2018; Tarlow et al., 2020).

The COVID-19 represented a "turning point for e-health" (Wind et al., 2020). Due to the pandemic, and the consequent security measures set up to contain the spread of the infection, the need was determined to accelerate the process of integrating technology into psychological practice and to rethink the usual methods of psychological support in presence. A real revolution in the provision of services to support and protect mental health has led to the increasingly frequent use of telepsychology. Some results (APA, 2021; Pierce et al., 2021) show that, during the pandemic, more than 85% of psychologists treated their patients at distance, and that, even at the end of the health emergency, they foresee that almost one third of their clinical activity will continue electronically.

Studies conducted for the evaluation of telepsychology in pandemic times confirm its effectiveness in the anxiety, depression and post-traumatic stress (Bolton & Dorstyn, 2015; Lange et al., 2001; Poletti et al., 2020). Better outcomes seem to be associated with a greater number of sessions and the correct management of patient expectations, while unfamiliarity with digital media and technical problems could specifically reduce the effectiveness of telepsychotherapy. Furthermore, the satisfaction of therapists seems to be linked to previous experiences of tele-assistance, the geographical position, the clinical experience, the degree of compatibility with one's own therapeutic model and the possibility of using alternative videoconferencing systems over the telephone (Békés & Aafjes-van Doorn, 2020). At the same time, several benefits could derive from the increase in training programs in online psychological and psychotherapeutic intervention and, in general, from the acceptance of this type of intervention both in users and among clinicians (Boldrini et al., 2020; Schulze et al., 2019).

It is also essential to evaluate the assessment tool used in the online setting. Some symptom screening tools are widely used in telematic administration, and their effectiveness has been verified compared to the traditional paper-pencil method (Giromini et al., 2021). Many other testing instruments have been adapted from those originally designed and developed for in-person performance (APA, 2013). Their reliability and validity could be affected with respect to face-to-face administration - especially for tools that involve the use of complex perceptual materials, the manipulation of objects, the careful analysis of the non-verbal aspects of the patient or multidimensional performance and intelligence assessments. In many case, their

application must be evaluated case by case, taking into account the measurement criteria as well as all the intervening cultural and linguistic implications (Buchanan, 2002; Farmer et al., 2020).

Although the integration of telepsychology with traditional therapeutic systems has been going on for decades, the rapid escalation of therapy and online assessment and treatment due to the health emergency has meant that the issue takes on different connotations. Sora, Nieto, Montesano del Campo, and Armayones (2021) recently demonstrated that the use of telepsychology is predicted by the perceived usefulness which influences the intention to use; and an effort should be made to overcome the discrepancy between the offer and the actual adoption of e-mental health interventions among the population.

Beyond integrative efforts, aimed at improving what already exists for remote work, real advances in clinical research and practice are needed to continue to offer support to the population in times of difficulty, during pandemics, and even afterwards.

1.1 Aims of the study

The study, part of an international research project "Covid-19 and psychological support: a mental health project based on telematic technologies", aims to investigate the perception of technology and its acceptability in clinical practice. Specific objectives are to know the opinions and attitudes of therapists and potential users (not currently in treatment) towards online testing and treatment methods, to evaluate the optimal ways of integrating digital technology into psychological practice.

2. Materials and Methods

2.1 Instruments

The survey was conducted electronically through the construction of two Google modules, addressed separately to potential users and psychologists.

Survey for potential users of psychological services:

- socio-demographic information and familiarity with technology (5 items);
- test of the Five Personality Factors, i.e. the *Big Five Inventory*, in the 10-item version (BFQ-10: Rammstedt & John, 2007; Italian edition: Guido et al., 2015);
- a section of 19 items built according to the UTAUT model (*Unified Theory of Acceptance and Use of Technology*: Venkatesh et al., 2003), and adapted with respect to the acceptance and use of technology for mental well-being (e.g., Sora et al., 2021); the items investigate performance

expectation (3 items), expectation of effort and / or commitment (3 items), social influence (3 items), facilitating conditions (3 items), anxiety (3 items), self-efficacy (2 items) and the will to use the system (2 items);

- *Semantic Differential (S.D.)*
- consisting of 12 pairs of polar adjectives (e.g.: easy / difficult; useful / useless) on which to evaluate technology in general (*Technology is…*). This tool allows for a more connotative than denotative evaluation of the research object, therefore more linked to emotionality than to purely cognitive judgment (Osgood et al., 1957; Takahashi et al., 2016).

Survey for psychologists:

- socio-demographic information and familiarity with technology (4 items);
- a section of 19 items built according to the UTAUT model, similar to that mentioned for users;
- *Semantic Differential* on the perception of technology already described above;
- 10 specific items on online psychodiagnostics, deduced from a survey on online psychological assessment promoted by the European Federation of Psychologists' Associations.

Each item was rated on a 5-intervals Likert-like scale or 5-intervals frequency scales; the Semantic Differential was built on 6 intervals (3 for each polarity; e.g. *very easy, quite easy, not very easy, not very difficult, quite difficult, very difficult*).

2.2 Sample and procedure

Two-hundred people responded to the user's survey, of which 52% were women (n = 104) and 48% were men (n = 96). Participants were divided by age group (52% up to 40 years and 48% over 40) and by educational qualification, 56.5% graduates (n = 113) and 43.5% with lower educational qualification (n = 87). None was currently in psychological or psychiatric treatment.

The professional clinical psychologists who participated in the survey were 100, of which 75% women and 25% men; by age group, 54% were up to 45 years old and 46% were older. They were psychotherapists or enrolled in clinical specialization schools of different theoretical and methodological approach

The procedures for involving users and psychologists in the responses were those typical of online surveys, with the "snowball sampling" method, starting from the dissemination to people

recruited through social networks and by email, which in turn involved the subsequent waves of participants.

The questionnaire had a preliminary part with the explanation of the purposes of the survey, and the request to give informed consent to the use of data anonymously. The respondent was warned that he or she could withdraw at any time during the compilation.

The procedure was approved by the ethics committee of the Department of Education of the University of Catania.

3. Results and discussion

Evaluation of the technological means: reliability of a composite score

We preliminarily evaluated the possibility of obtaining a total score by adding the individual scales of the Semantic Differential, after having rotated them all in a positive direction. The analysis of the reliability of the total score showed sufficient internal consistency, Cronbach's alpha index was .71 in users, .68 in psychologists. The values of the distributions were: in potential users mean 53.62, s.d. 6.70; in psychologists mean 54.29, s.d. 5.00. The average ratings were therefore similar and high in the two samples (average for each scale around 4.5, on a scale ranging from 1 to 6), albeit variability was lower in psychologists.

Habits and use of technology

Almost all of both potential users and psychologists interviewed declare that they use their smartphone and / or computer with a very high frequency: 93% for users and 99% for psychologists. Instead, a great part of the two samples rarely or never participated to the compilation of online questionnaires (users: 47%), or proposed them (psychologists: 60%).

There are no statistically significant differences in users either by gender or by age in the frequency of use of their digital devices. The youngest part of the sample of users (age < 40) reports that they answered more frequently to questionnaires administered online ($\chi^2 = 20.36$, d.f. 3, $p < 0.001$). There were no age differences in the sample of professional psychologists.

3.1 Results in the Potential User Group (n = 200)

The overall evaluation of the use of technology in general, as shown by the overall score of the Semantic Differential, does not show significant differences by gender (Males: mean 53.79, s.d. 7.64; Females: mean 53.46, s.d. 5.77; t = .35, d.f. 198, p = .73). The difference is significantly more positive in the younger group (mean 54.84, s.d. 5.72) compared to the older ones (mean 52.49, s.d. 7.37; t = 2.51, d.f. 198, p = .01).

Analyzing the significant differences in the individual scales of the S.D., online therapy is perceived by young people as *easier, more useful and important, faster, stronger*.

The intention of possible use for psychological evaluation and intervention is also more present in the younger (mean 3.77, s.d. 1.03) than in the older people (mean 3.20, s.d. 1.20; t = 3.56, d.f. 198, p <.001).

The comparisons in table 1 show that younger people consider the use of technologies easier, feel more at ease, are less afraid of making mistakes and that answers can be disseminated, have a greater sense of being able to be supported online and hope that remote intervention can also bring benefits. There are no significant differences by gender or age with respect to the perception of reliability of the online questionnaires and the confidence to be able to respond adequately.

Table 1. Comparison between age levels in the evaluation of technologies and their use for filling in online questionnaires. Comparisons with significant differences are reported

Question:	*Age up to 40 (n=96)*		*Age >40 (n=104)*		*t (df 198)*
	Mean	*s.d.*	*Mean*	*s.d.*	
It is easy for me to use smartphones and / or computers.	4.56	0.66	4.09	0.99	4.06*
I feel comfortable filling out an online questionnaire	4.44	0.61	4.07	0.85	3.51*
I hesitate to answer the online questions for fear of making mistakes that I cannot correct	1.60	0.91	2.06	1.07	3.22*
It is important to be able to receive psychological support even online in a delicate moment like the present one.	4.59	0.67	3.65	1.08	7.33*
I have the resources to complete the online questionnaire (internet connection, suitable device)	4.72	0.47	4.28	0.89	4.32*
People can benefit from taking online psychological interventions	3.19	1.17	2.68	0.98	3.32*
There is concern that data and my answers may be disseminated on the Internet	2.18	1.01	2.76	1.16	3.66*
I believe the online system is easy to use	4.34	0.78	4.02	0.90	2.71*

* p<0.01 (after Bonferroni correction)

The responses to the 19 items of the questionnaire were correlated with the frequency of use of the technologies and with the previous experience of answering online questionnaires (Table 2).

The frequency of use of technologies facilitates the perception of reliability, ease and availability to use, feeling at ease, confidence in being able to receive support, and decreases the fear of making mistakes and the preference for use in presence.

Having had previous experience in answering online questionnaires facilitates the perception of ease and usefulness of use and the expectation of being able to receive support and benefit.

Table 2. Correlations (Pearson r) between responses to the user questionnaire, frequency of use of technologies and previous experience of answering online questionnaires

	Frequency of use of technologies	*Previous experience of answering online questionnaires*
The online questionnaire can be as reliable as those filled in the traditional way.	0.29**	0.19
It is important to be able to answer questions at the place and time of day deemed most appropriate.	-0.03	0.10
In general, online psychological intervention is spreading.	0.20	0.26*
It is easy for me to use smartphones and / or computers.	0.45**	0.28**
It feels comfortable filling out an online questionnaire.	0.41**	0.26
The questionnaire completed in person gives more reliable results than the online one.	-0.15	-0.09
People find important to use technologies to monitor their health.	-0.10	-0.01
I hesitate to answer the online questions for fear of making mistakes that I cannot correct	-0.31**	-0.16
Health benefits are expected to be gained after completing an online questionnaire.	0.07	0.11
If I could have the opportunity to ask for explanations on the content of some questions, the answers online would be more accurate.	-0.12	0.04
The online questions are presented in a clear and easily understandable way.	0.14	0.10
It is important to be able to receive psychological support even online in a delicate moment like the present one.	0.26*	0.29**
I have the resources to complete the online questionnaire (internet connection, suitable device).	0.28**	0.18
If there was a choice, it would be preferable to complete the questionnaire in the professional's office.	-0.28**	-0.14
People can benefit from taking online psychological interventions.	0.16	0.36**
There is concern that the data and responses may be disseminated on the Internet.	-0.18	-0.24
I believe the online system is easy to use.	0.31**	0.28**
People is able to answer all questions well.	0.25	0.14
In the future, I could use technology as a tool for psychological support	0.29**	0.25

*p<.05 ** p<.01 (after Bonferroni correction)

Significant predictors of the positivity of the technology assessment (D.S. overall score) were identified using multiple regression analyses.

The table 3 reports this analysis for the answers to the questionnaire, tab. 4 for personality traits.

In the first case, the most relevant predictors are the perception of having adequate technical resources and the ease of their use, but also the lack of fear that the data may be disseminated on the network.

The most influential personality traits (tab. 4) are *introversion*, i.e. the tendency to be socially reserved and to prefer insight, and *open-mindedness*, which facilitate curiosity and availability for new experiences. Emotionality, consciousness and agreeableness appear to have little or no influence on a positive evaluation of the technology.

Table 3. Multiple regression analysis of the responses to the user questionnaire; dependent variable: positivity of the technology evaluation (stepwise method, p = .15; $r^2$of the model: .28)

Significant predictors of positivity of the technology evaluation:	*Std.coeff.*	*t*	*p-value*
I have the resources to complete the online questionnaire (internet connection, suitable device).	0.23	3.38	<0.001
There is concern that the data and responses may be disseminated on the Internet.	-0.21	-2.91	<0.001
It is easy for me to use smartphones and / or computers.	0.19	2.59	0.01
Health benefits are expected to be gained after completing an online questionnaire.	0.10	1.57	0.12
Online questionnaires have already been answered	0.10	1.48	0.14

Table 4. Multiple regression analysis of personality traits; dependent variable: positivity of the technology evaluation (r^2 of the model: .16)

Personality traits:	*Std. coeff.*	*t*	*p-value*
Extraversion	-0.20	-2.89	<0.001
Open mindedness	0.15	2.07	0.04
Emotionality	0.09	1.17	0.24
Consciousness	0.05	0.67	0.50
Agreeableness	0.00	0.00	1.00

3.2 Results in the group of psychologists (n = 100)

Even in the group of psychologists there are no significant differences by gender in the overall assessment of the use of technology (Males: mean 53.80, s.d. 5.44; Females mean 54.45, s.d. 4.91; t = -.56, d.f. 98, p = .58)

Psychologists do not show significant differences even by age: in the younger group, mean 54.80, s.d. 4.58; in the older group, mean 53.70, s.d. 5.49 (t = 1.09, d.f. 98, p = .28).

Significant differences by age were found for the specific questionnaire items only for the possibility that all tests can be administered online, where younger professionals (mean 2.24,

s.d. 0.90) appear more convinced of the possibility of generalized transposition compared to the older group (mean 1.89, s.d. 0.84; t = 2.01, d.f. 98, p <.05).

For psychologists too, the responses to the questionnaire were correlated with the frequency of use of technologies and with the previous experience of having administered online questionnaires.

Only the following correlations result significant (p<.05):

- frequency of use correlates with the knowledge of people who have had benefits after following psychological interventions online (r = .33), and with the propensity to use this type of intervention in the clinical work (.28)

- previous use correlates with ease of use (.30) and with the feeling of being at ease using technologies for one's own work (.31).

Significant predictors of the positive assessment of the technology were identified also for the psychologists (Table 5).

Table 5. Multiple regression analysis of the responses to the psychologists' questionnaire; Dependent variable: positivity of the technology evaluation (stepwise method, p = .15; r^2 of the model: .34)

Significant predictors of positivity of the technology evaluation:	*Std. coeff*	*t*	*p-value*
For customers in developmental age it is better not to proceed with the administration of online tests.	-0.24	-2.61	0.01
The regulatory data for online tests are similar to those for face-to-face administration	-0.18	-1.75	0.08
The use of online tests requires specific preparation for the psychologist.	-0.14	-1.45	0.15
It is important to be able to offer psychological support online in a delicate moment like the present one	0.15	1.43	0.15

The positivity perceived by psychologists regarding technological evaluation appears to be mainly connected to the possibility of using remote assessment also with children and adolescents; to evaluate online support as an opportunity to be offered in an emergency such as a pandemic; to the awareness that specific standardization and calibration are required for online tests; but also to the belief that specific preparation to administer online testing is not needed, and therefore all psychologists can do it.

3.3 Comparison between the two samples

Finally, the two groups were compared on the items of the questionnaire that evaluated similar topics. The results indicate that the significant differences ($p < .05$ after Bonferroni correction for multiple comparisons) concern:

- The perception of diffusion of online psychological intervention (mean 4.48 in professionals vs 3.71 in users);

- the fear of making mistakes producing reluctance to fill in online questionnaires, perceived as an obstacle more by psychologists (mean 2.60) than by users (mean 1.84);

- the idea that it would be better to do everything in the professional office - also in this case the psychologists consider the level to be higher (average 3.38 vs 2.49 in users);

- the confidence in the effectiveness of online intervention in producing benefits (psychologists' mean 4.36, users' mean 2.93);

- the propensity to use, higher in psychologists (mean 4.34 vs 3.48 in users).

4. Conclusions

The trust towards online testing and intervention appears very broad in both clinical psychologists and in potential users: the answers to the items on the reliability of the online questionnaire and on the importance of receiving remote support in times of crisis exceed the average threshold of 4 (out of a maximum of 5). The confidence in the online assessment is even higher in users than in psychologists themselves; all share the belief to find reliable and easy-to-use technological tools (an opinion prevalent in younger users).

Comparing the responses of professionals with those of users, there is a greater agreement by psychologists on the observation that people can have benefits after following the online clinical interventions, so they would be more inclined to use technology as a tool for psychological support.

Furthermore, psychologists are more convinced than clients that a responder can hesitate to answer online questions for fear of making mistakes that cannot be corrected, and that, if one could choose, it would be preferable to fill out the questionnaires in the professional's office.

Overall, psychologists have a more positive perception of the effectiveness of the online psychological intervention, which they would therefore use extensively. But, at the same time, they perceive some doubts and worries in potential users which they instead manifest to a lesser extent.

A limitation of the study is that it involved potential users and not people currently in treatment, who may have different perceptions in relation to actually choosing and practicing telepsychology. In this study, the perception in the general population of the possibility of receiving evaluation and psychological support at a distance was mainly concerned. It would be useful to compare these results with those of patients under treatment.

In conclusion, the belief that online assessment and treatment is useful and can be spread more is shared by potential users and psychologists. The latter think that online testing involves greater difficulties for the responders than the users themselves perceive.

The most positive evaluations of professionals towards the telematic diagnostic intervention correspond to the conviction that it - even when it concerns clients in developmental age - does not require specific preparation and therefore all psychologists can adapt to it. But they are convinced that a specific standardization and calibration is necessary for the tools to be applied online.

The need to prepare specific tools, especially on the diagnostic level (as underlined already some decades ago: e.g., Buchanan, 2002), to best carry out the psychological intervention at distance, and a specific awareness and training of psychologists who increasingly intend to use it, appears to be a prerequisite for testing and psychological support in telematic mode to become tools for restoring well-being by overcoming moments of crisis: during the pandemic, but also beyond it.

Conflict of Interest Statement

The authors declare that the research was conducted in the absence of any potential conflict of interest.

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