



CLINICAL PSYCHOLOGY IN EUROPE

The Official Academic Journal of the
European Association of Clinical Psychology
and Psychological Treatment

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Make a Wish – What Are the Wishes for Clinical Psychology and Psychological Treatment?

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It's the end of the year – and we look back to an enormously challenging year. We went through several restrictions in our professional and private lives, we adapted study programs to legal regulations on behaviour during the Pandemic, we missed the direct personal contacts which in the past used to be so essential to find solutions during debates, and we saw things during Zoom conferences that we didn't want to see. Our society is experiencing a deep and bitter division that is challenging psychology more than it has in a long time. It is quite understandable that people are annoyed, and have lost the motivation to reflect on the current situation.

But still, it's also the time of the year that stands for dreams and wishes. A world without dreams and hopes and wishes is something we would not want to imagine. To exile such a nightmare, we needed an optimistic outlook which can bring us safely through the year 2022. Therefore, we from CPE encouraged the members of our editorial board to take the time to express some of their wishes. And this is what came back: a new vaccination shot, filled with positive ideas, with perspectives and demands to our professional competences, with visions we would like to follow, and lots of optimism. The wishes show the strength of our collaboration to bring clinical psychology and psychological treatments forward for the benefit of the people. But, read yourself:

In every European country psychological therapies are less available than they should be. A lesson from the English IAPT programme is that politicians will invest more in therapy if we collect and report outcome data in our routine services. Such data shows our value, our focus on patient benefit, and our openness to learning. My New



Year wish is that clinical psychologists will once again lead the field in mental health by showing that we as a group embrace outcome monitoring. Other professionals and funding will follow our leadership. **(David Clark, UK)**

That psychological treatments and all the strategies for care already available in Clinical Psychology reach everyone in need. **(Christina Botella, Spain)**

Christmas time makes people focus more than usual on other people's needs, joys and concerns. As clinical psychologists, we are sensitive to the needs of our patients and clients, regardless of the season. May this attitude of listening and openness accompany our work, so that we can accompany those who ask for our professional help. **(Roman Cieślak, Poland)**

A significant portion of research in clinical psychology is unusable because of incomplete or poor reporting. Descriptions of interventions, particularly complex, psychosocial ones, are often sketchy and just reference a manual. My wish is that clinical research is reported more completely, by actually following (not just declaring to have followed) available reporting guidelines. **(Ioana A. Cristea, Italy/USA)**

Actually, I have a dozen wishes for clinical psychology, some for our patients or clients, others for ourselves. Here's one: that in the bitter dispute between Covid vaccine supporters and opponents, we can provide empathic communication strategies that both increase willingness to vaccinate and diminish the rifts between supporters and opponents. Who, if not us, should provide such helpful interventions to the rest of society? **(Andreas Maercker, Switzerland)**

I wish that the awareness, at all levels of our society, of the core value of mental health during the COVID crisis does not disappear once it is over. I also want European countries to invest heavily in research (which will then undoubtedly be published in the excellent CPE ;-)) and in the implementation of prevention and intervention programmes to improve mental health that are accessible to all people living on European soil. **(Céline Douilliez, Belgium)**

A more widespread use of clinimetric strategies in psychological assessment. **(Giovanni A. Fava, USA/Italy)**

Particularly in current times that challenge mental health, I wish all European clinical psychologists loads of resilience, strength, wisdom and self-care. In my own country (Belgium), clinical psychology is facing several important legislative and organisational transitions. I wish that once this phase of uncertainty and burden has passed, clinical psychology will find itself in a renewed and stronger position to the benefit of our clients. **(Dirk Hermans, Belgium)**

My wish for 2022 is to be dancing with you all at conference parties again! **(Tania Lincoln, Germany)**

Romanian wish for clinical psychology: Day by day, in many ways, be more and more personalized, high-tech, and evidence-based, for the sake of people's wellbeing! **(Daniel David, Romania)**

The role of clinical psychology is not evenly distributed in Europe and not even within countries. Given modern information technology it is technically easy to deliver treatments across borders. However, legal and administrative issues make it hard and sometimes even impossible to share treatments and do research. My wish is that we increase collaboration between countries and reduce administrative burden to facilitate spread of evidence-based treatments within Europe. **(Gerhard Andersson, Sweden)**

May clinical psychology continue to flourish in the year 2022, contribute to an understanding of the basic processes of the development of psychopathology and the principles of change in the treatment of psychological disorders (and help to overcome the pandemic!). **(Bernhard Strauss, Germany)**

I wish that we develop clear and agreed upon competencies of clinical psychologists that would help our profession and training of the next generation of clinical psychologists. **(Maria Karekla, Cyprus)**

I would like Santa to become a spiritual member of the CPE team to help us make inter-European networking in the field of clinical psychology even more vibrant, to keep our fire of curiosity burning, and to remind us of the importance of bringing hope and light to those who need us. **(Robert Masten, Slovenia)**

Wishing happy, healthy and peaceful lives for all. May we feel connected with our hearts and one another, during the Holidays and throughout the new year 2022! **(Jolanda Meeuwissen, The Netherlands)**

I wish more kindness in this world because we are all part of the same beautiful miracle. Love, peace, and compassion. (**Stefan Hofmann, Germany/USA**)

2022, please give us healthy clinical psychologists for research and practice in Europe and around the world. (Anonymous)

Personally, I have only the wish for "more time" (we need two more hours per day and an extra free day per week). Professionally, I wish: more collaboration [national, international (European)] in large scale studies; more research on moderators of treatment outcome in different groups of disorders; more research on mediators (mechanism) of change using psychological and biological basic science results; more support and funding for young (female) scientists; more replication studies; less egoism and competition; and again, more personal meetings. (**Martin Hautzinger, Germany**)

What a time we have all had! I'd like to wish all of you and your families and friends in Europe as well as further afield a restful time over the coming weeks, so that we can embrace 2022 with renewed energy. Carpe diem. (Trudie Chalder, UK)

I wish us all much inspiration in 2022 in generating new ideas to improve the impact of treatments for mental disorders, because that is what people suffering from these conditions very much need. (**Pim Cuijpers, The Netherlands**)

I wish for Clinical Psychology Research to rapidly develop and empirically validate even better treatments for those with co-morbid chronic physical conditions – and for these to be recognized and implemented by national health care systems. (Claus Vögele, Luxembourg)

I send out a wholehearted thanks to all the psychological therapists who have managed to support and help people in mental health need by delivering treatments online or in person, whilst they themselves have often had challenges in their own lives and at home. My wish for 2022 is that clinical psychology can be at the forefront of preventing mental health problems across Europe and beyond. (**Colette Hirsch, UK**)

I wish Clinical Psychology in Europe (and beyond) a contagious optimism and resilience in 2022. (Omer Van den Bergh, Belgium)

I wish you all merry Christmas with, hopefully, some face-to-face gatherings with your loved ones. (**Claudi Bockting, President of the EACLIP**)

Now it's your turn: take a minute and express your wish for your professional engagement during the year 2022.

Finally to us: For 2022, we wish that our journal will again receive as much support as this year, be it from authors, reviewers, editors, readers, and the excellent team of our publisher PsychOpen, so that we can continue to strengthen the visibility of the many facets of clinical psychology in Europe. As Editors-in-Chief of Clinical Psychology in Europe, we promise to address all your and our wishes to the corresponding institution (see photo).

We wish you a Happy Holiday season and a peaceful and prosperous New Year.

Winfried Rief & Cornelia Weise



Acknowledgments: The authors wish to thank all members of the Editorial Board of Clinical Psychology in Europe for expressing their wishes for 2022.

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Monetary Valuation of a Quality-Adjusted Life Year (QALY) for Depressive Disorders Among Patients and Non-Patient Respondents: A Matched Willingness to Pay Study

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Supplementary Materials: Materials [see [Index of Supplementary Materials](#)]



Abstract

Background: As estimated by the World Health Organization, depressive disorders will be the leading contributor to the Global Burden of Disease by 2030. In light of this fact, we designed a study whose aim was to investigate whether the value placed on health-related quality of life (HRQoL) for a depressive disorder is higher in patients diagnosed with a major depressive disorder (MDD) compared to non-patients in a matched sample.

Method: We collected data on willingness to pay (WTP) for a total of four health-gain scenarios, which were presented to 18 outpatients diagnosed with a MDD versus 18 matched non-patient respondents with no symptoms of depression. Matching characteristics included age, income, level of education, and type of health insurance. Respondents were presented with different HRQoL scenarios in which they could choose to pay money to regain their initial health state through various treatment options (e.g., inpatient treatment, electroconvulsive therapy). To test whether the probability of stating a positive WTP differed significantly between the two samples, Fisher's exact test was used. Differences regarding stated WTP between the samples were investigated using the Mann-Whitney U-test.

Results: For most of the health scenarios, the probability of stating a positive WTP did not differ between the two samples. However, patient respondents declared WTP values up to 7.4 times higher than those stated by matched non-patient respondents.



Conclusion: Although the perceived necessity to pay for mental-HRQoL gains did not differ between respondents with MDD and respondents with no symptoms of depression, patient respondents stated higher values.

Keywords

depressive disorders, quality-adjusted life years, willingness to pay, quality of life, electroconvulsive therapy

Highlights

- The probability of stating a positive WTP did not differ between samples.
- However, patient respondents stated WTP values as much as 7.4 times higher than non-patients.

The global burden of disease is shifting from premature death to years lived with disability (GBD 2017 DALYs and HALE Collaborators, 2018; Licher et al., 2019; Vigo et al., 2019). For this reason, the promotion of mental health has become a priority for health policies and action plans around the world (e.g., World Health Organization, 2013). Over the past several decades, the disease burden attributed to depressive disorders has increased tremendously, ranking them among the three leading causes of years lost due to disability (YLD; GBD 2016 DALYs and HALE Collaborators, 2017), as well as disability-adjusted life years (DALYs; Murray et al., 2012). By 2030, unipolar depression is estimated to be the leading factor within the global burden of disease (World Health Organization, 2008).

Cost-Effectiveness Analyses

Due to limited resources in the health-care sector, cost-effectiveness analyses are used as guidelines in priority setting, resource allocation, and reimbursement decisions. The preferred metric of health benefits in cost-effectiveness analyses is commonly the measurement of quality-adjusted life years (QALYs), combining the impact of health benefits on both health-related quality of life and quantity of life years (Sund & Svensson, 2018). Additionally, this measurement facilitates the comparison of different interventions within a disease or in comparison with other diseases (Pennington et al., 2015). From a health-economic perspective, the preference for and value of health-care interventions can be assessed by estimating a person's willingness to pay (WTP) for health gains (Sund & Svensson, 2018). The elicitation of preferences usually follows a two-stage process: 1) if the respondent indicates whether he or she is willing to pay money (yes/no); and 2) if the respondent indicates 'yes', that he or she is willing to pay money, the amount of money the respondent is willing to pay is further assessed.

Willingness to Pay for a Quality-Adjusted Life Year

Various studies have tried to estimate the value of a QALY through the WTP method (e.g., [Ahlert et al., 2013](#); [Donaldson et al., 2011](#); [Igarashi et al., 2019](#); [Pennington et al., 2015](#)). A systematic review including 24 studies on WTP per QALY found that WTP estimates range from €1,000 to €4,800,000, with mean WTP estimates of €118,839 and median estimates of €24,226 ([Ryen & Svensson, 2015](#)). Currently, preferences for health treatments are commonly elicited from the general public due to the recommendations of the Washington Panel on Cost-effectiveness in Health and Medicine ([Gold et al., 1996](#)) and the United Kingdom's National Institute for Health and Care Excellence ([National Institute for Health and Care Excellence, 2013](#)). Recently, however, arguments for eliciting the preferences based on appraisals of persons suffering from the health condition in question have been discussed (for a systematic overview on these arguments, see [Helgesson et al., 2020](#)).

Effects of Contextual and Individual Characteristics on WTP per QALY

WTP per QALY seems to be related to several *contextual* factors, such as duration (e.g., 0.1 QALYs over 10 years vs. 0.25 QALYs over 4 years), timing (i.e., QALY gain at the end of life vs. in the near future), and type of QALY gain valued (i.e., life extension vs. quality-of-life improvements), as well as the type and severity of the illness presented ([Igarashi et al., 2019](#); [Ryen & Svensson, 2015](#)). Additionally, several *individual* characteristics seem to influence the stated values for health gains. The most common predictor effect was found for income: A higher household income significantly increased the probability to state a positive WTP ([Ahlert et al., 2013](#)), as well as increasing the amount of money respondents were willing to pay ([Igarashi et al., 2019](#); [Pennington et al., 2015](#)). Also, individuals with a higher level of education stated greater amounts than individuals with fewer years of schooling ([Ahlert et al., 2013](#); [Pennington et al., 2015](#)). The effect of age on WTP was significant in two large samples, but results showed inconsistent findings: While one study found that younger respondents stated higher amounts ([Ahlert et al., 2013](#)), [Pennington and colleagues \(2015\)](#) found a contrary effect. A study of the German general population investigated the effects of the German health care system¹ on WTP per QALY and found that respondents with private health insurance were willing to pay higher amounts for a QALY, even when controlling for income effects ([Ahlert et al., 2013](#)).

1) Unlike other European countries, Germany has a universal health-care system with two types of health insurance: Germans can choose between public (statutory) insurance and private health insurance, which is co-financed by employer and employee.

To the best of our knowledge, no study has ever investigated the effects of the individual relevance of the presented health-gain scenario on the respondent's WTP per QALY. Additionally, several studies argued that the plurality of different perspectives should be acknowledged, and that values for health benefits (i.e., QALYs) should be based on preferences from both patients and the general public (Dolan, 2009; Ogorevc et al., 2019; Versteegh & Brouwer, 2016). A meta-analysis assessed whether values for QALYs differed between patients and the general public, comparing different valuation methods (time trade-off, visual analogue scale and standard gamble; Peeters & Stiggelbout, 2010). However, preferences from patients and the general public using the WTP method have yet to be investigated.

Study Aims

With an eye toward this need for more specific information on patient and non-patient preferences, the aim of our study was to assess whether WTP preferences for mental health gains differ between outpatients with a diagnosed major depressive disorder (the patient sample) and respondents from the general public with no symptoms of depression (the non-patient sample). To control for the effects of the above-mentioned individual characteristics on WTP, we matched respondents from the patient sample with respondents from the non-patient sample based on income, level of education, age, and type of health insurance (see Section 'Participants and Procedures'). The above-mentioned meta-analytical comparison of patient and non-patient health-state assessments found that patients give higher valuations than non-patients (Peeters & Stiggelbout, 2010). Therefore, we aim to investigate the following hypotheses:

1. The probability of indicating a positive WTP ($WTP > 0$) is higher throughout all the scenarios in the patient sample compared to its likelihood among respondents with no self-reported symptoms of depression (the non-patient sample).
2. Respondents from the patient sample are willing to pay significantly higher amounts for the health gains presented than respondents with no self-reported symptoms of depression (the non-patient sample).

Method

Ethics Approval

This study was performed in accordance with the principles of the Declaration of Helsinki. The Ethical Review Committee of the University of Hildesheim, Germany, approved the study (Application number: 107).

Participants and Procedure

Patient Sample

Individuals with a suspected depressive disorder were screened at a German university outpatient clinic between May 2019 and March 2020. Possible participants were informed as to the objective of the study both verbally and in writing, and were required to provide their written consent. Participants were eligible for inclusion if they were more than 18 years of age and met the *DSM-5* criteria of a major depressive disorder, using the German version of the Structured Clinical Interview for the *Diagnostic and Statistical Manual of Mental Disorders*, fifth edition (*DSM-5*), Clinical Version (SCID-5-CV; [Beesdo-Baum et al., 2019](#)). One master-level psychologist and three bachelor-level research-assistants conducted the interviews. All four interviewers had been trained in the administration and scoring of the SCID-5-CV in a workshop conducted by the second author, who is a licensed interviewer. The ratings of the diagnoses in question were discussed with the attending psychotherapist. We excluded patients who showed indications of mental retardation or dementia, substance-dependence disorders, bipolar disorder, or schizophrenia. Patients with other co-occurring mental disorders were not excluded. After the SCID-5-CV interview, patients who met the inclusion criteria and consented to participating in the study were asked to answer the questions of the online survey (further described in Section ‘Online Questionnaire’) on a laptop that we provided. After completing the survey, patients were thanked for their participation in the study.

Non-Patient Sample

For each respondent in the patient sample, we compared one matched respondent from the German general population who reported no symptoms of depression. Computer-based matching was conducted using the following characteristics: age at index rate (± 8 years), income category (see [Table 2](#)), highest level of education (basic, secondary, or advanced), and type of health insurance (statutory vs. private). Respondents from the German general population were recruited from an Internet panel run by an independent research institute (USUMA GmbH; <http://www.usuma.com/>) between March 6, 2019 and March 25, 2019. The research institute we selected complied with the ESOMAR International Code on Market, Opinion, and Social Research and Data Analytics. Internet-panel participants were informed about the online survey via email. After completing the survey, participants received survey ‘reward’ points from the Internet-panel company, which they could exchange for an online gift certificate or merchandise.

Online Questionnaire

On the first page of the online questionnaire, respondents were informed about the objective of the study and were asked to give their consent. The hypothetical scenario that was introduced assumed that no sickness funds exist in Germany, and therefore,

respondents would not have to pay premiums or contributions toward health insurance, increasing their monthly net income by that amount. Respondents were asked to imagine that instead, they would need to pay for every medical service out of their own pocket.

The concept of measuring health on a visual analog scale was introduced: Based on the European Quality of Life 5-Dimensions 3-Level Version (EQ-5D-3L; Szende et al., 2007), three health states and numerical valuations derived from survey values (Dolan et al., 1999) were used to indicate different levels of health on the scale. Demographical questions (e.g., age, income, health insurance, pre-existing diseases, region of residence) were presented. Respondents were then asked to estimate their life expectancy, and to rate the current state of their health on the European Quality of Life Visual Analogue Scale (EQ-VAS; Szende et al., 2007), with values between 0 and 100. Using items of the Patient-Health Questionnaire (PHQ-2; Kroenke et al., 2003) and EQ-5D-3L (Szende et al., 2007), respondents were asked to briefly assess their symptoms of depression and current health-related quality of life. The PHQ-2 is a two-item, self-administered depression module that scores the two main criteria from the *DSM-5*. Answer categories range from 0 (“not at all”) to 3 (“nearly every day”), and the total severity score ranges from 0 to 6. Regarding the total value of the PHQ-2 in the patient sample, the internal consistency was good ($\alpha = .82$). A cut-off score of ≥ 3 (see Kroenke et al., 2007) proved to be most suitable regarding sensitivity and specificity for the diagnosis of a major depressive disorder.

Next, a description of typical symptoms of depressive disorders and their impact on everyday life, including mortality rates by suicide, was presented (see Online Resource 1 in the [Supplementary Materials](#)). The respondents were given four different scenarios of health loss of either one QALY (Scenarios A and B) or a fraction of a QALY (Scenarios C and D), due to a depressive episode. These scenarios, which are further described in [Table 1](#), were presented in random order. The order of the questions and the wording of one sample scenario are displayed in Online Resource 2 (see [Supplementary Materials](#)). The respondents were asked if they were willing to pay money for each of the presented health-gain scenarios. If the respondents answered “yes,” that they would be willing to pay money for treatment, a table with three columns was presented, with a series of values in Euros ranging from €10 to €300,000 in accordance with previous studies (Ahlert et al., 2013; Donaldson et al., 2011; Pennington et al., 2015). To facilitate decision-making, the respondents were asked to sort the Euro values into one of three columns, indicating which amounts they would be willing to pay, the amounts they would not be willing to pay, and the amounts that left them unsure about whether or not they would pay. In order to summarize the maximum amount that the respondent was willing to pay and the minimum that he or she was not willing to pay, the respondent was asked to state his or her maximum WTP as an open-ended response. If the respondent answered that he or she would not be willing to pay money for the presented health-gain scenario, several pre-coded responses (translated from the EuroVaQ study) and a free text option

were presented. Lastly, respondents were asked to rate how much they currently knew about electroconvulsive therapy (ECT), which was offered as a treatment method in one of the scenarios². If they indicated that they knew at least “a little” about ECT, they were asked to state whether they thought this method was adequate. Respondents were given the chance to view and change their answers in the recapitulation section on the last page. The feasibility and validity of the questions were examined by pilot respondents who provided detailed feedback prior to the development of the survey.

Table 1

Health Gains Valued

Scenario	Health gain	Duration	Time	Initial health state achieved?	Treatment
A	25 points	4 years	In 1 year	100%	pain-free treatment
B	10 points	10 years	In 1 year	100%	pain-free treatment
C	25 points	4 years	In 1 year	90%	8-week inpatient treatment
D	25 points	4 years	In 1 year	90%	8-week inpatient treatment plus electroconvulsive therapy

Exclusion Criteria

To ensure that the questions were relevant to the individual respondents, and in accordance with the EuroVaQ report (Donaldson et al., 2011), the following exclusion criteria were applied:

General Exclusion Criteria

Respondents who indicated that “the government should pay” from the set of pre-coded responses as the reason for zero WTP (so-called “protest respondents”), were excluded due to their not having understood the hypothetical nature of the scenario (as is standard for WTP studies; see Olsen & Donaldson, 1998; Pennington et al., 2015).

Scenario-Specific Exclusion Criteria

Additionally, respondents were excluded from data analysis regarding scenarios A, C, and D if they rated their health state at less than 35 points (indicating poor health), and

² This treatment method was used because its efficacy is recognized by the German Association for Psychiatry, Psychotherapy, and Psychosomatics (DGPPN), and because it is a highly standardized procedure with rapid response rates (DGPPN et al., 2015).

if they expected to live for less than 6 years as of that day. Respondents were excluded from data analysis regarding scenario B if they rated their health state at less than 20 points, and if their life expectancy was assumed to be below 12 years. The intention was to ensure that no health loss reduced the respondent's health to below 10 points, and that all health gains were complete at least one year before the respondent expected to die.

Data Analysis

All analysis was undertaken with IBM SPSS Statistics 26. The collection of open-ended responses allowed us to determine the mean and median values reported for each scenario, which were collected in Euros. The current study does not report trimmed means because [Ahlert and colleagues \(2013\)](#) found that trimming the top 1% or 5% of WTP values may lead to the exclusion of potentially reasonable cases (e.g., younger respondents with a higher income). The Kolmogorov–Smirnov Test and Q-Q plots indicated that the assumption of normal distribution was violated: Distribution of WTP scores for scenario A ($D(20) = 0.385, p < .001$), scenario B ($D(20) = 0.416, p < .001$), scenario C ($D(20) = 0.363, p < .001$), and scenario D ($D(20) = 0.270, p < .001$) all differed significantly from normal.

To test Hypothesis 1 – whether the likelihood of expressing a positive WTP differed across both samples – WTP responses were dichotomized as zero and non-zero values. Because of the small sample size, Fisher's exact test and odds ratios were calculated. To assess Hypothesis 2 – whether WTP values for the described health gains differed between the patient and the non-patient sample – the nonparametric Mann–Whitney *U*-Test was applied, due to the skewed distribution of the WTP scores. Effect size *r* was calculated by dividing the *z*-scores for the test statistic by the square root of the sample size ([Field, 2018](#); [Rosenthal, 1991](#)). Bias-corrected accelerated 95% confidence intervals around means were estimated.

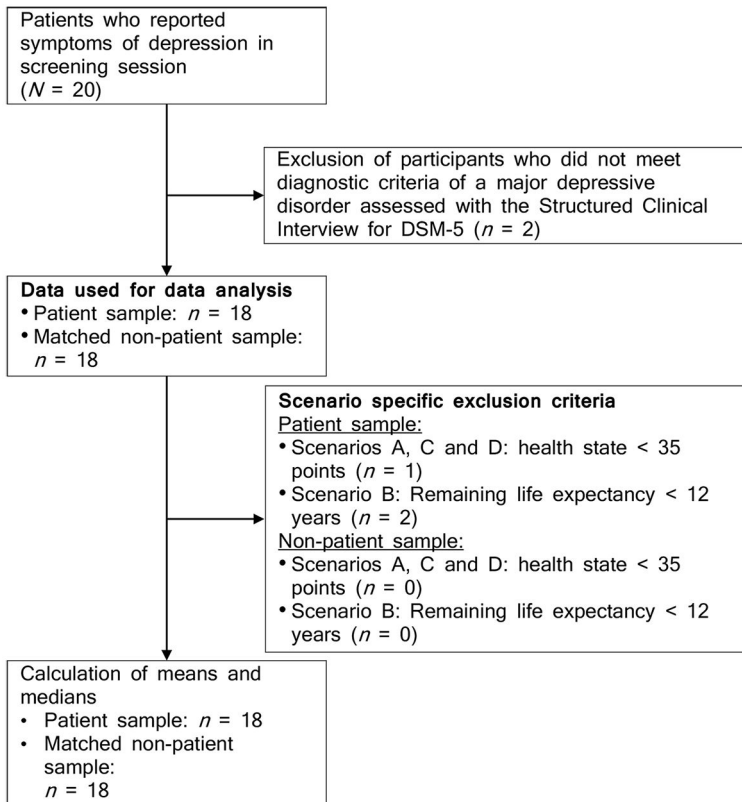
Results

Sociodemographic Characteristics of the Samples

[Figure 1](#) depicts the flowchart. A total of $N = 36$ participants were included in the study, with $n = 18$ participants in each sample. Most of the total sample (75%) was female, with a mean age of 48 years ($SD = 14.88$).

Figure 1

Flowchart



Patient Sample

From an initial sample of 20 screened outpatients, $n = 18$ patients met the *DSM-5* criteria of a major depressive disorder. No co-occurring mental disorders were diagnosed. The cut-off score of the PHQ-2 was exceeded by 16 patients (88.9%), while the mean score was 4.33 ($SD = 1.57$). The mean overall health state of the patient sample was indicated as poor ($M = 61.67$; $SD = 18.31$).

Matched Non-Patient Sample

The matching process based on income, level of education, type of health insurance, and age resulted in a sample of $n = 18$ matched respondents from the German general population. We ensured that respondents of the matched non-patient sample reported no symptoms of depression (PHQ-2 sum score = 0). The mean overall health state of the non-patient sample was indicated as rather good ($M = 89.94$, $SD = 9.17$).

Table 2 displays the sociodemographic characteristics of the two samples. No between-group differences were found in terms of the sociodemographic data. None of our subjects had to be excluded as protest respondents.

Table 2

Sociodemographic Characteristics of Both Samples

Characteristic	Patient Sample N = 18		Non-patient sample N = 18	
	M (SD)	Min/Max	M (SD)	Min/Max
Age (in years)	48.33 (15.22)	22/77	47.89 (14.97)	22/70
Life expectancy (age)	82.28 (9.49)	65/99	83.78 (8.45)	70/110
Health status (0-100)	61.67 (18.31)	20/95	89.94 (9.17)	70/100
	n	%	n	%
20 to 69 (poor)	11	61.1	0	0.0
70 to 79 (rather poor)	2	11.1	2	11.1
80 to 89 (rather good)	4	22.2	2	11.1
90 to 100 (very good)	1	5.6	14	77.8
Low remaining lifetime (< 16 years)	4	22.2	1	5.6
Females (rather than males)	16	88.9	11	61.1
Educational level				
Basic (nine years)	0	0.0	0	0.0
Secondary (ten years)	8	44.4	7	38.9
Tertiary (> ten years)	10	55.6	11	61.1
Monthly household income				
No answer	1	5.6	1	5.6
Below 500 €	0	0.0	0	0.0
500 to below 1.000 €	1	5.6	1	5.6
1.000 € to below 1.500€	1	5.6	1	5.6
1.500€ to below 2.000€	4	22.2	4	22.2
2.000€ to below 3.000€	4	22.2	4	22.2
3.000€ to below 4.000€	6	33.3	6	33.3
4.000€ and more	1	5.6	1	5.6
Health Insurance				
Social insurance	17	94.4	17	94.4
Private insurance	1	5.6	1	5.6
ICD-10 Diagnosis				
Depressive episode	8	44.4		
Recurrent MDD	10	55.6		

Note. M = mean; SD = standard deviation; Min/Max = Minimum/Maximum; N = sample size; MDD = major depressive disorder.

Results Regarding Hypothesis 1: Probability of Indicating a Positive WTP

Results from Fisher's exact test indicate no association between the sample (patient vs. non-patient sample) and the probability of stating a positive WTP ($WTP > 0$) in three of four scenarios (Scenarios B, C, and D). Only in scenario A was the probability of expressing a positive WTP higher in the patient sample compared to the non-patient sample ($\chi^2 = 6.84$, $p < .05$). Odds ratios could not be calculated, as 100% of the patient sample indicated a positive WTP.

In the patient sample, the number-one reason for being unwilling to pay for the presented health gains across all scenarios was: "The effects of treatment are too small." In the non-patient sample, the number-one reason stated was: "It would not be so bad/I could live with it." Table 3 shows the frequency of reasons stated for zero WTP.

Table 3

Frequencies of Reasons for Zero WTP

Scenario	N Zero WTP	It would not be so bad/ I could live with it	Effects of treatment are too small	I want my family to have the money	I would get better without treatment	I value the treatment but cannot afford it	Other reasons
Patient sample							
A	0	0	0	0	0	0	0
B	1	0	1 (6.3)	0	0	0	0
C	2	0	0	0	0	0	2 (11.8)
D	8	0	2 (11.8)	0	0	0	6 (35.4)
Non-patient sample							
A	6	1 (5.6)	0	1 (5.6)	1 (5.6)	1 (5.6)	2 (11.2)
B	7	4 (22.2)	0	1 (5.6)	0	1 (5.6)	1 (5.6)
C	6	1 (5.6)	0	0	2 (11.2)	2 (11.2)	1 (5.6)
D	8	2 (11.2)	0	0	2 (11.2)	2 (11.2)	2 (11.2)

Note. Percentages are in parentheses. N = sample size; WTP = willingness to pay.

Results Regarding Hypothesis 2: WTP Differences Between Patient and Non-Patient Respondents

Mean, median, and maximum WTP values, as well as bias-corrected accelerated 95% confidence intervals around means, are displayed in Table 4. In the patient sample, mean WTP values ranged from €15,778 (Scenario D) to €54,794 (Scenario A). In the matched non-patient sample, mean values ranged from €2,277 (Scenario B) to €4,650 (Scenario A). Results from the Mann-Whitney U -Test indicated that patient respondents stated significantly higher WTP values than non-patients in all scenarios: Scenario A ($U = 33.50$, $z = -3.05$, $p < .01$, $r = -.56$), scenario B ($U = 25.50$, $z = -2.97$, $p < .01$, $r = -.58$), scenario

C ($U = 22.50$, $z = -3.31$, $p < .001$, $r = -.64$) and scenario D ($U = 10.50$, $z = -2.83$, $p < .01$, $r = .65$). For all scenarios, differences between samples represented a medium effect in accordance with [Cohen \(1988\)](#).

Table 4

Mean, Median and Maximum Values in Euros (€) for Both Samples After Applying General and Scenario-Specific Exclusion Criteria

Scenario	<i>n</i>		<i>M</i>	Bootstrapped 95% CI	<i>Mdn</i>	Maximum WTP
	<i>n_a</i>	WTP > 0				
Patient sample						
A	17	17	54,794	14,646-116,424	15,000	350,000
B	16	15	52,667	6,956-121,249	10,000	350,000
C	17	15	23,867	10,714-45,548	10,000	150,000
D	17	9	15,778	7,667-25,762	13,000	50,000
Non-patient sample						
A	18	12	4,650	2,322-7,686	2,500	15,000
B	18	11	2,277	1,000-4,126	1,500	10,000
C	18	12	3,433	2,245-4,737	2,750	10,000
D	18	10	2,415	1,183-3,567	1,750	5,000

Note. n_a = sample size after applying scenario-specific exclusion criteria; n = sample size; CI = confidence interval.

Discussion

A Vital Assessment of Patient Preferences

As currently discussed (e.g., [Dolan, 2009](#); [Ogorevc et al., 2019](#); [Versteegh & Brouwer, 2016](#)), the present study is one of the first attempts to directly compare experience-based preferences from patients to ‘hypothetical’ preferences of the general population using the WTP method.

Results indicate that the probability of stating a positive WTP does not differ between patients and non-patient respondents. However, when assessing the number-one reasons indicated for zero WTP (patient sample: “Effects of treatment are too small,” vs. non-patient sample: “It would not be too bad/I could live with it”), it seems that respondents with no prior experience of depression underestimate the burden of depressive symptoms. As discussed by [Dolan \(2007\)](#), “hypothetical” preferences of the general public, as elicited through assessing WTP values, may not be a reliable basis for judgment because the “general public are not good at assessing what it would be like to experience different states of health” ([Dolan, 2007](#), p. 6). However, contrary to the assumption that “hypothetical” preferences by the public tend to overestimate the severity of a loss of health

(Dolan, 2007, p. 6), patients stated significantly higher WTP values than non-patients. These findings are in accordance with previous studies (Ogorevc et al., 2019; Versteegh & Brouwer, 2016) and emphasize the need to consider both the perspectives of the general public and those of patients when assessing values or preferences for health benefits.

In this study, we assessed respondents' WTP for one specified treatment (electroconvulsive therapy) in detail due to its high standardization when compared to other psychotherapeutic interventions. Thus, when assessing results for this specified scenario, it seems unexpected that only 53% of the patient sample and 55% of the non-patient sample were willing to pay money for ECT. One possible explanation might be that 83% of the patient sample stated that they knew nothing or little about ECT, compared to 72% of the non-patient sample. The present findings accord with the conclusion of a recent study, which found that ECT is still largely underutilized due to persisting stigma and lack of knowledge about modern ECT techniques (Kellner et al., 2020). In particular, considering recent discussions of advocating for patients in the decision-making process regarding treatment options (e.g., Barry, 2011; Couët et al., 2015), the present findings underline the importance of an informed patient. So-called patient-decision aids – tools designed to help patients make an informed choice, which include explanations about treatment options based on scientific evidence – can be used to improve patients' knowledge of which treatment route to choose, as well as the risks and benefits of various treatments (for an overview, see Perestelo-Perez et al., 2017).

The cost-effectiveness of primary care for depressive disorders has been investigated by, for example, Chisholm et al. (2004) and Pyne et al. (2003). Low-cost, non-medical interventions for relief from depression, such as exercise, relaxation, and bibliotherapy, are also readily available (for a systematic review, readers are referred to Morgan & Jorm, 2008). Their (cost-)effectiveness in reducing symptoms of depression is, however, yet to be assessed in randomized controlled trials in a clinical population (Bellón et al., 2021; Lawlor & Hopker, 2001; Philippot et al., 2019)

Strengths and Limitations

Matching the respondents from the patient sample to respondents from the non-patient sample allowed us to control for the effects of individual characteristics (e.g., income, level of education) on WTP. Presenting the scenarios in a randomized order let us control for ordering effects. However, some limitations should be also mentioned.

First, the size of both samples ($n = 18$ in each sample) was quite small, and the post-hoc power analysis indicated medium power ($1 - \beta = 0.89$), assuming a medium effect size ($|d| = 0.5$, according to the convention of Cohen (1988)).

Second, the broad majority (88.9%) of the recruited patient sample was female. Results from the EuroVaQ study indicate that men stated a higher WTP (Donaldson et al., 2011, p. 76). Still, Ahlert and colleagues (2013) investigated the effect of gender in more detail, and found that although women were significantly more likely than men to state a

positive WTP, males were willing to pay significantly higher amounts than females. Therefore, generalization of results may be limited, and a more representative patient sample should be recruited in subsequent studies.

Additionally, presenting scenarios that emphasize the certainty of successful treatment – which may be especially unlikely with respect to mental health – may have led to the overestimation of estimated WTP values. More scenarios with uncertainty characteristics should be evaluated in further research, as well as other specified treatment options, such as psychotherapeutic treatment approaches or antidepressant medication (DGPPN et al., 2015).

Fourth, the assessment of the variable “knowledge about ECT” consisted of one item only, and did not objectively specify how much respondents know or how and where they became informed (e.g., movies, media, medical services). During administration of the present survey, a measure to assess perceptions and knowledge of ECT was published (Tsai et al., 2020), and we believe that it should be used in future studies to guarantee an objective, more detailed measurement of the respondents’ attitudes toward and knowledge of ECT.

Additionally, we only recruited people who were being seen at an outpatient clinic. It is possible that patients of an inpatient clinic with more severe depressive symptoms would place higher values on mental-health-related quality of life, and might also be better informed about their treatment options – ECT in particular. Generalization of results may therefore be limited to patients from an outpatient setting with no co-occurring mental disorders.

Finally, the health-care system (including psychiatric and psychological care) in Germany is unique compared to that of other European systems (see Melcop et al., 2019, for an overview). In Germany, health insurance is mandatory, and Germans can choose between public or private health insurance. Access to mental health care is free of additional charges in Germany, which is uncommon among the other European Union member states (Strauß, 2009). Additionally, the mental-health-care spending proportionate to the gross domestic product is higher in Germany (4.8%) than the European average (4.1%), and is only exceeded by that of Denmark (5.4%; OECD, 2018). Therefore, external validity may be limited to countries with similar health services for mental disorders.

Conclusion

This study investigated the effect of the personal relevance of a presented health-gain scenario on the respondent’s WTP per QALY, and produced findings that add valuable information toward estimating the effects that individual characteristics have on the value that respondents place on a QALY. Additionally, our findings emphasize the need to assess hypothetical population preferences alongside actual patients’ preferences for health benefits.

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Competing Interests: The authors have declared that no competing interests exist.

Supplementary Materials

The Supplementary Materials contain the following items (for access see [Index of Supplementary Materials](#) below):

Supplementary Material 1: Translation of the health state description

Supplementary Material 2: Sample scenario

Index of Supplementary Materials

Ulbrich, L., & Kröger, C. (2021). *Supplementary materials to "Monetary valuation of a Quality-Adjusted Life Year (QALY) for depressive disorders among patients and non-patient respondents: A matched willingness to pay study"* [Additional information]. PsychOpen GOLD. <https://doi.org/10.23668/psycharchives.5286>

References

- Ahler, M., Breyer, F., & Schwetmann, L. (2013). What you ask is what you get: Willingness to pay for a QALY in Germany. *CESifo Working Paper Series*, 4239, 1-33. <https://www.cesifo.org/en/publikationen/2013/working-paper/what-you-ask-what-you-get-willingness-pay-qaly-germany>
- Barry, M. J. (2011). Helping patients make better personal health decisions: The promise of patient-centered outcomes research. *Journal of the American Medical Association*, 306(11), 1258-1259. <https://doi.org/10.1001/jama.2011.1363>
- Beesdo-Baum, K., Zaudig, M., & Wittchen, H. U. (2019). *SCID-5-CV. Strukturiertes Klinisches Interview für DSM-5®-Störungen–Klinische Version*. Hogrefe.
- Bellón, J. Á., Conejo-Cerón, S., Sánchez-Calderón, A., Rodríguez-Martín, B., Bellón, D., Rodríguez-Sánchez, E., Mendive, J. M., Ara, I., & Moreno-Peral, P. (2021). Effectiveness of exercise-based interventions in reducing depressive symptoms in people without clinical depression: Systematic review and meta-analysis of randomised controlled trials. *The British Journal of Psychiatry*. Advance online publication. <https://doi.org/10.1192/bjp.2021.5>

- Chisholm, D., Sanderson, K., Ayuso-Mateos, J. L., & Saxena, S. (2004). Reducing the global burden of depression: Population-level analysis of intervention cost-effectiveness in 14 world regions. *The British Journal of Psychiatry*, *184*(5), 393-403. <https://doi.org/10.1192/bjp.184.5.393>
- Cohen, J. (1988). *Statistical power analysis for the behavioural sciences*. Lawrence Erlbaum Associates.
- Couët, N., Desroches, S., Robitaille, H., Vaillancourt, H., Leblanc, A., Turcotte, S., Elwyn, G., & Légaré, F. (2015). Assessments of the extent to which health-care providers involve patients in decision making: A systematic review of studies using the OPTION instrument. *Health Expectations*, *18*(4), 542-561. <https://doi.org/10.1111/hex.12054>
- DGPPN, BÄK, KBV, AWMF (Hrsg.) für die Leitliniengruppe Unipolare Depression. (2015). *S3-Leitlinie/Nationale VersorgungsLeitlinie Unipolare Depression – Langfassung* (2. Auflage, Version 5). <https://www.depression.versorgungsleitlinien.de>
- Dolan, P., Gudex, C., Kind, P., & Williams, A. (1999). A social tariff for EuroQoL: Results from a UK general population survey. *CHE Discussion Paper*, *138*. Centre for Health Economics, University of York. <https://www.york.ac.uk/che/pdf/DP138.pdf>
- Dolan, P. (2007). Finding a NICEr way to value health: From hypothetical preferences to real experiences. *Social Market Foundation*. <http://www.smf.co.uk/wp-content/uploads/2007/07/Publication-Finding-a-NICEr-way-to-value-health-From-hypothetical-preferences-to-real-experiences.pdf>
- Dolan, P. (2009). NICE should value real experiences over hypothetical opinions. *Nature*, *462*, 35. <https://doi.org/10.1038/462035a>
- Donaldson, C., Robinson, A., Persson, U., Khatiba, R. A., Poznanski, D., Baker, R., Wildman, J., Jones-Lee, M., Lancsar, E., Mason, H., Bell, S., Pennington, M., Olsen, J. A., Bacon, P., Gyrd-Hansen, D., Kjaer, T., Bech, M., Nielsen, J. S., Bergman, A., Protière, C., Moatti, J. P., Luchini, S., Pinto Prades, J. L., Mataria, A., Jarallah, Y., van Exel, J., Brouwer, W., Topór-Madry, R., Kozierekiewicz, A., Kocot, E., Gulácsi, L., Péntek, M., Manca, A., Kharroubi, S. A., & Shackley, P. (2011). *European Value of a Quality Adjusted Life Year*. Government Report.
- Field, A. (2018). *Discovering statistics using IBM SPSS Statistics* (5th ed.). SAGE.
- GBD 2017 DALYs and HALE Collaborators. (2018). Global, regional, and national disability-adjusted life-years (DALYs) for 359 diseases and injuries and healthy life expectancy (HALE), 1990–2017: A systematic analysis for the Global Burden of Disease Study 2017. *The Lancet*, *392*, 1859-1922. [https://doi.org/10.1016/S0140-6736\(18\)32335-3](https://doi.org/10.1016/S0140-6736(18)32335-3)
- GBD 2016 DALYs and HALE Collaborators. (2017). Global, regional, and national disability-adjusted life-years (DALYs) for 333 diseases and injuries and healthy life expectancy (HALE) for 195 countries and territories, 1990–2016: A systematic analysis for the Global Burden of Disease Study 2016. *The Lancet*, *390*, 1260-1344. [https://doi.org/10.1016/S0140-6736\(17\)32130-X](https://doi.org/10.1016/S0140-6736(17)32130-X)
- Gold, M. R., Siegel, J. E., Russell, L. B., & Weinstein, M. C. (Eds.). (1996). *Cost-effectiveness in health and medicine*. Oxford University Press.
- Helgesson, G., Ernstsson, O., Åström, M., & Burström, K. (2020). Whom should we ask? A systematic literature review of the arguments regarding the most accurate source of

- information for valuation of health states. *Quality of Life Research*, 29, 1465-1482.
<https://doi.org/10.1007/s11136-020-02426-4>
- ICC/ESOMAR. (2016). *ICC/ESOMAR International Code on market, opinion and social research and data analytics*.
- Igarashi, A., Goto, R., & Yoneyama-Hirozane, M. (2019). Willingness to pay for QALY: Perspectives and contexts in Japan. *Journal of Medical Economics*, 22, 1041-1046.
<https://doi.org/10.1080/13696998.2019.1639186>
- Kellner, C. H., Obbels, J., & Sienart, P. (2020). When to consider electroconvulsive therapy (ECT). *Acta Psychiatrica Scandinavica*, 141, 304-315. <https://doi.org/10.1111/acps.13134>
- Kroenke, K., Spitzer, R. L., & Williams, J. B. (2003). The Patient Health Questionnaire-2: Validity of a two-item depression screener. *Medical Care*, 41(11), 1284-1292.
<https://doi.org/10.1097/01.MLR.0000093487.78664.3C>
- Kroenke, K., Spitzer, R. L., Williams, J. B., Monahan, P. O., & Löwe, B. (2007). Anxiety disorders in primary care: Prevalence, impairment, comorbidity, and detection. *Annals of Internal Medicine*, 146, 317-325. <https://doi.org/10.7326/0003-4819-146-5-200703060-00004>
- Lawlor, D. A., & Hopker, S. W. (2001). The effectiveness of exercise as an intervention in the management of depression: Systematic review and meta-regression analysis of randomised controlled trials. *BMJ*, 322, Article 763. <https://doi.org/10.1136/bmj.322.7289.763>
- Licher, S., Heshmatollah, A., van der Willik, K. D., Stricker, B. H. C., Ruitter, R., de Roos, E. W., Lahousse, L., Koudstaal, P. J., Hofman, A., Fani, L., Brusselle, G. G. O., Bos, D., Arshi, B., Kavousi, M., Leening, M. J. G., Ikram, M. K., & Ikram, M. A. (2019). Lifetime risk and multimorbidity of non-communicable diseases and disease-free life expectancy in the general population: A population-based cohort study. *PLoS Medicine*, 16(2), Article e1002741.
<https://doi.org/10.1371/journal.pmed.1002741>
- Melcop, N., von Werder, T., Sarubin, N., & Benecke, A. (2019). The role of psychotherapy in the German health care system: Training requirements for psychological psychotherapists and child and adolescent psychotherapists, legal aspects, and health care implementation. *Clinical Psychology in Europe*, 1, Article e34304. <https://doi.org/10.32872/cpe.v1i4.34304>
- Morgan, A. J., & Jorm, A. F. (2008). Self-help interventions for depressive disorders and depressive symptoms: A systematic review. *Annals of General Psychiatry*, 7, Article 13.
<https://doi.org/10.1186/1744-859X-7-13>
- Murray, C. J. L., Vos, T., Lozano, R., Naghavi, M., Flaxman, A. D., Michaud, C., Ezzati, M., Shibuya, K., Salomon, J. A., Abdalla, S., Aboyans, V., Abraham, J., Ackerman, I., Aggarwal, R., Ahn, S. Y., Ali, M. K., AlMazroa, M. A., Alvarado, M., Anderson, H. R., ... Lopez, A. D. (2012). Disability-adjusted life years (DALYs) for 291 diseases and injuries in 21 regions, 1990-2010: A systematic analysis for the Global Burden of Disease Study 2010. *Lancet*, 380, 2197-2223.
[https://doi.org/10.1016/S0140-6736\(12\)61689-4](https://doi.org/10.1016/S0140-6736(12)61689-4)
- National Institute for Health and Care Excellence (NICE). (2013). *Guide to the methods of technology appraisal 2013*. National Institute for Health and Care Excellence: London. Retrieved from <https://www.nice.org.uk/process/pmg9/chapter/foreword>

- OECD. (2018, November 22). *Hohe Kosten durch psychische Erkrankungen in Europa* [High costs because of mental disorders in Europe] [Press release]
<https://www.oecd.org/berlin/presse/hohe-kosten-durch-psychische-erkrankungen-in-europa-22112018.htm>
- Ogorevc, M., Murovec, N., Fernandez, N. B., & Rupel, V. P. (2019). Questioning the differences between general public vs. patient based preferences towards EQ-5D-5L defined hypothetical health states. *Health Policy*, *123*, 166-172. <https://doi.org/10.1016/j.healthpol.2017.03.011>
- Olsen, J. A., & Donaldson, C. (1998). Helicopters, hearts and hips: Using willingness to pay to set priorities for public sector health care programmes. *Social Science & Medicine*, *46*(1), 1-12.
[https://doi.org/10.1016/S0277-9536\(97\)00129-9](https://doi.org/10.1016/S0277-9536(97)00129-9)
- Peeters, Y., & Stiggelbout, A. M. (2010). Health state valuations of patients and the general public analytically compared: A meta-analytical comparison of patient and population health state utilities. *Value in Health*, *13*, 306-309. <https://doi.org/10.1111/j.1524-4733.2009.00610.x>
- Pennington, M., Baker, R., Brouwer, W., Mason, H., Hansen, D. G., Robinson, A., Donaldson, C., & EuroVaQ Team. (2015). Comparing WTP values of different types of QALY gain elicited from the general public. *Health Economics*, *24*(3), 280-293. <https://doi.org/10.1002/hec.3018>
- Perestelo-Perez, L., Rivero-Santana, A., Sanchez-Afonso, J. A., Perez-Ramos, J., Castellano-Fuentes, C. L., Sepucha, K., & Serrano-Aguilar, P. (2017). Effectiveness of a decision aid for patients with depression: A randomized controlled trial. *Health Expectations*, *20*, 1096-1105.
<https://doi.org/10.1111/hex.12553>
- Philippot, A., Meerschaut, A., Danneaux, L., Smal, G., Bleyenheuft, Y., & De Volder, A. G. (2019). Impact of physical exercise on symptoms of depression and anxiety in pre-adolescents: A pilot randomized trial. *Frontiers in Psychology*, *10*, Article 1820.
<https://doi.org/10.3389/fpsyg.2019.01820>
- Pyne, J. M., Rost, L. M., Zhang, M., Williams, D. K., Smith, J., & Fortney, J. (2003). Cost-effectiveness of a primary care depression intervention. *Journal of General Internal Medicine*, *18*, 432-441.
<https://doi.org/10.1046/j.1525-1497.2003.20611.x>
- Rosenthal, R. (1991). *Meta-analytic procedures for social research* (2nd ed.). SAGE.
<https://doi.org/10.4135/9781412984997>
- Ryen, L., & Svensson, M. (2015). The willingness to pay for a quality adjusted life year: A review of the empirical literature. *Health Economics*, *24*, 1289-1301. <https://doi.org/10.1002/hec.3085>
- Strauß, B. (2009). Patterns of psychotherapeutic practice and professionalization in Germany. *European Journal of Psychotherapy & Counselling*, *11*(2), 141-150.
<https://doi.org/10.1080/13642530902927352>
- Sund, B., & Svensson, M. (2018). Estimating a constant WTP for a QALY—A mission impossible? *The European Journal of Health Economics*, *19*, 871-880.
<https://doi.org/10.1007/s10198-017-0929-z>
- Szende, A., Oppe, M., & Devlin, N. J. (2007). *EQ-5D Value Sets: Inventory, comparative review and user guide*. Springer. <https://doi.org/10.1007/1-4020-5511-0>

- Tsai, J., Huang, M., Wilkinson, S. T., Edelen, C., Rosenheck, R. A., & Holtzheimer, P. E. (2020). A measure to assess perceptions and knowledge about electroconvulsive therapy: Development and psychometric properties. *The Journal of ECT*, 36(1), e1-e6.
<https://doi.org/10.1097/YCT.0000000000000609>
- Versteegh, M. M., & Brouwer, W. B. F. (2016). Patient and general public preferences for health states: A call to reconsider current guidelines. *Social Science & Medicine*, 165, 66-74.
<https://doi.org/10.1016/j.socscimed.2016.07.043>
- Vigo, D. V., Kestel, D., Pendakur, K., Thornicroft, G., & Atun, R. (2019). Disease burden and government spending on mental, neurological, and substance use disorders, and self-harm: Cross-sectional, ecological study of health system response in the Americas. *The Lancet Public Health*, 4, e89-e96. [https://doi.org/10.1016/S2468-2667\(18\)30203-2](https://doi.org/10.1016/S2468-2667(18)30203-2)
- World Health Organization. (2008). *The Global Burden of Disease: 2004 update*.
https://www.who.int/healthinfo/global_burden_disease/GBD_report_2004update_full.pdf?ua=1
- World Health Organization. (2013). *Mental Health Action Plan 2013-2020*.
https://apps.who.int/iris/bitstream/handle/10665/89966/9789241506021_eng.pdf

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Engaging Turkish Immigrants in Psychotherapy: Development and Proof-of-Concept Study of a Culture- Tailored, Web-Based Intervention

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Supplementary Materials: Data, Materials [see [Index of Supplementary Materials](#)]



Abstract

Background: Culturally tailored interventions can increase the engagement and the success rate of psychotherapy in immigrant and ethnic minority patients. In this regard, the integration of the patients' illness beliefs is a key element. Applying principles of Motivational and Ethnographic Interviewing, we developed a culture-tailored, web-based intervention to facilitate engagement of Turkish immigrant inpatients in psychotherapy.

Method: The different aspects of the engagement intervention development are described and its acceptance and usefulness were tested in a proof-of-concept trial with an experimental control group design (active control condition: progressive muscle relaxation) in a sample of Turkish immigrant inpatients in Germany (N = 26). Illness perception, illness-related locus of control, and self-efficacy were assessed pre and post intervention.

Results: The engagement intervention was rated better than the control condition ($p = .002$) and in particular, participants felt better prepared for therapy after working with it ($p = .013$). By working with the engagement intervention, self-efficacy increased ($p = .034$) and external-fatalistic control beliefs diminished ($p = .021$). However, half of the participants needed assistance in using the computer and web-based interventions.



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Conclusion: The developed intervention provides a first step towards feasible culture-tailored psychotherapeutic elements that can be integrated into routine clinical care. The first results regarding acceptance and usefulness are promising.

Keywords

engagement, motivational interviewing, psycho-education, web intervention, cultural tailoring

Highlights

- Culturally tailored psychotherapeutic interventions are more effective than generic ones.
- We explored the use of native language, web-based interventions for ethnic minority patients.
- An engagement intervention facilitated feeling ready for psychotherapy in Turkish immigrants.
- Web-based interventions can address complex themes such as motivational factors and illness beliefs.

Prevalence rates of psychological distress and disorders are higher in many ethnic minority populations than in the general population (Aichberger et al., 2010; de Wit et al., 2008; Sariaslan et al., 2014). Psychotherapy is a well-established and effective treatment for many mental disorders, but its interventions are based in European tradition and may be difficult to embrace for ethnic minorities (Priebe et al., 2011). Reasons for less favorable outcomes might be that socioeconomic stressors that have been reported to negatively impact mental health treatment (e.g. lower education, unemployment) are common among immigrant populations in Europe (Möske et al., 2008; Priebe et al., 2011). Meta-analytical evidence on premature discontinuation of psychotherapy showed that low education, but not ‘race’ (i.e., the proportion of *White* patients) was a predictor of dropout (Swift & Greenberg, 2012). Moreover, conventional psychotherapy may not be sufficiently specific and can be incongruent with the cultural values and worldviews of ethnic minorities (Möske et al., 2008; Priebe et al., 2011). Unfavorable treatment expectations, different expectations about the roles of doctors/ psychotherapists and patients, and a different understanding of illness and treatment have been shown to reduce patient motivation to seek for or engage in psychotherapy (Drieschner et al., 2004; Priebe et al., 2011; Reich et al., 2015). Last but not least, even if language, per se, is not crucial for the successful delivery of culturally appropriate psychotherapy (Benish et al., 2011), the patient must at least have some understanding of what is being said within an intervention. Limited access to interpreting services has been shown to curtail immigrant health care throughout Europe (Priebe et al., 2011).

Fortunately, some of these factors can be addressed: Preparatory interventions in advance of inpatient treatment have been shown to improve knowledge and reduce

tension among patients (Best et al., 2009). Meta-analytic evidence showed that culturally adapted psychotherapy is more effective than unadapted therapy (Hall et al., 2016) and that the extent of cultural adaptation of minimally guided mental health interventions had an effect on intervention efficacy (Harper Shehadeh et al., 2016). The adaptation of the ‘illness myth’ (i.e., the subjective concepts of illness) in particular was the key moderator for a superior outcome (Benish et al., 2011). Patients’ ‘illness myths’ include, among others, treatment expectations and self-efficacy beliefs that influence the motivation for psychotherapy and treatment outcome (Drieschner et al., 2004; Hagger & Orbell, 2003). Both, subjective illness concepts and self-efficacy, can be influenced by psychological interventions such as Motivational Interviewing (Miller & Rollnick, 1991; Petrie & Weinman, 2012). An integration of techniques from Motivational Interviewing (MI) and Ethnographic Interviewing (EI) has been proposed to engage patients from ethnic minorities in psychotherapy (Swartz et al., 2007). MI is a ‘directive, client-centered counseling style for eliciting behavior change by helping clients to explore and resolve ambivalence’ (Miller & Rollnick, 1991). It is effective in a broad range of behavioral problems and diseases (Rubak et al., 2005), and is particularly helpful in clients from ethnic minority groups (Lundahl et al., 2010). Complementing MI, EI focuses on the patient’s cultural background, including perceptions of the world and its nature, values, and faith (Westby, 1990). In this regard, it encourages patients to share their own ‘narrative’, the adaptation of which Benish and colleagues (2011) found to be the key to a superior outcome in culturally adapted psychotherapy.

However, there is a lack of culturally adapted, standardized interventions for immigrant patients (Möske et al., 2008; Priebe et al., 2011). Osilla and colleagues (2012) demonstrated how to develop and deliver a culturally relevant MI intervention successfully on the web. The use of technological platforms is considered as a strategy with great potential to address major barriers to mental healthcare (Rebello et al., 2014). Given the background outlined above, we aimed to design a web-based intervention providing inpatients with information and ideas on how they could benefit from the therapies offered in inpatient treatment. The primary goal was to encourage patients to accept psychotherapy as a culturally appropriate healing practice and thereby increase motivation for psychotherapy. The present study focused on Turkish immigrant inpatients who are among the largest immigrant populations in European countries (European Commission, 2011). Turkish immigrants reported about language problems and difficulties obtaining medical information when hospitalized (Giese et al., 2013) and inpatient treatment for common mental disorders was less successful in Turkish immigrants than in non-migrants (Möske et al., 2008). The aims of our study were twofold: A) to develop a culture-tailored, web-based intervention to facilitate treatment engagement that can be integrated into routine clinical care without major expense, and B) to conduct a proof-of-concept study, testing the acceptance and feasibility of the intervention and its effect on motivation, control beliefs, and illness representations in a randomized controlled pilot trial.

Materials and Method

A) Development of the Engagement Intervention

The engagement intervention was based on MI and EI techniques and developed as a web-based tool in German and Turkish language versions for the use as one session (approx. 50 minutes) within the first two weeks of inpatient treatment for common mental disorders. We chose a bi-lingual, web-based approach to bridge the gap between patients of Turkish origin with poor knowledge of German and the German healthcare system with very scant resources of Turkish-speaking therapists. The engagement and the active control intervention were drafted in German and then fully developed in both languages simultaneously through expert discussion, pilot testing and feedback with the help of five Turkish native speakers (psychotherapists, medical doctors, professional interpreters, and university students of psychology).

Summary of the Contents

The intervention was named *Sağlığa Doğru* (Turkish for 'Path to Health') and was organized into five sections following the structure of the engagement session developed by Swartz and colleagues (2007). At the beginning, a short introduction to the structure and elements of the intervention was given. The first section of *Sağlığa Doğru* addressed individual symptoms, illness beliefs, and social consequences of the illness. The aim for the patients was to feel accepted, understood, taken seriously regarding their individual history, and to achieve a positive general orientation about the inpatient treatment. The second section dealt with the patients' previous treatment experiences, allowing them to specify wishes for the current treatment. The professional help offered in the hospital was introduced as support in addition to the patients' own resources, such as the family. The patients' own resources were thereby validated while the integration of professional mental health care into the patients' support system was facilitated. Educational material about the concept, process, and efficacy of psychotherapy was provided in the next section. Positive outcome expectancies regarding treatment success were encouraged by providing automated feedback using previous information entered by the patients. Section four gave the patients scope to express concerns about their treatment. In addition to practical obstacles (e.g. worries about being away from family during inpatient treatment), psychological and cultural barriers that may hamper participation in the therapy were addressed (e.g. being ashamed of symptoms, being seen as 'crazy'). Feedback was given that such concerns are quite common, and the patients were encouraged to talk about their concerns with their therapist. The aim of the final section was to strengthen the patients' commitment to engage in treatment. After a brief summary of the previous contents, the patients were asked to write down their individual goals for the inpatient treatment as concretely as possible, and what they

could do to achieve them. A structured overview of Sağlığa Doğru is given in [Table 1](#); the script of the engagement intervention is available as [Supplementary Materials](#).

Table 1

Overview of the Engagement Intervention Sağlığa Doğru

Topic of the section	Aims	Central message	Culture-tailored web-MI elements
1. My story	Reflect upon symptoms and their social consequences; learn that therapist is validating and interested in individual story	Your personal view of your illness counts, each disease history is different.	<ul style="list-style-type: none"> Turkish sample patient and therapist talk about symptoms and social consequences in a video. Therapist behaves in a validating and encouraging manner. Patient is asked about his/her most impairing symptom and to check areas of life in which he/she is impaired. Written feedback corresponding to the chosen areas is provided. Patient is asked to write down his/her 'good reason' for therapy ('What do you want to do again after treatment?'). Examples and hints are given.
2. Treatment – what do I already know?	Reflect upon previous treatment experiences and draw conclusions for your current treatment	You can shape your therapy – say what you like and what you don't like!	<ul style="list-style-type: none"> Previous treatment experiences are queried in adapted stages. Questions about personal do's and don'ts for the current treatment based on prior experiences (personal, hearsay, positive or negative nature of experience, personal opinion about psychotherapy). Invitation to express a wish for the treatment. Examples are given; patients are encouraged to tell their practitioners about their wish.
3. Psychotherapy can help	Learn about the efficiency and effectiveness of psychotherapy; see how a psychological model can integrate mixed causal illness attributions	Psychotherapy is an efficient and effective treatment for your disease.	<ul style="list-style-type: none"> Written and graphic material about process and effectiveness of psychotherapy. Video sequence in which the sample patient and the therapist develop a rationale for psychotherapeutic treatment and integrate mixed causal illness attributions (genetic predisposition, family stress, punishment from God, problems dealing with emotions) into a working model for psychotherapeutic interventions. Rating of the personal relevance of causal illness attributions addressed in the video sequence.

Topic of the section	Aims	Central message	Culture-tailored web-MI elements
4. Possible obstacles	Clarify and handle (expected) treatment difficulties	It is normal to have concerns about treatment – talk about them!	<ul style="list-style-type: none"> • Rating of the importance of different practical problems associated with inpatient treatment (e.g. unfamiliar food, difficulties to comply with religious requirements in the inpatient setting). • Video in which the sample therapist asks about the sample patient's concerns regarding treatment. • Rating of the importance of psychological and cultural problems associated with psychotherapy. • Feedback acknowledging the concerns and stimulating courage to talk about them openly with the therapist.
5. Next steps	Commit to engage in treatment and work for individual goals	You can influence the achievement of your goals and improve your health and life.	<ul style="list-style-type: none"> • Open-ended questions about individual goals and actions planned. • Examples from the sample patient.

Motivational Interviewing (MI) and Ethnographic Interviewing (EI) Elements

Sağlığa Doğru was informed by principles of MI and EI. Using open-ended questions and empathic feedback, the patients were asked about their motivation for treatment, their motivation for change, and about their own health history (cf. Table 1, Sections 1, 'My story', and 5, 'Next steps'). Natural resistance to change was integrated into the intervention by actively addressing possible barriers and concerns of the patient without judgment (see Section 4, 'Possible obstacles'). Instead, the patients' concerns were validated by written feedback and they were encouraged to actively talk about these concerns with their therapist. This should facilitate redirection of resistance into an active client behavior in actual therapy sessions. A further goal informed by principles of MI was patient empowerment that constituted a particular aim of Sections 2 and 3 of the intervention. Knowledge about the treatment offered and an evaluation of previous treatment experiences were stimulated, as those formed the basis for informed decision making.

Principles of EI helped us to focus on the cultural background of Turkish immigrants living in Germany, especially their values and faith. We addressed typical values with video sequences of a male Turkish sample patient who talked openly about some issues prevalent in Turkish immigrants (e.g. high relevance of religious beliefs and 'punishment from God' as a causal illness attribution). After watching the video, the participants were asked to rate how relevant the respective attributions or concerns were to them (see Sections 3 and 4, Table 1). Encouragement to tell one's own individual story and to actively talk about one's own illness beliefs was given at various points throughout the intervention.

Culturally Adapted Elements

In order to plan and evaluate the cultural adaptations, we used the parameters suggested by [Hinton and Jalal \(2014\)](#) to create culturally sensitive CBT interventions, i.e., identifying the cultural group, culturally appropriate framing of CBT techniques, identifying and addressing key stressors, and incorporating key local sources of recovery and resilience. *Sağlığa Doğru* was culturally adapted in terms of its surface structure, e.g., the use of the native language and an ethnically matched therapist, as well as its deep structure, involving the incorporation of cultural ideas, beliefs, and values ([Heim & Kohrt, 2019](#)). Surface structure adaptations included the Turkish name *Sağlığa Doğru* that was used in all presentations and materials (also the German ones). Moreover, we provided a complete Turkish language version, for which idiomatic expressions and German standard terms were carefully translated. In addition, names and identities of sample patient and therapist were informed by Turkish immigrants living in Germany. For instance, a high relevance of the family and religion were taken into account. Comprehensibility for persons with low literacy was also an important goal, as many Turkish immigrants in Germany had a poor educational background. Therefore, as much information as possible was delivered using video, audio, or graphics, and sentences were kept short and grammatically simple.

Deep structure adaptations were made regarding the ingredients of psychotherapy that make it a culturally accepted ‘healing practice’: A trusting relationship between patient and therapist was modeled in video sequences by a female therapist and a male sample patient both originating from Turkey, aimed to help the patient to identify with the intervention and its contents. The therapist embedded in the program gave meaningful feedback and comprehensive information in order to foster the image of a capable ‘healer’. A common rationale for illness was developed by way of example in a video session, in which we integrated a broad variety of causal illness attributions that have been shown to be culturally relevant ([Minas et al., 2007](#); [Reich et al., 2015](#)). To strengthen confidence in the effectiveness of psychotherapy, general information was provided in conjunction with a case vignette as an example of a patient with a Turkish migration background who got better following psychotherapy.

Active Control Condition

The active control intervention consisted of an applied progressive muscle relaxation (PMR) with a duration of approx. half an hour (see [Table 3](#)). The structure of the PMR was harmonized with *Sağlığa Doğru* and offered through a web-based platform with the same content management system. The design was interactive and patients were addressed directly. In videos, the same sample patient as in *Sağlığa Doğru* gave illustrative information and examples and reported on his experience with the relaxation process. After introducing the content and structure of the intervention, the purpose and principles of the muscle and breathing relaxation were explained in the first section. In

addition, the participant could select answers to related questions regarding the relaxation technique. In section two, 'My muscle and breathing relaxation', the participant was given the opportunity to participate in a 15-minute PMR audio relaxation session with specific instructions. Then, the participants were asked about their positive and negative experiences with the relaxation, with the sample patient providing example answers. The program concluded with further information and suggestions on how to transfer the relaxation exercise to everyday life.

B) Proof-Of-Concept Study

Participants and Setting

The institutional review board of the Department of Psychology, Marburg University, Germany, gave ethics approval to the study protocol. All participants provided written informed consent.

The study was based on an experimental control group design (see [Figure 1](#)) to test the feasibility and usefulness of the culture-tailored, web-based engagement intervention described above. Participants were recruited between August 2013 and March 2014 in two psychiatric hospitals in the Federal State of Hessen, Germany. We included adult inpatients with a Turkish migration background and an ICD-10 F3 or F4 principal diagnosis (depressive, somatoform, anxiety, or adjustment disorder) in their first or second week of treatment. Migration background was categorized as present when one or both parents were not born in Germany ([Schenk et al., 2006](#)). Patients with bipolar disorders, acute psychosis, substance abuse disorders, neurodegenerative diseases, and a primary diagnosis of eating disorders were excluded.

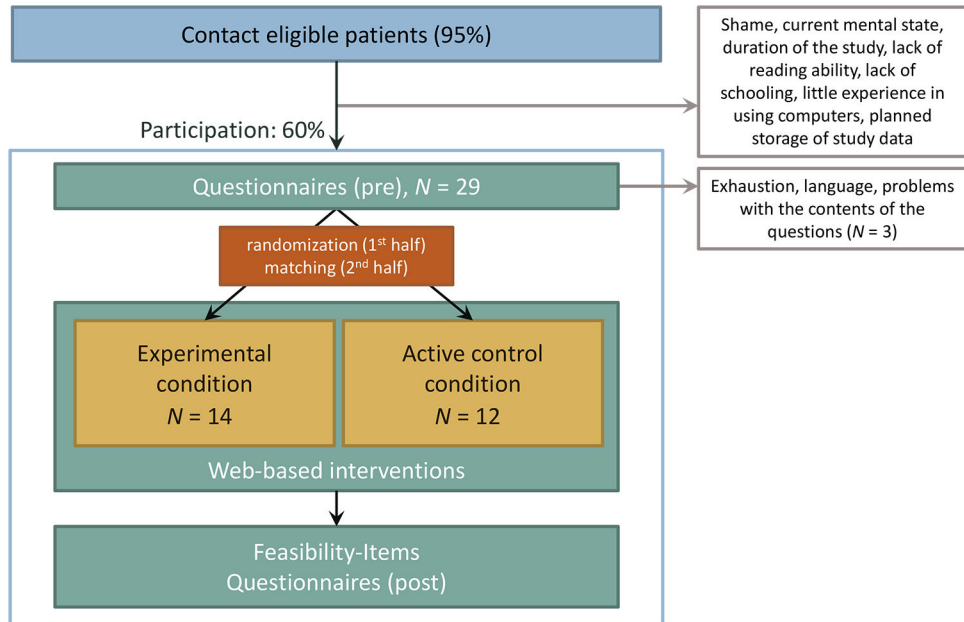
During the study period, nearly all eligible patients were contacted (about 95%; see [Figure 1](#)). About 60% of the contacted patients participated in the study. Self-reported reasons for non-participation included shame, the current mental state, the duration of the study, lack of reading ability or lack of schooling, little experience in using computers, and the planned storage of study data. During the first half of the study period, participants were randomly assigned to the experimental conditions (engagement intervention or active control intervention). In the second half, groups were gender-matched to prevent a bias in the results due to an unequal gender distribution and increase internal validity of the study. Three patients dropped out shortly after the initiation of the trial. Reasons for discontinuation were exhaustion, as well as language difficulties and problems with the contents of the questions. The final total study sample comprised $N = 26$ inpatients.

We hypothesized that patients working with Sađlđga Dođru were going to feel better prepared for therapy and be more strongly motivated to engage in therapy than those working with the PMR, and that personal and treatment control beliefs as well as self-efficacy would be stronger after using the engagement intervention than before, while

external-fatalistic control beliefs and threatening illness perceptions would diminish after using Sağlık Dođru.

Figure 1

Study Design and Flow Chart



Process of the Study Trial

Participants could choose their preferred language, as all instruments and both interventions were provided in German and Turkish. They completed all questionnaires and the intervention on a computer in the presence of a bilingual research assistant (D.Z.). The research assistant was ready to provide help at any time, while paying attention to ensure standardized test conditions. Written instructions were given for the individual parts of the study. The participants could take a break or discontinue assessments at any time without any consequences. To make participation less taxing, all questionnaires (see below) were completed in a morning session. In the afternoon, participants worked with the intervention, provided feasibility feedback, and completed the questionnaires for the post-assessment.

Measures

Clinical diagnoses were reported by the treating physician or psychologist after receiving written consent. Socio-demographics, migration-related characteristics, and dimen-

sional psychopathology (see [Supplementary Materials](#)) were assessed at the beginning. Questionnaires about illness concept and self-efficacy (Brief IPQ, IPQ-R Personal and Treatment Control Scales, KKG External-fatalistic Control Scale, and SWE) were applied before and after the interventions. Questions regarding acceptance and feasibility were completed at the end of the interventions. All self-rating questionnaires were provided on a computer in German or Turkish according to the participants' choice.

The Brief Illness Perception Questionnaire (Brief IPQ) – The Brief IPQ (nine items) assesses the cognitive and emotional representations of illness ([Broadbent et al., 2006](#)). Response options range from 0 to 10 with labeled endpoints. Item 9 (illness causes) has an open response format and was not used in this study. Sum scores range from 0 to 80, with higher scores indicating a more pessimistic and threatening illness representation. [Broadbent and colleagues \(2006\)](#) demonstrated its validity and reliability. Turkish and German versions of the Brief IPQ were available ([Weinman et al., 2012](#)).

The Revised Illness Perception Questionnaire (IPQ-R) – The IPQ-R scales 'Personal Control' (six items) and 'Treatment Control' (five items) ([Moss-Morris et al., 2002](#)) were used to assess the individual's assumed self-efficacy and efficacy of treatments, respectively, for controlling the disorder. Response options range from 1 ('strongly disagree') to 5 ('fully agree'). High values indicate high controllability of the disorder by the respective domain. Reliability and validity of the IPQ-R have been confirmed repeatedly (e.g. [Moss-Morris et al., 2002](#)). German and Turkish versions of the IPQ-R were available online ([Weinman et al., 2012](#)).

Locus of Control Inventory for Illness and Health (KKG) – The KKG scale 'External-fatalistic control' ([Lohaus & Schmitt, 1989](#)) captured the extent to which a patient is convinced that his/her complaints depend on chance, fate, or luck. Its seven items are answered from 1 ('not at all') to 6 ('fully agree'); sum scores range from 7 to 42. Higher values indicate a higher conviction of external-fatalistic control of the illness. Acceptable reliability and validity has been shown ([Lohaus & Schmitt, 1989](#)). As no Turkish version was available, it was translated following the forward-backward-translation method ([Brislin, 1970](#)).

Generalized Self-Efficacy Scale (SWE) – Based on ten items, the SWE ([Schwarzer & Jerusalem, 1995](#)) measures an optimistic anticipation of one's competence to cope with a situation successfully. It shows convincing evidence of validity and good psychometric properties ([Luszczynska et al., 2005](#)). Response options range from 1 ('not at all true') to 4 ('exactly true') and sum scores range from 10 to 40. The reliability of the German ([Jerusalem & Schwarzer, 1999](#)) and Turkish version ([Yeşilay et al., n.d.](#)) was satisfactory ([Luszczynska et al., 2005](#)).

Acceptance and Feasibility — At the end of the interventions, patients provided their global evaluation of the interventions by rating them on a scale from 0 to 10, with higher values indicating a better rating. Subsequently, they answered to four items ('Are you motivated to engage in therapy?', 'After using the tool, do you feel better prepared for therapy?', 'Would you recommend this tool to other patients?', and 'Was the tool easy to handle?') on a rating scale ranging from 0 'no, not at all' to 10 'yes, absolutely'. The research assistant noted whether participants used the computer and the interventions without assistance and how much time participants spent using the interventions.

Statistical Analyses

The distribution of continuous variables was assessed for normality using Q-Q plots. One univariate outlier was detected: one participant reported 17 years of education because of his university degree. Since all other participants had reported 2-12 years of schooling, his value was replaced with the maximum schooling duration (i.e. 12 years). Univariate normality was assessed with Shapiro-Wilk tests and confirmed for all variables except for 'German language proficiency', most feasibility variables (see Table 3), and self-efficacy (SWE pre and post). Homoscedasticity was inspected visually via box-plots and tested statistically with Bartlett's test for normally distributed variables or Fligner-Killeen test for non-parametric variables. For all variables, homoscedasticity was confirmed (all $p > .05$), with the exception of treatment control pre ($p = .049$).

First, the experimental groups were compared regarding socio-demographic, clinical, and feasibility variables. Discrete variables were coded dichotomously and their distribution was checked with 2x2 cross tables. Group differences were assessed using a χ^2 test or Fischer's exact test in the case of cells with a count less than 5. For sample comparisons in continuous variables (see Table 2 and Table 3), t -tests for normally distributed variables and Mann-Whitney-Wilcoxon U tests for nonparametric variables were applied. Then, the effectivity of the engagement intervention in comparison to the active control intervention with regard to treatment-related variables was analyzed using analyses of variance (ANOVAs) for repeated measures with time (pre vs. post) as within-subjects-factor and experimental group (engagement intervention vs. active control intervention) as between-subjects-factor for each variable. Since self-efficacy (SWE) was not normally distributed, an equivalent nonparametric analysis was conducted additionally using the package nparLD in R (Noguchi et al., 2012). For the group that had worked with the engagement intervention, contrast analyses (one-sided t -tests for dependent samples: pre vs. post / Wilcoxon signed rank test with continuity correction) were carried out to differentiate whether the observed effects originated from an improvement through the use of the engagement intervention, and were not merely due to variations in the active control condition.

Table 2*Study Sample Characteristics*

Variable	Active control intervention (N = 12)	Engagement intervention (N = 14)	Test statistic
Socio-demographic characteristics			
Age in years	36-59, 48.6 (7.3)	38-58, 47.8 (5.5)	$t(20) = -0.31, p = .76$
Female sex	6 (50)	7 (50)	$\chi^2(1) = 0, p = 1$
Education in years	2-11, 6.8 (2.7)	4-12, 7.4 (2.7)	$t(23) = 0.71, p = .48$
Being employed ^a	6 (50)	10 (71.4)	$OR = 2.4 [0.4;17.2], p = .42$
Migration-related characteristics			
Years since immigration ^b	9-40, 30.8 (9.6)	17-43, 28.1 (7.4)	$t(16) = -0.75, p = .46$
German language proficiency ^c	1-4, 3.1 (0.9)	2-5, 3.4 (0.8)	$U = 98.5, p = .43$
Clinical characteristics (categorical)			
Depressive disorder	9 (75.0)	11 (78.6)	$OR = 1.2 [0.1;11.4], p = 1$
Somatoform disorder	2 (16.7)	2 (14.3)	$OR = 0.8 [0.1;13.4], p = 1$
Stress or adjustment disorder	1 (8.3)	1 (7.1)	$OR = 0.9 [0.1;72.3], p = 1$
Comorbid disorders	10 (83.3)	8 (57.1)	$OR = 0.3 [0.02;2.2], p = .22$

Note. For continuous variables, minimum to maximum, mean and standard deviation are given. For discrete variables, the frequency and percentage rates are given.

^aWorking part-time or full-time. ^b $n = 2$ participants in the active control group were born in Germany and are not included here. ^cSelf-reported German language proficiency (1 = very good, 5 = none).

Effect sizes and 95% confidence intervals (as far as available) are reported for all feasibility variables and treatment-related measures. For normally distributed variables, Cohen's d was calculated; a value of .2 was considered a small effect, .5 a medium effect, and .8 a large effect. Cliff's d was used for non-parametric continuous variables. Cliff's d ranges between -1 and 1, with 0 indicating no effect; $|d| < 0.147$ was considered a negligible effect, $|d| < 0.33$ small, $|d| < 0.474$ medium, and otherwise a large effect. Generalized eta squared (η_G^2) was given as a measure of effect size for the ANOVAs described above; an η_G^2 of .02 was considered a small effect, .13 a medium effect, and one of .26 as large. Φ was calculated as a measure of effect size for discrete feasibility variables. A value of $\Phi = .1$ was considered a small effect, .3 a medium effect, and .5 a large effect.

The significance level was set at $\alpha = .05$; a p -value $< .10$ was considered a statistical trend and also reported in the results section. With respect to ANOVAs with repeated measures, only statistically significant effects were reported in the results section; all F - and p -values can be obtained as [Supplementary Materials](#). Statistical analyses were conducted using R version 3.5.0 (R Development Core Team, 2008).

Results

Participants

The sample consisted of $N = 26$ Turkish immigrant inpatients (see Table 2). The mean age was 48 ± 6 years, and 50% of the participants were female. On average, participants had received 7 ± 3 years of schooling and approximately 60% were employed in a part-time or full-time job. Self-reported German language proficiency was moderate, even though 29 ± 8 years had passed since immigration and two participants were born in Germany. The most frequent main diagnosis was depression (77%), followed by somatoform disorder (15%), and stress or adjustment disorder (8%). About 70% of participants had one or more comorbid diagnoses. There were no statistically significant differences between the experimental groups in terms of socio-demographic and clinical characteristics.

Acceptance and Feasibility

The overall rating for Sağlık Doğru was better than that for the PMR and participants working with Sağlık Doğru felt better prepared for therapy (see Table 3). Participants in both groups showed statistically similar levels of motivation to engage in therapy and willingness to recommend their tool to other patients.

Table 3

Acceptance and Feasibility of the Interventions

Variable	Active control intervention ^b	Engagement intervention ^c	Test statistic	Effect size [95% CI]
Overall rating	5.3 (2.5)	8.4 (1.6)	$t(18) = 3.63, p = .002$	Cohen's $d = 1.48$ [0.55; 2.41]
'Are you motivated to engage in therapy?'	8.1 (2.5)	8.7 (1.7)	$U = 86.5, p = .65$	Cliff's $d = .11$ [-.34; .51]
'After using the tool, do you feel better prepared for therapy?'	3.6 (3.1)	7.0 (2.6)	$U = 115, p = .013$	Cliff's $d = .60$ [.10; .86]
'Would you recommend this tool to other patients?'	7.2 (2.8)	7.9 (2.1)	$U = 94, p = .62$	Cliff's $d = .12$ [-.33; .53]
'Was the tool easy to handle?'	8.0 (2.7)	9.4 (1.1)	$U = 21.5, p = .50$	Cliff's $d = .23$ [-.45; .74]
Use of the intervention without assistance [N (%)]	5 (45.5)	7 (50)	$\chi^2(1) = 0.0009, p = .98$	$\phi = 0.08$
Time working with the intervention (minutes)	31.7 (6.8)	49.6 (6.9)	$t(23) = 6.34, p < .001$	Cohen's $d = 2.61$ [1.51; 3.71]

Note. Unless otherwise indicated, M (SD) are presented. Rating scales ranged from 0 'no, not at all' to 10 'yes, absolutely'.

^aOnly participants that used the intervention without assistance. ^b $N = 12$. ^c $N = 14$.

Only half of the participants were able to use the interventions without assistance, regardless of the experimental condition. However, those who used the interventions by themselves indicated that they were very easy to handle. Participants worked approximately 28 minutes longer with Sağlığa Doğru than with the PMR.

Illness Perception and Self-Efficacy

Brief IPQ threatening illness perceptions decreased on a descriptive level after using Sağlığa Doğru as expected, while there was no change in the PMR-condition. The contrast analysis confirmed a statistical trend in the expected direction (Cohen's $d = -0.43$, see Table 4). After using Sağlığa Doğru, beliefs in personal (Cohen's $d = 0.34$) and treatment control (Cohen's $d = 0.20$) increased, and beliefs in external-fatalistic control decreased significantly (Cohen's $d = -0.60$). Self-efficacy increased after working with Sağlığa Doğru, while it decreased after working with the PMR with a small and statistically significant effect for the group*time interaction ($\eta_G^2 = 0.024$) that was confirmed by the nonparametric approach (Wald-type and ANOVA-type test statistic = 7.432, $df = 1$, $p = .006$). The contrast analyses confirmed a small effect and a statistically significant increase in self-efficacy after using Sağlığa Doğru (Cliff's $d = 0.22$).

Table 4

Usefulness of the Engagement Intervention Regarding Treatment-Related Variables

Variable	Active control intervention ^a		Engagement intervention ^b		ANOVA (group*time interaction) ^c		Contrast analyses ^d	
	Pre	Post	Pre	Post	Test statistic	η_G^2	Test statistic	d [95% CI] ^e
Illness concept (Brief-IPQ)	58.7 (8.5)	58.6 (7.6)	60.3 (6.0)	57.0 (7.5)	$F_{(1, 24)} = 1.18, p = .288$	0.012	$t_{(13)} = 1.62, p = .065$	-0.43 [-1.22; 0.35]
Personal control (IPQ-R)	17.3 (2.1)	16.7 (3.9)	17.4 (3.9)	18.8 (4.1)	$F_{(1, 24)} = 2.27, p = .145$	0.020	$t_{(13)} = -1.36, p = .111$	0.34 [-0.44; 1.13]
Treatment control (IPQ-R)	14.7 (2.8)	14.9 (3.6)	15.8 (5.1)	16.7 (4.9)	$F_{(1, 24)} = 0.17, p = .683$	0.001	$t_{(13)} = -0.74, p = .236$	0.20 [-0.58; 0.98]
External-fatalistic control (KKG)	17.0 (6.3)	18.8 (7.1)	16.8 (6.4)	15.0 (6.9)	$F_{(1, 24)} = 3.94, p = .059$	0.019	$t_{(13)} = 2.26, p = .021$	-0.60 [-1.40; 0.19]
Self-efficacy (SWE)	15.7 (4.1)	14.6 (3.8)	17.4 (6.4)	19.9 (8.2)	$F_{(1, 24)} = 6.81, p = .015$	0.024	$V = 15.5, p = .034$	0.22 [-0.24; 0.60]

Note. M (SD) are presented.

^a $N = 12$. ^b $N = 14$. ^cAll main effects for group and time were statistically not significant in ANOVA and are not shown. ^dPre-post comparison for the engagement intervention group only (see Statistics section). ^eCohen's d for normally distributed data, Cliff's d for SWE (not normally distributed).

Discussion

Our work aimed at developing and piloting a culture-tailored intervention assisting Turkish immigrant inpatients to engage in psychotherapeutic treatment. In a proof-of-concept study, this intervention was rated better than an active control intervention, in particular concerning a better preparedness for psychotherapy. Self-efficacy and personal and treatment control beliefs improved through working with Sağlığa Dođru, while threatening illness perceptions and external-fatalistic control beliefs diminished.

Multicultural, web-based MI interventions have received positive feedback before, particularly regarding less shame, embarrassment, and discomfort compared to face-to-face group interventions (Osilla et al., 2012). Our study demonstrated that a web-based intervention is applicable even in a group of relatively low-educated immigrants, but the pilot trial showed that half of the sample was unable to use the computer and the web-based interventions on their own. We assume that the recruitment strategy of the current study (i.e., approaching potential participants in-person during specialized inpatient treatment for Turkish migrants) resulted in a sample that was potentially older and less digitally literate than participants who are typically included into randomized controlled trials, particularly into trials on web-based and app-based interventions with inclusion criteria such as having access to the internet (e.g., Heim et al., 2020). Understanding this barrier to implementation could be addressed by an even more rigorous emphasis on user-centered design for the target population (Burchert et al., 2019) or through task-sharing with Turkish-speaking non-therapists (e.g. nursing staff) assisting patients with low technical or digital literacy (Rebello et al., 2014).

The improvements in self-efficacy and personal control beliefs indicate the engagement intervention's capability to strengthen the belief in one's own coping abilities. The beliefs that health depends on chance, fate, or luck diminished after working with Sağlığa Dođru. However, even though the illness perception was *less* threatening, it remained in the range of a rather pessimistic and threatening concept of disease. It has been shown previously that a threatening illness perception was associated with poor psychological health and low motivation for psychotherapy (Petrie & Weinman, 2012). While this highlights the relevance of Sağlığa Dođru, it also suggests that continuous work is needed to achieve longer lasting changes in illness perception (Petrie et al., 2012).

Limitations

This proof-of-concept study comprised a small sample, limiting the generalizability of the present findings. Only 60% of patients were willing to participate in the study, implying that participant burden due to study duration and concerns about data storage were relevant barriers towards participation. German and Turkish language versions of questionnaires and interventions were provided to the participants ad libitum, including the options to switch between language versions and use both versions. This approach was

well received and facilitated participation but tracking of the use of language versions was not possible within the system and hence, no further analysis could be undertaken regarding language use. For most Turkish-language versions of the questionnaires, psychometric properties, cultural validity, and measurement equivalence with the German versions have not been established to a satisfactory degree, which might compromise reliability and validity of the findings regarding treatment-related variables. Contrast analyses were carried out to give a first impression of the effect of the engagement intervention on treatment-related variables, but effects need to be replicated in larger trials since statistical power was, at best, acceptable due to the small sample size. Wide confidence intervals containing zero point out that the estimates are imprecise and cannot be readily transferred to a population level. The intervention material included no female sample patient. Therefore, the identification with the (male) sample patient might have differed between male and female participants.

Conclusions

The present proof-of-concept study gave an example of how to adapt psychoeducational information and foster treatment engagement in Turkish immigrant inpatients in a one-session, web-based intervention. While we found promising first results, the effect of the engagement intervention on actual treatment engagement and treatment outcome is still to be evaluated. Further evaluation is also needed regarding whether a one-session intervention is sufficient, or whether more sessions are necessary to create a reliable effect regarding treatment engagement. The evident limitations notwithstanding, this study provided a novel approach to fostering the engagement of an immigrant population in psychotherapy. It might encourage the further development and application of culturally tailored, web-based treatment elements which facilitate the delivery of psychotherapy or single techniques (e.g., PMR as a relaxation technique). Treatment enhancement by web-based interventions can add language and cultural resources in a scalable way and bridge gaps in the field of immigrant and minority psychotherapy. Clinical applications may be realized for immigrant and minority patients undergoing professional treatment to increase readiness for and thereby effectiveness of psychotherapy. Further applications can be envisioned to facilitate the uptake of professional treatment by using culturally tailored, web-based interventions to bridge gaps in mental health literacy and foster openness for psychotherapy in the most vulnerable populations (e.g. asylum seekers and refugees (Böttche et al., 2021), as well as other socio-economic disadvantaged groups, or adolescents and young adults).

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Competing Interests: The authors have declared that no competing interests exist.

Data Availability: All data, analytic methods, and study materials are available to other researchers and can be obtained from PsychArchives as Supplementary Materials to this article (Reich, Zürn, & Mewes, 2021a, 2021b).

Supplementary Materials

The Supplementary Materials include the Turkish and German versions of the Sağlığa Doğru intervention script, additional analyses of the sample characteristics using self-report measures for dimensional psychopathology, test statistics for main effects (Table 4), and the full dataset including a codebook (for access see [Index of Supplementary Materials](#) below).

Index of Supplementary Materials

- Reich, H., Zürn, D., & Mewes, R. (2021a). *Supplementary materials to "Engaging Turkish immigrants in psychotherapy: Development and proof-of-concept study of a culture-tailored, web-based intervention"* [Research data]. PsychOpen GOLD. <https://doi.org/10.23668/psycharchives.5156>
- Reich, H., Zürn, D., & Mewes, R. (2021b). *Supplementary materials to "Engaging Turkish immigrants in psychotherapy: Development and proof-of-concept study of a culture-tailored, web-based intervention"* [Additional information]. PsychOpen GOLD. <https://doi.org/10.23668/psycharchives.5155>

References

- Aichberger, M. C., Schouler-Ocak, M., Mundt, A., Busch, M. A., Nickels, E., Heimann, H. M., Ströhle, A., Reischies, F. M., Heinz, A., & Rapp, M. A. (2010). Depression in middle-aged and older first generation migrants in Europe: Results from the Survey of Health, Ageing and Retirement in Europe (SHARE). *European Psychiatry*, 25(8), 468-475. <https://doi.org/10.1016/j.eurpsy.2009.11.009>
- Benish, S. G., Quintana, S., & Wampold, B. E. (2011). Culturally adapted psychotherapy and the legitimacy of myth: A direct-comparison meta-analysis. *Journal of Counseling Psychology*, 58(3), 279-289. <https://doi.org/10.1037/a0023626>

- Best, M., Lange, M., Karpinski, N., Hessel, A., Söpper-Terborg, B., Sieling, W., & Petermann, F. (2009). Psychosomatic rehabilitation: Effects of pre-treatment counselling under the statutory pension insurance scheme. *Die Rehabilitation*, 48(5), 283-287.
<https://doi.org/10.1055/s-0029-1239544>
- Böttche, M., Kampisiou, C., Stammel, N., El-Haj-Mohamad, R., Heeke, C., Burchert, S., Heim, E., Wagner, B., Renneberg, B., Böttcher, J., Glaesmer, H., Gouzoulis-Mayfrank, E., Zieselak, J., Konnopka, A., Murray, L., & Knaevelsrud, C. (2021). From formative research to cultural adaptation of a face-to-face and internet-based cognitive-behavioural intervention for Arabic-speaking refugees in Germany. *Clinical Psychology in Europe*, 3(Special Issue), Article e4623.
<https://doi.org/10.32872/cpe.4623>
- Brislin, R. W. (1970). Back-translation for cross-cultural research. *Journal of Cross-Cultural Psychology*, 1(3), 185-216. <https://doi.org/10.1177/135910457000100301>
- Broadbent, E., Petrie, K. J., Main, J., & Weinman, J. (2006). The Brief Illness Perception Questionnaire. *Journal of Psychosomatic Research*, 60(6), 631-637.
<https://doi.org/10.1016/j.jpsychores.2005.10.020>
- Burchert, S., Alkneime, M. S., Bird, M., Carswell, K., Cuijpers, P., Hansen, P., Heim, E., Shehadeh, M. H., Sijbrandij, M., Van't Hof, E., & Knaevelsrud, C. (2019). User-centered app adaptation of a low-intensity e-mental health intervention for Syrian refugees. *Frontiers in Psychiatry*, 9, Article 663. <https://doi.org/10.3389/fpsy.2018.00663>
- de Wit, M. A. S., Tuinebreijer, W. C., Dekker, J., Beekman, A.-J. T. F., Gorissen, W. H. M., Schrier, A. C., Penninx, B. W. J. H., Komproe, I. H., & Verhoeff, A. P. (2008). Depressive and anxiety disorders in different ethnic groups: A population based study among native Dutch, and Turkish, Moroccan and Surinamese migrants in Amsterdam. *Social Psychiatry and Psychiatric Epidemiology*, 43(11), 905-912. <https://doi.org/10.1007/s00127-008-0382-5>
- Drieschner, K. H., Lammers, S. M. M., & van der Staak, C. P. F. (2004). Treatment motivation: An attempt for clarification of an ambiguous concept. *Clinical Psychology Review*, 23(8), 1115-1137.
<https://doi.org/10.1016/j.cpr.2003.09.003>
- European Commission. (2011). *Migrants in Europe: A statistical portrait of the first and second generation*. Publications Office of the European Union.
<https://doi.org/10.2785/5318><https://doi.org/10.2785/5318>
- Giese, A., Uyar, M., Uslucan, H. H., Becker, S., & Henning, B. F. (2013). How do hospitalised patients with Turkish migration background estimate their language skills and their comprehension of medical information – A prospective cross-sectional study and comparison to native patients in Germany to assess the language barrier. *BMC Health Services Research*, 13, Article 196.
<https://doi.org/10.1186/1472-6963-13-196>
- Hagger, M. S., & Orbell, S. (2003). A meta-analytic review of the common-sense model of illness representations. *Psychology & Health*, 18(2), 141-184.
<https://doi.org/10.1080/088704403100081321>

- Hall, G. C. N., Ibaraki, A. Y., Huang, E. R., Marti, C. N., & Stice, E. (2016). A meta-analysis of cultural adaptations of psychological interventions. *Behavior Therapy, 47*(6), 993-1014. <https://doi.org/10.1016/j.beth.2016.09.005>
- Harper Shehadeh, M., Heim, E., Chowdhary, N., Maercker, A., & Albanese, E. (2016). Cultural adaptation of minimally guided interventions for common mental disorders: A systematic review and meta-analysis. *JMIR Mental Health, 3*(3), Article e44. <https://doi.org/10.2196/mental.5776>
- Heim, E., Burchert, S., Shala, M., Kaufmann, M., Cerga Pashoja, A., Morina, N., Schaub, M. P., Knaevelsrud, C., & Maercker, A. (2020). *Effect of cultural adaptation of a smartphone-based self-help programme on its acceptability and efficacy: Study protocol for a randomized controlled trial*. PsychArchives. <https://doi.org/10.23668/PSYCHARCHIVES.3152>
- Heim, E., & Kohrt, B. A. (2019). Cultural adaptation of scalable psychological interventions: A new conceptual framework. *Clinical Psychology in Europe, 1*(4), Article e37679. <https://doi.org/10.32872/cpe.v1i4.37679>
- Hinton, D. E., & Jalal, B. (2014). Parameters for creating culturally sensitive CBT: Implementing CBT in global settings. *Cognitive and Behavioral Practice, 21*(2), 139-144. <https://doi.org/10.1016/j.cbpra.2014.01.009>
- Jerusalem, M., & Schwarzer, R. (1999). *Skalen zur Erfassung von Lehrer- und Schülermerkmalen. Dokumentation der psychometrischen Verfahren im Rahmen der Wissenschaftlichen Begleitung des Modellversuchs Selbstwirksame Schulen*. Freie Universität Berlin.
- Lohaus, A., & Schmitt, G. M. (1989). *Fragebogen zur Erhebung von Kontrollüberzeugungen zu Krankheit und Gesundheit (KKG) – Handanweisung*. Hogrefe-Verlag.
- Lundahl, B. W., Kunz, C., Brownell, C., Tollefson, D., & Burke, B. L. (2010). A meta-analysis of motivational interviewing: Twenty-five years of empirical studies. *Research on Social Work Practice, 20*(2), 137-160. <https://doi.org/10.1177/1049731509347850>
- Luszczynska, A., Gutiérrez-Doña, B., & Schwarzer, R. (2005). General self-efficacy in various domains of human functioning: Evidence from five countries. *International Journal of Psychology, 40*(2), 80-89. <https://doi.org/10.1080/00207590444000041>
- Miller, W. R., & Rollnick, S. (1991). *Motivational interviewing: Preparing people to change addictive behavior*. The Guilford Press.
- Minas, H., Klimidis, S., & Tuncer, C. (2007). Illness causal beliefs in Turkish immigrants. *BMC Psychiatry, 7*, Article 34. <https://doi.org/10.1186/1471-244X-7-34>
- Möske, M., Schneider, J., Koch, U., & Schulz, H. (2008). Does a Turkish migration background influence treatment outcome? Results of a prospective inpatient healthcare study. *Psychotherapie, Psychosomatik, Medizinische Psychologie, 58*(3-4), 176-182.
- Moss-Morris, R., Weinman, J., Petrie, K., Horne, R., Cameron, L., & Buick, D. (2002). The Revised Illness Perception Questionnaire (IPQ-R). *Psychology & Health, 17*(1), 1-16. <https://doi.org/10.1080/08870440290001494>

- Noguchi, K., Gel, Y. R., Brunner, E., & Konietzschke, F. (2012). nparLD: An R software package for the nonparametric analysis of longitudinal data. *Journal of Statistical Software*, *50*(12), 1-23. <https://doi.org/10.18637/jss.v050.i12>
- Osilla, K. C., D'Amico, E. J., Díaz-Fuentes, C. M., Lara, M., & Watkins, K. E. (2012). Multicultural web-based motivational interviewing for clients with a first-time DUI offense. *Cultural Diversity & Ethnic Minority Psychology*, *18*(2), 192-202. <https://doi.org/10.1037/a0027751>
- Petrie, K. J., Perry, K., Broadbent, E., & Weinman, J. (2012). A text message programme designed to modify patients' illness and treatment beliefs improves self-reported adherence to asthma preventer medication. *British Journal of Health Psychology*, *17*(1), 74-84. <https://doi.org/10.1111/j.2044-8287.2011.02033.x>
- Petrie, K. J., & Weinman, J. (2012). Patients' perceptions of their illness: The dynamo of volition in health care. *Current Directions in Psychological Science*, *21*(1), 60-65. <https://doi.org/10.1177/0963721411429456>
- Priebe, S., Sandhu, S., Dias, S., Gaddini, A., Greacen, T., Ioannidis, E., Kluge, U., Krasnik, A., Lamkaddem, M., Lorant, V., Puigpinósi Riera, R., Sarvary, A., Soares, J. J. F., Stankunas, M., Straßmayr, C., Wahlbeck, K., Welbel, M., & Bogic, M. (2011). Good practice in health care for migrants: Views and experiences of care professionals in 16 European countries. *BMC Public Health*, *11*(1), Article 187. <https://doi.org/10.1186/1471-2458-11-187>
- R Development Core Team. (2008). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing. <http://www.r-project.org>
- Rebello, T. J., Marques, A., Gureje, O., & Pike, K. M. (2014). Innovative strategies for closing the mental health treatment gap globally. *Current Opinion in Psychiatry*, *27*(4), 308-314. <https://doi.org/10.1097/YCO.000000000000068>
- Reich, H., Bockel, L., & Mewes, R. (2015). Motivation for psychotherapy and illness beliefs in Turkish immigrant inpatients in Germany: Results of a cultural comparison study. *Journal of Racial and Ethnic Health Disparities*, *2*(1), 112-123. <https://doi.org/10.1007/s40615-014-0054-y>
- Rubak, S., Sandbæk, A., Lauritzen, T., & Christensen, B. (2005). Motivational interviewing: A systematic review and meta-analysis. *The British Journal of General Practice*, *55*(513), 305-312.
- Sariaslan, S., Morawa, E., & Erim, Y. (2014). Mental distress in primary care patients: German patients compared with patients of Turkish origin. *Der Nervenarzt*, *85*(5), 589-595. <https://doi.org/10.1007/s00115-013-3767-y>
- Schenk, L., Bau, A. M., Borde, T., Butler, J., Lampert, T., Neuhauser, H., Razum, O., & Weilandt, C. (2006). Mindestindikatoren zur Erfassung des Migrationsstatus [Minimum set of indicators for measuring the migration status]. *Bundesgesundheitsblatt, Gesundheitsforschung, Gesundheitsschutz*, *49*(9), 853-860. <https://doi.org/10.1007/s00103-006-0018-4>
- Schwarzer, R., & Jerusalem, M. (1995). Generalized self-efficacy scale. In M. Johnston, S. C. Wright, & J. Weinman (Eds.), *Measures in health psychology: A user's portfolio* (Vol. 1., Causal and control beliefs, pp. 35-37). Windsor, United Kingdom: NFER-NELSON.
- Swartz, H. A., Zuckoff, A., Grote, N. K., Spielvogel, H. N., Bledsoe, S. E., Shear, M. K., & Frank, E. (2007). Engaging depressed patients in psychotherapy: Integrating techniques from

- motivational interviewing and ethnographic interviewing to improve treatment participation. *Professional Psychology, Research and Practice*, 38(4), 430-439.
<https://doi.org/10.1037/0735-7028.38.4.430>
- Swift, J. K., & Greenberg, R. P. (2012). Premature discontinuation in adult psychotherapy: A meta-analysis. *Journal of Consulting and Clinical Psychology*, 80(4), 547-559.
<https://doi.org/10.1037/a0028226>
- Weinman, J., Petrie, K. J., Moss-Morris, R., Broadbent, E., & Sivertsen, B. (2012). *The Illness Perception Questionnaire*. <http://www.uib.no/ipq/>
- Westby, C. E. (1990). Ethnographic interviewing: Asking the right questions to the right people in the right ways. *Journal of Childhood Communication Disorders*, 13(1), 101-111.
<https://doi.org/10.1177/152574019001300111>
- Yeşilay, A., Schwarzer, R., & Jerusalem, M. (n.d.). *Turkish Adaptation of the General Perceived Self-Efficacy Scale*. *Genelleştirilmiş özyetki beklentisi*. <http://userpage.fu-berlin.de/~health/turk.htm>

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A Self-Report Measure of Perfectionism: A Confirmatory Factor Analysis of the Swedish Version of the Clinical Perfectionism Questionnaire

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Supplementary Materials: Materials [see Index of Supplementary Materials]



Abstract

Background: Perfectionism is often defined as the strive for achievement and high standards, but can also lead to negative consequences. In addition to affecting performance and interpersonal relationships, perfectionism can result in mental distress. A number of different self-report measures have been put forward to assess perfectionism. Specifically intended for clinical practice and research, the Clinical Perfectionism Questionnaire (CPQ) was developed and is presently available in English and Persian. To promote its use in additional contexts, the current study has translated and investigated the psychometric properties of the Swedish version of the CPQ.

Method: A Confirmatory Factor Analysis was performed to examine the best fit with data, using a priori-models and a sample of treatment-seeking participants screened for eligibility to receive Internet-based cognitive behavior therapy (n = 223).

Results: The results indicated a lack of fit with data. A two-factor structure without the two reversed items (2 and 8) exhibited the best fit, perfectionistic strivings and perfectionistic concerns, but still had poor structural validity. Correlations with self-report measures of perfectionism, depression, anxiety, dysfunctional beliefs, self-criticism, quality of life, and self-compassion were



all in the expected directions. Eight-week test-retest correlation was Pearson $r = .62$, 95% Confidence Interval [.45, .74], using data from 72 participants in the wait-list control, and the internal consistency for the CPQ, once removing the reversely scored items, was Cronbach's $\alpha = .72$.

Conclusion: The CPQ can be used as a self-report measure in Swedish, but further research on its structural validity is needed.

Keywords

perfectionism, Swedish, psychometrics, Clinical Perfectionism Questionnaire, confirmatory factor analysis

Highlights

- The Clinical Perfectionism Questionnaire is available in Swedish.
- Two factors emerged: perfectionistic strivings and perfectionistic concerns.
- Eight-week test-retest correlation was Pearson $r = .62$.
- Further research on its construct validity is needed.

Perfectionism can result in the refusal to accept any standard short of perfection and the relentless pursuit of achievements (Egan et al., 2011). Shafran et al. (2002) define this as the “overdependence of self-evaluation on the determined pursuit of personally demanding, self-imposed standards in at least one highly salient domain, despite adverse consequences.” (p. 778), noting that certain individuals become dependent on attaining high standards, experiencing distress when these are not met. A highly perfectionistic person is thought to derive its self-worth on success in one or a few domains, such as school or work, and to rely on highly inflexible behaviors, e.g., repeated checking, seeking reassurance, and comparing oneself to others (Egan et al., 2011). This is also maintained by cognitive biases, such as dichotomous thinking (e.g., “either you succeed or you fail”). Perfectionism can have a detrimental impact on interpersonal relationships, performance, and well-being (Shafran et al., 2002). In a systematic review and meta-analysis, Limburg et al. (2017) found moderate to strong correlations between self-rated perfectionism and many psychiatric disorders. Also, Egan et al. (2011) reviewed some of the issues a high degree of perfectionism might impose on treatment, e.g., achieving poorer outcomes for patients with depression and worse therapeutic alliance, suggesting that it constitutes a transdiagnostic process that may warrant clinical attention.

To assess and determine the nature and severity of perfectionism, different forms of self-report measures have been developed (Stoeber, 2018). Among the first and most widespread are the Frost Multidimensional Perfectionism Scale (FMPS; Frost et al., 1990) and the Multidimensional Perfectionism Scale (MPS; Hewitt & Flett, 1990). Both self-report measures conceptualized perfectionism as a multidimensional construct, although being composed of somewhat different factors. Regardless of what type of self-report measure is used, perfectionism is considered to involve two higher-order dimensions;

Perfectionistic Strivings, i.e., perfectionistic personal standards and a self-oriented striving for perfection, and Perfectionistic Concerns, i.e., concern over mistakes, perceived discrepancy between standards and performance, and the notion of being judged negatively by others (Stoeber, 2018).

A criticism of the two self-report measures is their focus on issues that are a bit outside the scope of the two higher-order dimensions. This includes such subscales as Organization on the FMPS (i.e., need for order and neatness) and Other-Oriented Perfectionism on the MPS (i.e., imposing unrealistic standards toward others), which have been recommended for removal (Stoeber & Otto, 2006). Furthermore, it has been argued that many items are not associated with perfectionism at all, such as those belonging to the factors Parental Expectations and Parental Criticism on the FMPS (Frost et al., 1990), which can be seen as developmental antecedents (i.e., having parents that emphasize the need for performance and who are highly critical of their child) (Limburg et al., 2017). In an attempt to overcome some of these issues, Fairburn, Cooper, and Shafran (2003) developed the Clinical Perfectionism Questionnaire (CPQ), arguing that it measures behaviors and cognitions related to the clinically relevant aspects of perfectionism, e.g., “Have you pushed yourself really hard to meet your goals” (Item 1). In comparison to other self-report measures on perfectionism, it also prompts respondents to think about life domains relevant for their perfectionism and how perfectionism has affected them during the last month. Furthermore, given the multidimensional nature of many self-report measure of perfectionism (six for the FMPS and three for the MPS), these might not be sensitive enough to detect change during treatment, suggesting that the CPQ might be more clinically relevant.

At present, the CPQ has been administered in several clinical trials of perfectionism (e.g., Rozental, Shafran, et al., 2017; Shafran et al., 2017; Zetterberg et al., 2019), and a number of studies have also explored its psychometric properties in English (Dickie et al., 2012; Egan et al., 2016; Stoeber & Damian, 2014), Persian (Moloodi et al., 2017), and German (Roth et al., 2021). Overall, it seems to load on two factors, i.e., Perfectionistic Strivings and Perfectionistic Concerns, and the internal consistency, Cronbach’s α , has been found to be within the acceptable range (.71-.82 for the full self-report measure), depending on the study and sample. However, the results also indicate that its two reversed items can be removed to increase reliability, as is often the case with reversely scored statements (Weijters et al., 2013). Also, two other items have demonstrated cross-loadings (Items 7 and 9) in some studies (Egan et al., 2016; Stoeber & Damian, 2014), which could reflect the fact that the two higher-order dimensions are supposed to be correlated with each other (Limburg et al., 2017), or indicate a more severe problem associated with the factorial structure of the CPQ. Further, in terms of its temporal stability, Dickie et al. (2012) collected data from 142 undergraduate students and found a four-month test-retest correlation of $r = .49-.67$, depending on the factor investigated. As for its validity, the CPQ has been found to be related to different self-report measures of perfectionism

and their respective subscales, e.g., Concern over Mistakes ($r = .61$) as well as Personal Standards (.47-.57) on the FMPS, and the same goes for Self-Oriented Perfectionism and Socially Prescribed Perfectionism (.42-.59) on the MPS, as shown, for example, in the studies by Dickie et al. (2012) and Stoeber and Damian (2014). Only one investigation assessed its relation with variables concerning psychiatric disorders (Moloodi et al., 2017). Here, items on the CPQ belonging to the factor perfectionistic concerns were related to rumination (.49-.51) on the Perfectionism Inventory (Hill et al., 2004), as well as depression (.44-.48), anxiety (.37-.43), and stress (.45-.51) on the Dysfunctional Attitudes Scale (Weissman & Beck, 1978) (with higher correlations belonging to the clinical group, in comparison to the general population group).

To promote its use in clinical practice and research in Sweden, the CPQ was translated into Swedish as part of a series of clinical trials (Rozenal, Magnusson, et al., 2017; Zetterberg et al., 2019). However, no psychometric study of this translation has yet been reported, warranting an examination of its factorial structure, internal consistency, validity, and test-retest correlation. In addition, with the exceptions of Moloodi et al. (2017) and Prior et al. (2018), all attempts at examining the CPQ have used Exploratory Factor Analysis or Principal Component Analysis. Although being useful ways of investigating plausible factors or components among items, these methods should primarily be used when there is no available hypothesis regarding the underlying construct (Hurley et al., 1997). Seeing as there are presently several studies of the CPQ in both English and Persian, there is sufficient evidence to test a priori-models using Confirmatory Factor Analysis (CFA). This method could help to explore not only the reliability of the Swedish version but also to check the proposed two-factor structure using collected data, in line with the recommendations by Stoeber and Damian (2014). Hence, the current study aims to investigate the psychometric properties of the CPQ in Swedish to facilitate its use in Sweden, and to assess the best fitting factorial structure based on previous research. The data is derived from a treatment-seeking sample of participants that were recruited for a clinical trial of Internet-based cognitive behavior therapy for perfectionism (Rozenal, Shafran, et al., 2017). Furthermore, internal consistency will also be explored, and convergent and divergent validity will be examined using self-report measures of perfectionism, depression, anxiety, dysfunctional beliefs, self-criticism, quality of life, and self-compassion. Test-retest correlation will also be assessed using the wait-list control, i.e., participants who were assigned to a waiting-period of eight weeks in the clinical trial, as these are not subject to an intervention that might affect their scores.

Method

Participants

Participants were recruited through social media, the recruitment website www.studie.nu, posters set up at Linköping University, Stockholm University, and a number of health centers in Linköping, a local public radio show, and a local newspaper. These advertisements declared that anyone who experienced severe problems of perfectionism and were interested in the study could register and fill out the self-report measures on the study's website. Inclusion criteria were as follows: being over the age of 18, fluent in Swedish, and having severe problems of perfectionism. Eligibility was determined using both self-report measures (i.e., the CPQ and the FMPS, subscales Concern over Mistakes and Personal Standards), and through a case management conference (where each case was reviewed and discussed together with an experienced clinician and researcher, GA). No cutoff was employed for any of the self-report measures, but each individuals' scores were checked on a case-by-case basis. Exclusion criteria included; pregnancy (given that it could have interfered with the completion of treatment), ongoing psychological treatment, any change to psychotropic medication less than twelve weeks prior to entering the clinical trial, and the need for other or more extensive psychological treatment, such as when having anorexia nervosa or elevated suicide ideation, as assessed over the telephone using the MINI-International Neuropsychiatric Interview (Sheehan et al., 1998). Other psychiatric disorders were allowed as long as perfectionism was deemed to be the primary concern.

In total, 273 individuals registered on the study's website, of which 223 (81.7%) completed all of the self-report measures and were included in the current psychometric study, regardless of whether they were included in the clinical trial or not. Of those eligible for inclusion, 78 were randomized to a wait-list control and were used to establish the test-retest correlation of the CPQ (eight weeks), with 72 (92.3%) completing the second round of assessments. For more detailed information concerning the screening procedure, see [Rozentel, Shafran, et al. \(2017\)](#). Although data in the current psychometric study are derived from the clinical trial, there are no overlaps in study design, statistical analyses, or the presentation of data or results. [Table 1](#) includes the sociodemographics of the participants.

Table 1*Sociodemographic Characteristics of the Participants*

Sociodemographics	Total sample (<i>n</i> = 223)
Women: <i>n</i> (%)	193 (86.5)
Age (years): <i>M</i> (<i>SD</i>)	34 (9.6)
Relationship status: <i>n</i> (%)	
Single	63 (28.3)
Married/Partner	154 (69.1)
Divorced/Widowed	5 (2.2)
Answer missing	1 (0.4)
Children: <i>n</i> (%)	
Yes, at home	74 (33.2)
Yes, not at home	10 (4.5)
No	134 (60.1)
Answer missing	5 (2.2)
Pregnant: <i>n</i> (%)	2 (0.9)
Highest education level: <i>n</i> (%)	
Elementary School	4 (1.8)
High School	57 (25.6)
University	156 (70.0)
Graduate School	6 (2.7)
Employment: <i>n</i> (%)	
Unemployed	8 (3.6)
Student	57 (25.6)
Employed	141 (63.2)
Parent leave	6 (2.7)
Sick leave (> 3 months)	5 (2.2)
Other	5 (2.2)
Currently diagnosed with a psychiatric diagnosis: <i>n</i> (%)	24 (10.8)
Ongoing psychological treatment: <i>n</i> (%)	15 (6.7)
Regularly taking psychotropic medication: <i>n</i> (%)	39 (17.5)

Procedure

Individuals having registered their interest to participate completed a screening process on a secure online platform (Vlaescu et al., 2016), consisting of sociodemographic information and self-report measures. During the registration, individuals received an auto generated identification code, e.g., 1234abcd, guaranteeing their anonymity. Prior to recruitment and data collection, ethics approval was granted by the Regional Ethical

Board in Linköping, Sweden (Dnr: 2015/419-31), and informed consent was obtained from all participants during the screening process.

Measures

Clinical Perfectionism Questionnaire

The CPQ includes the definition of perfectionism as put forward by [Shafran et al. \(2002\)](#), followed by a yes/no question of whether the individual has tried to achieve high standards during the last month regardless of having succeeded at this, and what life domain(s) this pertains, e.g., performance at work (however, none of these parts are analyzed quantitatively). It is then followed by twelve items concerning clinically relevant aspects of perfectionism that are scored on a four-point Likert-scale 1-4 (*Not at all to All of the time*), with two reversed items (Items 2 and 8), and employing a time-frame of one month.

For more information regarding the factorial structure and validity of the CPQ, please see the introduction.

The Swedish version of the CPQ was developed in relation series of clinical trials ([Rozental, Shafran, et al., 2017](#); [Zetterberg et al., 2019](#)), with translation and back-translation being made by the researchers of the current study to ensure that nothing was lost in the process of translating the self-report measure.

Other Self-Report Measures

Several self-report measures were also used in the current study to establish the convergent and divergent validity of the CPQ. The FMPS was administered to establish the relationship with another self-report measure of perfectionism ([Frost et al., 1990](#)). The FMPS is rated on a five-point Likert-scale 1-5, *Strongly disagree* (1) to *Strongly agree* (5), with 35 items covering the subscales Concern over Mistakes, Personal Standards, Doubts about Action, Parental Expectations, Parental Criticism, and Organization. The FMPS has been shown to correlate with other self-report measures of perfectionism and different symptoms of psychiatric disorders (e.g., [Purdon et al., 1999](#)). With regard to internal consistencies, α ranges from adequate to excellent, .77-.93 ([Frost et al., 1990](#)), see [Table 2](#) for this estimate for the FMPS and the other self-report measures in the current study. The FMPS does not include a predefined time-frame.

Moreover, the nine-item Patient Health Questionnaire (PHQ-9; [Löwe et al., 2004](#)) was distributed to evaluate the degree of depression and is scored on a four-point Likert-scale, *Not at all* (0) to *Nearly every day* (3). The PHQ-9 is often used as a screening tool for depressive symptoms, employs a time-frame of two weeks, has been validated against other self-report measures and clinical interviews of depression, and has an excellent internal consistency, .89 ([Löwe et al., 2004](#)). The seven-item Generalized Anxiety Disorder (GAD-7; [Spitzer et al., 2006](#)) determines the level of anxiety and worry and is scored on a four-point Likert-scale, *Not at all* (0) to *Nearly every day* (3). The GAD-7 is often used as

Table 2*Range in Scores, Means, Standard Deviations, and Internal Consistencies of the Self-Report Measures (n = 223)*

Self-report measure	Range in scores	M (SD)	Internal consistencies
			Cronbach α
CPQ	12-48	38.3 (4.6)	.68
PS ^a	1-24	15.0 (2.7)	.58
PC ^a	1-20	17.0 (2.4)	.69
FMPS	35-175	97.9 (16.3)	.89
PSt.	35	28.3 (4.1)	.69
CM	45	34.2 (6.6)	.86
DA	20	13.7 (3.3)	.61
PC	20	9.5 (4.4)	.86
PE	25	12.3 (5.5)	.90
O	30	24.4 (4.4)	.83
PHQ-9	0-27	10.3 (5.9)	.85
GAD-7	0-21	8.6 (5.3)	.88
DAS-40	40-280	175 (31.7)	.91
SC	15-105	63.1 (15.7)	.90
BBQ	0-96	41.8 (16.8)	.71
SCS-SF	12-60	26.1 (6.3)	.79

Note. CPQ = Clinical Perfectionism Questionnaire; PS = Perfectionistic Strivings; PC = Perfectionistic Concerns; FMPS = Frost Multidimensional Perfectionism Scale; PSt. = Personal Standards; CM = Concern over Mistakes; DA = Doubts about Action; PC = Parental Criticism; PE = Parental Expectations; O = Organization; PHQ-9 = Patient Health Questionnaire; GAD-7 = Generalized Anxiety Disorder; DAS-40 = Dysfunctional Attitude Scale; SC = Self-Criticism; BBQ = Brunnsvikien Brief Quality of Life Scale; SCS-SF = Self-Compassion Scale - Short Form.

^aBased on the best fitting model in the current study, i.e., [Stoerber and Damian \(2014\)](#), without reversed items and with Item 7 belonging to the factor perfectionistic concerns.

a screening tool for anxiety symptoms, employs a time-frame of two weeks, corresponds well with other self-report measures of anxiety and clinical interviews of generalized anxiety disorder, and has an excellent internal consistency, .92 (e.g., [Dear et al., 2011](#)). The 40-item Dysfunctional Attitude Scale, sometimes referred to as Form A (as compared to the original version of 100-item) (DAS; [Weissman & Beck, 1978](#)) assesses various maladaptive beliefs, e.g., self-criticism. The DAS is scored on a seven-point Likert-scale, *Strongly disagree* (1) to *Strongly agree* (7), is correlated with other self-report measures of depression (e.g., [Oliver & Baumgart, 1985](#)), and has an excellent internal consistency, .90 ([Cane et al., 1986](#)). Moreover, the 15-item subscale Self-Criticism was explored separately in the current study given its relationship with perfectionism (e.g., [Dunkley et al., 2009](#); [Imber et al., 1990](#)). The DAS does not include a predefined time-frame. The 12-item

Brunnsviken Brief Quality of Life Scale (BBQ; Lindner et al., 2016) explores the quality of life within six different areas, e.g., leisure and learning, and level of importance, e.g., “my leisure time is important to me”. The BBQ is scored on a four-point scale from *Strongly disagree* (1) to *Strongly agree* (4). The BBQ demonstrates good convergent and divergent validity, good classification ability, and has an adequate internal consistency, .76 (Lindner et al., 2016). The BBQ does not include a predefined time-frame. Lastly, the twelve-item Self-Compassion Scale - Short Form (SCS-SF) (as compared to the full self-report measure of 26 items) tests the degree of self-compassion and is scored on a five-point scale from *Almost never* (1) to *Almost all of the time* (5), range in scores 5-60. The SCS-SF has been shown to be negatively correlated with self-report measures of symptoms of psychiatric disorders, and has a good internal consistency, .86 (Raes et al., 2011). The SCS-SF does not include a predefined time-frame. All of the self-report measures used in the current study have previously been translated and/or were available in Swedish.

For an overview of the means and standard deviations of all self-report measures used in the current study, see [Table 2](#).

Data Analysis

In order to investigate the factorial structure of the Swedish version of the CPQ and to relate the results to previous studies on the same self-report measure, CFA was used on the total sample ($n = 223$). In comparison to employing an Exploratory Factor Analysis or Principal Component Analysis, CFA allows the researcher to test one or several a priori-model(s), making it possible to assess the reliability of the CPQ as well as to confirm or refute prior findings (Brown, 2015), in this case with regard to its previously proposed two-factor structure. For comparison, a single factor model with and without the reversed items were also analyzed. Model fit was subsequently examined using the likelihood-ratio χ^2 -test ($p > .05$), the Tucker-Lewis Index (TLI; $\geq .95$), the Comparative Fit Index (CFI; $\geq .95$), the Root Mean Square Error of Approximation (RMSEA; $\leq .06$), with cutoffs for indices presented in parentheses (Brown, 2015). Given that the CPQ violated assumptions of normality, Weighted Least Squares was used as estimator. Items with cross-loadings were added to the factor with the highest positive loading.

Internal consistencies were explored using Cronbach's α , and the convergent and divergent validity were investigated by examining the correlations between the manifest scale scores of the CPQ and the other self-report measures administered in the current study. Meanwhile, test-retest correlation was determined by studying the correlation on the CPQ for the wait-list control ($n = 78$) between two points of measurement that were eight weeks apart.

All analyses were performed in R Studio 1.4.1717 (RStudio Team, 2020).

Results

Confirmatory Factor Analysis

Each a priori-model from the previous studies of the CPQ were tested separately using CFA. However, none of them demonstrated an acceptable fit, as seen in Table 3. With the exception of significant likelihood-ratio χ^2 -tests, the TLI, CFI, and RMSEA all exhibited indices that were below/above the cutoffs. Similar results were obtained for a single factor model and the two models without the reversed items.

Table 3

Goodness of Fit Indices for Each Priori-Model From Prior Research on the Clinical Perfectionism Questionnaire (n = 223)

Model	χ^2	df	TLI	CFI	RMSEA	95% CI
Two-factor structure						
Dickie et al. (2012)	101*	34	.59	.69	.09	.07, .12
Factor 1: 1, 3, 6, 9, 10, 11						
Factor 2: 2, 4, 5, 12						
Stoerber and Damian (2014) ^a	116*	49	.72	.79	.08	.06, .10
Factor 1: 1, 3, 5, 6, 7, 8, 9, 10, 11						
Factor 2: 2, 4, 5, 7, 8, 9, 12						
Stoerber and Damian (2014) ^a , without reversed items	76*	31	.73	.81	.08	.06, .11
Factor 1: 1, 3, 5, 6, 7, 9, 10, 11						
Factor 2: 4, 5, 7, 9, 12						
Egan et al. (2016) ^b	NA ^c	NA	NA	NA	NA	NA
Factor 1: 1, 3, 6, 7, 8, 9, 10, 11						
Factor 2: 1, 2, 4, 5, 8, 12						
Moloodi et al. (2017) ^d	114*	43	.66	.74	.09	.07, .11
Factor 1: 1, 3, 6, 7, 9, 10, 11						
Factor 2: 2, 4, 5, 12						
Single factor structure						
Single factor	142*	54	.67	.73	.09	.07, .10
Single factor without reversed items	91*	35	.70	.77	.09	.06, .11

Note. Likelihood-ratio χ^2 -test ($p > .05$), the Tucker-Lewis Index (TLI; $\geq .95$), the Comparative Fit Index (CFI; $\geq .95$), the Root Mean Square Error of Approximation (RMSEA; $\leq .06$), cutoffs for indices presented in parentheses. *df* = Degrees of Freedom; CI = Confidence Interval.

^aBased on the results reported for the first Exploratory Factor Analysis.

^bBased on the results reported for Study 1.

^cModel did not converge.

^dBased on the results reported for the general population.

* $p < .05$.

Table 4 contains the factor loadings for each item using the model with the best fit in the current study, i.e., [Stoeber and Damian \(2014\)](#), without reversed items. Factor 1 (Items 1, 3, 6, 7, 9, 10, and 11) fits well with the first higher-order dimension of perfectionistic strivings, while Factor 2 (Items 4, 5, 7, 9, and 12) corresponds to the second, perfectionistic concerns. One item exhibited a significant cross-loading between factors, Item 7, “Have you judged yourself on the basis of your ability to achieve high standards?”. Given its emphasis on negative evaluation, it was deemed more appropriate to include it in Factor 2 (i.e., perfectionistic concerns).

Table 4

Standardized Factor Loadings for Each Item Using the Best Fitting A Priori-Model in the Current Study, i.e., [Stoeber and Damian \(2014\)](#), Without Reversed Items (n = 223)

Items	Skewness	Factor 1: Perfectionistic Strivings	Factor 2: Perfectionistic Concerns
1. Have you pushed yourself really hard to meet your goals?	-0.67	.57*	
3. Have you been told that your standards are too high?	-1.27	.55*	
4. Have you felt a failure as a person because you have not succeeded in meeting your goals?	-1.30		.64*
5. Have you been afraid that you might not reach your standards?	-1.05	.07	.54*
6. Have you raised your standards because you thought they were too easy?	0.04	.36*	
7. Have you judged yourself on the basis of your ability to achieve high standards?	-0.98	.11*	.53*
9. Have you repeatedly checked how well you are doing at meeting your standards (for example, by comparing your performance with that of others)?	-0.72	.16	.45*
10. Do you think that other people would have thought of you as a “perfectionist”?	-0.42	.35*	
11. Have you kept trying to meet your standards, even if this has meant that you have missed out on things?	-0.57	.63*	
12. Have you avoided any tests of your performance (at meeting your goals) in case you failed?	-0.86		.49*

* $p < .05$.

Convergent and Divergent Validity

The manifest scale scores of the CPQ were correlated with the other self-report measures distributed to the participants (see Table 5 for the correlation matrix, and Table 6 and 7 in the Online Appendix, [Supplementary Materials](#), for partial correlations controlling for each factor). Overall, the CPQ demonstrated moderate to large positive correlations with FMPS (the full self-report measure) and the subscales Personal Standards and Concern over Mistakes, which are often used to examine levels of perfectionism in many clinical trials. Meanwhile, the CPQ exhibited small positive correlations with the rest of the subscales, which are considered antecedents to, or, in the case of the subscale Organization, unrelated to perfectionism. The CPQ also exhibited moderate positive correlations with depression, anxiety, and self-criticism. Furthermore, the CPQ was negatively related to self-report measures of quality of life and self-compassion with correlations in the small to moderate range.

Table 5

Correlations Between the Self-Report Measures (n = 223)

Self-report measure	CPQ	PS	PC	FMPS	PSt.	CM	DA	PC	PE	O	PHQ-9	GAD-7	DAS-40	SC	BBQ	SCS-SF
CPQ	–	.84*	.77*	.49*	.48*	.46*	.33*	.23*	.16*	.26*	.34*	.41*	.47*	.44*	-.20*	-.38*
PS		–	.41*	.38*	.45*	.24*	.24*	.22*	.17*	.28*	.23*	.31*	.31*	.28*	-.06	-.18*
PC			–	.51*	.35*	.56*	.37*	.24*	.16*	.13	.43*	.44*	.54*	.54*	-.27*	-.42*
FMPS				–	.66*	.74*	.48*	.74*	.71*	.26*	.27*	.34*	.55*	.58*	-.22*	-.29*
PSt.					–	.48*	.29*	.22*	.28*	.39*	.24*	.32*	.31*	.30*	-.07	-.20*
CM						–	.38*	.27*	.19*	.15*	.33*	.38*	.70*	.72*	-.22*	-.44*
DA							–	.13	.04	.18*	.21*	.33*	.33*	.37*	-.17*	-.10
PC								–	.82*	.10	.10	.12	.26*	.32*	-.16*	-.09
PE									–	.11	.02	.01	.14*	.16*	-.11	-.05
O										–	.07	.20*	.04	.00*	-.02	-.03
PHQ-9											–	.72*	.34*	.36*	-.28*	-.26*
GAD-7												–	.37*	.36*	-.28*	-.30*
DAS-40													–	.92*	-.28*	-.51*
SC														–	-.26*	-.43*
BBQ															–	.33*
SCS-SF																–

Note. CPQ = Clinical Perfectionism Questionnaire; PS = Perfectionistic Strivings; PC = Perfectionistic Concerns; FMPS = Frost Multidimensional Perfectionism Scale; PSt. = Personal Standards; CM = Concern over Mistakes; DA = Doubts about Action; PC = Parental Criticism; PE = Parental Expectations; O = Organization; PHQ-9 = Patient Health Questionnaire; GAD-7 = Generalized Anxiety Disorder; DAS-40 = Dysfunctional Attitude Scale; SC = Self-Criticism; BBQ = Brunnsvikens Brief Quality of Life Scale; SCS-SF = Self-Compassion Scale - Short Form.

^aBased on the best fitting model in the current study, i.e., [Stoeber and Damian \(2014\)](#), without reversed items and with Item 7 belonging to the factor perfectionistic concerns.

* $p < .05$.

Inspecting the two factors of the CPQ more closely, both Perfectionistic Strivings and Perfectionistic Concerns show similar relationships with the other self-report measures when looking at the overall correlations. However, the partial correlation revealed that Perfectionistic Strivings (controlling for Perfectionistic Concerns) was primarily associated with the subscales Perfectionistic Standards and Organization, while Perfectionistic Concerns (controlling for Perfectionistic Strivings) was most notably related to Concern over Mistakes and Doubts about Action. Overall, Perfectionistic Concerns can also be distinguished by its stronger positive correlations to depression, anxiety, dysfunctional beliefs, self-criticism, and stronger negative correlations with quality of life and self-compassion, even after controlling for Perfectionistic Strivings.

Test-Retest Correlation

Of the 78 participants who were randomized to wait-list control, 72 (92.3%) completed the CPQ at both measurement points. Using this data, the eight-week test-retest correlation was Pearson $r = .62$, 95% Confidence Interval (CI) [.45, .74]. For Perfectionistic Standards, $r = .49$, 95% CI [.30, .65], and Perfectionistic Concerns, $r = .65$, 95% CI [.50, .77].

Internal Consistency

Internal consistencies for the CPQ are shown in [Table 2](#). The reliability statistic for the full scale also indicated that it would increase if Items 2 and 8 were removed (from .68 to .72), suggesting a somewhat improved reliability if the two reversely scored statements were to be excluded. With regard to the best fitting model, the reliability statistic was .58 for Perfectionistic Strivings and .69 for Perfectionistic Concerns.

Discussion

The current study explored the psychometric properties of the Swedish version of the CPQ. Based on the results from the CFA, none of the a priori-models examined showed an acceptable fit. The single-factor model demonstrated poorest fit with data, refuting a unidimensional construct, as already noted in prior research of the self-report measure ([Dickie et al., 2012](#); [Egan et al., 2016](#); [Moloodi et al., 2017](#); [Stoeber & Damian, 2014](#)). This is in line with the theoretical notion as well as empirical findings of perfectionism being comprised of two higher-order dimensions, that is, perfectionistic strivings and perfectionistic concerns ([Stoeber, 2018](#)). Using the same single factor model without the two reversed Items (2 and 8) increased the fit slightly, albeit still not being satisfactory. Meanwhile, using the model proposed by [Stoeber and Damian \(2014\)](#), and excluding the two reversed items, resulted in the best fit in the current study, yet still without meeting cutoffs on the indices. Of note is that one significant cross-loading was found; Item 7, “Have you judged yourself on the basis of your ability to achieve high standards?”. This

could indicate that there is an inherent problem with this item or that it challenges the proposed factorial structure of the CPQ, that is, being related to both higher-order dimensions of perfectionism, i.e., setting high standards and being demanding of oneself (Perfectionistic Standards) and critically appraising one's own behavior (Perfectionistic Concerns). In the current study, Item 7 was included in latter factor, but the decision was data-driven rather than based on theory as there is no consensus in the literature on how to deal with this issue. Judging by its wording, it could however be assumed that it relates to the core concept of perfectionism, as conceptualized by [Shafran et al. \(2002\)](#), i.e., an overdependence of self-evaluation. This might be explored further by, for example, including additional items related to self-worth and investigating their loadings on either of the two factors. Similarly, Item 8, which is a reversed statement, demonstrated a negative correlation with one factor and positive correlation with the second. Moreover, two additional, albeit not significant, cross-loadings were observed, Items 5 and 9, "Have you been afraid that you might not reach your standards?" and "Have you repeatedly checked how well you are doing at meeting your standards (for example, by comparing your performance with that of others)?" In the current study, these belonged to the factor Perfectionistic Concerns, but also taps into the concept of setting high standards (i.e., Perfectionistic Standards), perhaps explaining this finding. However, because there is no agreement on a theoretical concept behind the CPQ with regard to what items belong to what factor, there is an inherent problem in examining different models. This makes it difficult to understand and manage cross-loadings as well as how to develop the self-report measure further, warranting a more collaborative approach to generating a theoretical concept of perfectionism and model testing.

Given the results from the CFA, a two-factor solution seems most reasonable. However, this still displayed a poor fit, suggesting that further research on its structural validity is needed. Furthermore, a shorter version of the CPQ with 10 items, excluding Items 2 and 8, might be more useful to administer in the future, as has already been proposed by [Prior et al. \(2018\)](#). The removal of these two reversed items improved the factorial structure, in line with [Stoeber and Damian \(2014\)](#), suggesting that the findings from the current study should not be a translational issue. Still, there may be diagnostic reasons to retain reversely scored items, such as to preventing the risk of acquiescence bias. Future research should explore the structural validity of the CPQ in greater detail by employing larger samples and both clinical and non-clinical participants, as well as determining how to manage the more problematic items, i.e., 2, 7, and 8.

Meanwhile, the analysis of convergent and divergent validity shows that the CPQ is positively correlated with the FMPS, both for the full self-report measure and for the clinically most relevant subscales Personal Standards and Concern over Mistakes, as has been found previously in the literature ([Limburg et al., 2017](#)). These estimates are similar, albeit a bit smaller than what has been found in other studies, such as .57 for Personal Standards and .61 for Concern over Mistakes ([Stoeber & Damian, 2014](#)). The

two factors of the CPQ, Perfectionistic Strivings and Perfectionistic Concerns, also had somewhat different relationships with other variables, but all in the expected directions. When controlling for Perfectionistic Strivings, the correlations between the CPQ and the FMPS are stronger for the subscales Concern over Mistakes and Doubts about Action. Meanwhile, when controlling for Perfectionistic Concerns, the CPQ is more strongly related to the subscales Personal Standards and Organization. These results were anticipated and corresponds to the findings by, for example, [Dickie et al. \(2012\)](#). In addition, a high degree of perfectionism as assessed using the CPQ, and in particular the factor Perfectionistic Concerns, seems to be associated with such issues as depression, anxiety, and self-criticism, while at the same time being linked to a lower quality of life and less of a compassionate stance towards yourself, confirming the results from [Moloodi et al. \(2017\)](#).

In terms of the test-retest correlation, the results for the wait-list control between the two points of measurement (i.e., eight weeks) was $r = .62$, which was slightly higher for Perfectionistic Concerns than Perfectionistic Strivings, $r = .65$ compared to $.49$. Albeit in line with the estimates found by [Dickie et al. \(2012\)](#), the correlation is still lower than many self-report measures used to assess symptoms of psychiatric disorders, e.g., the Penn State Worry Questionnaire, $r = .84$ ([Pallesen et al., 2006](#)). The reason and implication of this is unclear. On the one hand, it might be argued that the CPQ is expected to exhibit greater temporal stability given its many trait-like features and the fact that no intervention was provided during the waiting period. On the other hand, it is not unlikely to see spontaneous remission and deterioration among participants in a wait-list control (e.g., [Rozental, Magnusson, et al., 2017](#)), as well as other external factors influencing their scores, such as being on holiday or not being exposed to triggers for their perfectionism at the second round of assessment, thereby affecting the test-retest correlation. Another explanation may be that the CPQ captures how cognitions and behaviors related to perfectionism fluctuates depending on situations the individual is exposed to, resulting in some variation in scores between assessments. Additional research is required in order to get a better impression of the test-retest correlation of the CPQ, preferably by using a normal population and a shorter time-frame, such as one or two weeks, as recommended by [Tingey et al. \(1996\)](#). Also, longitudinal studies could investigate the theoretical assumptions behind the test-retest correlation, such as factorial invariance and reliability index.

The current study has a number of strengths as well as limitations that need to be addressed when reviewing the results. Similar to [Prior et al. \(2018\)](#), it used a clinical sample, in line with the intended use of the CPQ in clinical settings. The average levels of perfectionism on the self-report measures were therefore high at screening, CPQ 38.3 ($SD = 4.6$), and Personal Standards 28.3 ($SD = 4.1$) and Concern over Mistakes 34.2 ($SD = 6.6$) on the FMPS, implying that they probably had quite severe problems before treatment. Symptoms of depression and anxiety were also evident, for example PHQ-9

10.3 ($SD = 5.9$) and GAD-7 8.6 ($SD = 5.3$), indicating slightly elevated levels of depression and anxiety. However, the inclusion of participants from a normal population would have been helpful to distinguish clinical from non-clinical perfectionism and should be pursued in future research. Using a larger sample size and interviews with regard to the clinical implications of the participants' perfectionism could also be used to assess classification accuracy. Meanwhile, data was solely based on the responses at screening as part of being assessed for eligibility to participate in a clinical trial. This made it possible to explore convergent and divergent validity to a greater extent than before as other self-report measures were administered at the same time. Yet, this recruitment method could be affected by self-presentation bias, that is, exaggerating one's problems in order to be eligible for inclusion in treatment. An alternative would have been to administer the CPQ to patients already in a clinical setting to confirm the results from the current study, e.g., eating disorders, which is advised in future psychometric studies of the self-report measure. Similarly, participants included in the analyses were predominantly in their 30's, women (86.5%), having a university degree, and being employed, which might affect generalizability. Although such sociodemographics are not uncommon in treatment-seeking populations (Vessey & Howard, 1993), especially in terms of Internet-based cognitive behavior therapy (Lindner et al., 2015; Titov et al., 2010), it does raise some questions concerning the self-report measure's application across groups, e.g., age and gender, therefore research should try to include more diverse samples in upcoming studies. In addition, other aspects warranting further investigation is to determine the validity of the time-frame used in the instructions for the CPQ, i.e., one month, perhaps by employing a longitudinal study design. On a different note, exploring rank order stability is also important, that is, how well the self-report measure functions for different symptom severity levels among individuals undergoing treatment.

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Author Note: The self-report measure evaluated in the current study, the Clinical Perfectionism Questionnaire, is free to use in both English and Swedish and can be located in the Online Appendix (see [Supplementary Materials](#)).

Supplementary Materials

The Supplementary Materials contain the following items (for access see [Index of Supplementary Materials](#) below):

- Table 6: Partial correlations between the self-report measures, controlling for Perfectionistic Strivings ($n = 223$)
- Table 7: Partial correlations between the self-report measures, controlling for Perfectionistic Concerns ($n = 223$)
- English and Swedish Translations of the Clinical Perfectionism Questionnaire

Index of Supplementary Materials

Parks, A., van de Leur, J. C., Strååt, M., Elfving, F., Andersson, G., Carlbring, P., Shafran, R., & Rozental, A. (2021). *Supplementary materials to "A self-report measure of perfectionism: A confirmatory factor analysis of the Swedish version of the clinical perfectionism questionnaire"* [Appendix]. PsychOpen GOLD. <https://doi.org/10.23668/psycharchives.5272>

References

- Brown, T. A. (2015). *Confirmatory factor analysis for applied research*. New York, NY, USA: The Guilford Press.
- Cane, D. B., Olinger, L. J., Gotlib, I. H., & Kuiper, N. A. (1986). Factor structure of the Dysfunctional Attitude Scale in a student population. *Journal of Clinical Psychology, 42*(2), 307-309. [https://doi.org/10.1002/1097-4679\(198603\)42:2<307::AID-JCLP2270420213>3.0.CO;2-J](https://doi.org/10.1002/1097-4679(198603)42:2<307::AID-JCLP2270420213>3.0.CO;2-J)
- Dear, B. F., Titov, N., Sunderland, M., McMillan, D., Anderson, T., Lorian, C., & Robinson, E. (2011). Psychometric comparison of the Generalized Anxiety Disorder Scale-7 and the Penn State Worry Questionnaire for measuring response during treatment of generalised anxiety disorder. *Cognitive Behaviour Therapy, 40*(3), 216-227. <https://doi.org/10.1080/16506073.2011.582138>
- Dickie, L., Surgenor, L. J., Wilson, M., & McDowall, J. (2012). The structure and reliability of the Clinical Perfectionism Questionnaire. *Personality and Individual Differences, 52*(8), 865-869. <https://doi.org/10.1016/j.paid.2012.02.003>
- Dunkley, D. M., Sanislow, C. A., Grilo, C. M., & McGlashan, T. H. (2009). Self-criticism versus neuroticism in predicting depression and psychosocial impairment for 4 years in a clinical sample. *Comprehensive Psychiatry, 50*(4), 335-346. <https://doi.org/10.1016/j.comppsy.2008.09.004>
- Egan, S. J., Shafran, R., Lee, M., Fairburn, C. G., Cooper, Z., Doll, H. A., . . . Watson, H. J. (2016). The reliability and validity of the clinical perfectionism questionnaire in eating disorder and community samples. *Behavioural and Cognitive Psychotherapy, 44*(1), 79-91. <https://doi.org/10.1017/S1352465814000629>
- Egan, S. J., Wade, T. D., & Shafran, R. (2011). Perfectionism as a transdiagnostic process: A clinical review. *Clinical Psychology Review, 31*(2), 203-212. <https://doi.org/10.1016/j.cpr.2010.04.009>

- Fairburn, C. G., Cooper, Z., & Shafran, R. (2003). *Clinical Perfectionism Questionnaire*. Oxford, United Kingdom: Department of Psychiatry, University of Oxford.
- Frost, R. O., Marten, P., Lahart, C., & Rosenblate, R. (1990). The dimensions of perfectionism. *Cognitive Therapy and Research*, 14(5), 449-468. <https://doi.org/10.1007/BF01172967>
- Hewitt, P. L., & Flett, G. L. (1990). Perfectionism and depression: A multidimensional analysis. *Journal of Social Behavior and Personality*, 5(5), 423-438.
- Hill, R. W., Huelsman, T. J., Furr, R. M., Kibler, J., Vicente, B. B., & Kennedy, C. (2004). A new measure of perfectionism: The Perfectionism Inventory. *Journal of Personality Assessment*, 82(1), 80-91. https://doi.org/10.1207/s15327752jpa8201_13
- Hurley, A. E., Scandura, T. A., Schriesheim, C. A., Brannick, M. T., Seers, A., Vandenberg, R. J., & Williams, L. J. (1997). Exploratory and confirmatory factor analysis: Guidelines, issues, and alternatives. *Journal of Organizational Behavior*, 18(6), 667-683. [https://doi.org/10.1002/\(SICI\)1099-1379\(199711\)18:6<667::AID-JOB874>3.0.CO;2-T](https://doi.org/10.1002/(SICI)1099-1379(199711)18:6<667::AID-JOB874>3.0.CO;2-T)
- Imber, S. D., Pilkonis, P. A., Sotsky, S. M., Elkin, I., Watkins, J. T., Collins, J. F., . . . Glass, D. R. (1990). Mode-specific effects among three treatments for depression. *Journal of Consulting and Clinical Psychology*, 58(3), 352-359. <https://doi.org/10.1037/0022-006X.58.3.352>
- Limburg, K., Watson, H. J., Hagger, M. S., & Egan, S. J. (2017). The relationship between perfectionism and psychopathology: A meta-analysis. *Journal of Clinical Psychology*, 73(10), 1301-1326. <https://doi.org/10.1002/jclp.22435>
- Lindner, P., Frykheden, O., Forsström, D., Andersson, E., Ljótsson, B., Hedman, E., . . . Carlbring, P. (2016). The Brunnsviken Brief Quality of life scale (BBQ): Development and psychometric evaluation. *Cognitive Behaviour Therapy*, 45(3), 182-195. <https://doi.org/10.1080/16506073.2016.1143526>
- Lindner, P., Nyström, M. B. T., Hassmén, P., Andersson, G., & Carlbring, P. (2015). Who seeks ICBT for depression and how do they get there? Effects of recruitment source on patient demographics and clinical characteristics. *Internet Interventions*, 2(2), 221-225. <https://doi.org/10.1016/j.invent.2015.04.002>
- Löwe, B., Kroenke, K., Herzog, W., & Gräfe, K. (2004). Measuring depression outcome with a Brief Self-Report Instrument: Sensitivity to change of the Patient Health Questionnaire (PHQ-9). *Journal of Affective Disorders*, 81(1), 61-66. [https://doi.org/10.1016/S0165-0327\(03\)00198-8](https://doi.org/10.1016/S0165-0327(03)00198-8)
- Moloodi, R., Pourshahbaz, A., Mohammadkhani, P., Fata, L., & Ghaderi, A. (2017). Psychometric properties of the Persian version of Clinical Perfectionism Questionnaire: Findings from a clinical and non-clinical sample in Iran. *Personality and Individual Differences*, 119, 141-146. <https://doi.org/10.1016/j.paid.2017.07.003>
- Oliver, J. M., & Baumgart, E. P. (1985). The Dysfunctional Attitude Scale: Psychometric properties and relation to depression in an unselected adult population. *Cognitive Therapy and Research*, 9(2), 161-167. <https://doi.org/10.1007/BF01204847>
- Pallesen, S., Nordhus, I. H., Carlstedt, B., Thayer, J. F., & Johnsen, T. B. (2006). A Norwegian adaptation of the Penn State Worry Questionnaire: Factor structure, reliability, validity and

- norms. *Scandinavian Journal of Psychology*, 47, 281-291.
<https://doi.org/10.1111/j.1467-9450.2006.00518.x>
- Prior, K. L., Erceg-Hurn, D. M., Raykos, B. C., Egan, S. J., Byrne, S., & McEvoy, P. M. (2018). Validation of the Clinical Perfectionism Questionnaire in an eating disorder sample: A bifactor approach. *International Journal of Eating Disorders*, 51(10), 1176-1184.
<https://doi.org/10.1002/eat.22892>
- Purdon, C., Antony, M. M., & Swinson, R. P. (1999). Psychometric properties of the Frost Multidimensional Perfectionism Scale in a clinical anxiety disorders sample. *Journal of Clinical Psychology*, 55(10), 1271-1286.
[https://doi.org/10.1002/\(SICI\)1097-4679\(199910\)55:10<1271::AID-JCLP8>3.0.CO;2-A](https://doi.org/10.1002/(SICI)1097-4679(199910)55:10<1271::AID-JCLP8>3.0.CO;2-A)
- Raes, F., Pommier, E., Neff, K. D., & Van Gucht, D. (2011). Construction and factorial validation of a short form of the self-compassion scale. *Clinical Psychology & Psychotherapy*, 18(3), 250-255.
<https://doi.org/10.1002/cpp.702>
- Roth, I., Cludius, B., Egan, S. J., & Limburg, K. (2021). Evaluation of the factor structure and psychometric properties of the German Version of the Clinical Perfectionism Questionnaire: The CPQ-D. *Clinical Psychology in Europe*, 3(2), Article e3623. <https://doi.org/10.32872/cpe.3623>
- Rozental, A., Magnusson, K., Boettcher, J., Andersson, G., & Carlbring, P. (2017). For better or worse: An individual patient data meta-analysis of deterioration among participants receiving Internet-based cognitive behavior therapy. *Journal of Consulting and Clinical Psychology*, 85(2), 160-177. <https://doi.org/10.1037/ccp0000158>
- Rozental, A., Shafran, R., Wade, T., Egan, S., Nordgren, L. B., Carlbring, P., . . . Trosell, L. (2017). A randomized controlled trial of Internet-based cognitive behavior therapy for perfectionism including an investigation of outcome predictors. *Behaviour Research and Therapy*, 95, 79-86.
<https://doi.org/10.1016/j.brat.2017.05.015>
- RStudio Team. (2020). *RStudio: Integrated Development for R*. RStudio, PBC, Boston, MA, USA.
<http://www.rstudio.com>
- Shafran, R., Cooper, Z., & Fairburn, C. G. (2002). Clinical perfectionism: A cognitive-behavioural analysis. *Behaviour Research and Therapy*, 40(7), 773-791.
[https://doi.org/10.1016/S0005-7967\(01\)00059-6](https://doi.org/10.1016/S0005-7967(01)00059-6)
- Shafran, R., Wade, T. D., Egan, S. J., Kothari, R., Allcott-Watson, H., Carlbring, P., . . . Andersson, G. (2017). Is the devil in the detail? A randomised controlled trial of guided internet-based CBT for perfectionism. *Behaviour Research and Therapy*, 95, 99-106.
<https://doi.org/10.1016/j.brat.2017.05.014>
- Sheehan, D. V., Lecrubier, Y., Sheehan, K. H., Sheehan, K., Amorim, P., Janavs, J., . . . Dunbar, G. (1998). Diagnostic Psychiatric Interview for DSM-IV and ICD-10. *The Journal of Clinical Psychiatry*, 59, 22-33.
- Spitzer, R. L., Kroenke, K., Williams, J. B., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder: The GAD-7. *Archives of Internal Medicine*, 166(10), 1092-1097.
<https://doi.org/10.1001/archinte.166.10.1092>
- Stoeber, J. (2018). *The psychology of perfectionism*. Abingdon, United Kingdom: Routledge.

- Stoeber, J., & Damian, L. E. (2014). The Clinical Perfectionism Questionnaire: Further evidence for two factors capturing perfectionistic strivings and concerns. *Personality and Individual Differences*, *61*, 38-42. <https://doi.org/10.1016/j.paid.2014.01.003>
- Stoeber, J., & Otto, K. (2006). Positive conceptions of perfectionism: Approaches, evidence, challenges. *Personality and Social Psychology Review*, *10*(4), 295-319. https://doi.org/10.1207/s15327957pspr1004_2
- Tingey, R., Lambert, M., Burlingame, G., & Hansen, N. (1996). Assessing clinical significance: Proposed extensions to method. *Psychotherapy Research*, *6*(2), 109-123. <https://doi.org/10.1080/10503309612331331638>
- Titov, N., Andrews, G., Kemp, A., & Robinson, E. (2010). Characteristics of adults with anxiety or depression treated at an internet clinic: Comparison with a national survey and an outpatient clinic. *PLoS One*, *5*(5), Article e10885. <https://doi.org/10.1371/journal.pone.0010885>
- Vessey, J. T., & Howard, K. I. (1993). Who seeks psychotherapy? *Psychotherapy*, *30*(4), 546-553. <https://doi.org/10.1037/0033-3204.30.4.546>
- Vlaescu, G., Alasjö, A., Miloff, A., Carlbring, P., & Andersson, G. (2016). Features and functionality of the Iterapi platform for internet-based psychological treatment. *Internet Interventions*, *6*, 107-114. <https://doi.org/10.1016/j.invent.2016.09.006>
- Weijters, B., Baumgartner, H., & Schillewaert, N. (2013). Reversed item bias: An integrative model. *Psychological Methods*, *18*(3), 320-334. <https://doi.org/10.1037/a0032121>
- Weissman, A. N., & Beck, A. T. (1978). *Development and validation of the Dysfunctional Attitudes Scale: A preliminary investigation*. Paper presented at the 62nd annual meeting of the American Educational Research Association, Toronto, Ontario, Canada, March 27-31.
- Zetterberg, M., Carlbring, P., Andersson, G., Berg, M., Shafran, R., & Rozental, A. (2019). Internet-based cognitive behavioral therapy of perfectionism: Comparing regular therapist support and support upon request. *Internet Interventions*, *17*, Article 100237. <https://doi.org/10.1016/j.invent.2019.02.001>

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Item Response Model Validation of the German ICD-11 International Trauma Questionnaire for PTSD and CPTSD

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Supplementary Materials: Materials [see [Index of Supplementary Materials](#)]



Abstract

Background: In the 11th revision of the International Classification of Diseases (ICD-11) posttraumatic stress disorder (PTSD) and the complex variant (CPTSD) were newly conceptualised. The International Trauma Questionnaire (ITQ) was developed as a brief self-report measure to screen for both disorders. The English original version has been rigorously tested and presents convincing psychometric properties. The aim of the current study was to validate the German version by means of item response theory (IRT).

Method: This is a secondary analysis of a representative, trauma-exposed adult sample from the German general population (N = 500). 1- and 2-parameter logistic IRT models (i.e. examination on an item level), diagnostic rates and confirmatory factor analyses were calculated.

Results: All items showed good model fit and acceptable to good performance aligning with the items of the English original except for item C1 (Long time to calm down) which had a high endorsement rate and a low discriminatory power yielding low information gain. CPTSD diagnostic rate of 3.2% was lower than in comparable literature. Confirmatory factor analysis deemed the six first-order, two second-order factors model superior.

Conclusion: Measurement and factorial validity of the German version of the ITQ was confirmed. The German translation matches the English original in most psychometric properties and can thus be used for research and clinical practice.



Keywords

International Trauma Questionnaire, ITQ, ICD-11, validation, PTSD, CPTSD, item response theory, German translation

Highlights

- The ITQ is a short self-report questionnaire measuring ICD-11 PTSD and CPTSD symptoms. There is a lack of evidence regarding the validity of the German translation.
- 1- and 2-parameter logistic Item Response Theory models were calculated and are comparable to the English original.
- Evidence for the measurement and factorial validity of the German translation was found.
- Confirmation of these results and further examination of the German ITQ are desirable.

ICD-11 PTSD and CPTSD

In 2018, the World Health Organization (WHO) released the ICD-11 in which the two diagnoses posttraumatic stress disorder (PTSD) and the complex “sibling” diagnosis (CPTSD) were redefined and newly conceptualised (WHO, 2018). This reorganization aimed at improving clinical applicability and intercultural adaptation of the diagnoses for example by including a limited number of symptoms and clear delineation from other disorders (Keeley, Reed, Roberts, Evans, Medina-Mora, et al., 2016; Reed, 2010).

The diagnosis of PTSD consists of three symptom clusters (re-experiencing in the present, avoidance, and perception of current threat) in response to a traumatic event. Symptoms must persist for several weeks and cause significant impairment. Regarding CPTSD, three more symptom clusters called *Disturbances in Self-Organization* (DSO), must be clinically endorsed in addition to the presence of PTSD symptoms: problems in affect regulation, negative self-concept, and difficulties in relationships. The two diagnoses are mutually exclusive (WHO, 2018).

A growing body of evidence has confirmed the usefulness of these ICD-11 conceptualizations of PTSD and CPTSD. For instance, regarding the factorial structure of PTSD the three-factor structure has been demonstrated in various studies (e.g. Hansen, Hyland, Armour, Shevlin, & Elklit, 2015; Hyland, Brewin, & Maercker, 2017). For CPTSD two superordinate factors (PTSD and DSO) with six subordinate factors (symptom clusters) were the best-fitting models (Hyland, Shevlin, Elklit, et al., 2017; Nickerson et al., 2016; Shevlin et al., 2017). Several studies found clearly distinctive symptom profiles for individuals with PTSD and CPTSD by means of latent class and profile analyses (e.g. Knefel, Garvert, Cloitre, & Lueger-Schuster, 2015; Sachser, Keller, & Goldbeck, 2017). For CPTSD, divergent validity was found regarding Borderline Personality Disorder by means of latent class analyses (Cloitre, Garvert, Weiss, Carlson, & Bryant, 2014) and by means

of a network analysis (Knefel, Tran, & Lueger-Schuster, 2016). A vignette-based study with international mental health experts found that the diagnostic guidelines for ICD-11 C/PTSD provide substantial clarifications in the diagnostic framework in comparison to ICD-10 (Keeley, Reed, Roberts, Evans, Robles, et al., 2016). Nevertheless, the ICD-11 concept for C/PTSD is not without controversies. For instance, in a network analysis with Israeli men, Gilbar (2020) found no clear boundaries between ICD-11 C/PTSD, depression, and anxiety symptoms. Finally, Møller, Augsburger, Elklit, Søgaard, and Simonsen (2020) compared measured ICD-11 C/PTSD and active ICD-10 diagnoses in Danish psychiatric outpatients and found an overlap between ICD-11 CPTSD and ICD-10 affective, personality, anxiety, behavioural, and emotional disorders.

Development of the International Trauma Questionnaire

New diagnoses require accurate measuring instruments that are well conceptualized and validated. The International Trauma Questionnaire (ITQ) was developed to serve this purpose for ICD-11 PTSD and CPTSD (Cloitre, Roberts, Bisson, & Brewin, 2015; Cloitre et al., 2018). Items were developed in an iterative process based on criteria formulation from the *Diagnostic and Statistical Manual of Mental Disorders* (DSM) 5 PTSD (Brewin et al., 2009), the results of the DSM-IV field trials which assessed the most frequently reported CPTSD symptoms (van der Kolk et al., 2005), and a consensus survey among expert clinicians (Cloitre et al., 2011). The initial English ITQ resulted in a preliminary version with 28 items (Cloitre et al., 2015). Studies provided support for this version's factorial, discriminant, and convergent (Karatzias et al., 2016) as well as predictive validity (Hyland, Shevlin, Brewin, et al., 2017). In a last step, the number of items was reduced to 12 to conform to the organizing principle of ICD-11 that disorders should focus on a limited but central set of symptoms. This was done by assessing the psychometric properties of the items using item response theory (IRT) models (Cloitre et al., 2018).

In the validation study of the English ITQ, Cloitre et al. (2018) applied confirmatory factor analyses and IRT to data from both a community and a clinical sample with trauma exposure. For both, the PTSD and DSO cluster groups, a 1- and a 2-parameter logistic IRT model were compared. The 1-parameter model had a superior fit regarding all clusters except for the DSO items in the community sample. Differential item functioning was tested with multigroup IRT models comparing the two samples and showed adequacy of the ITQ for both of them. Rates of indicated diagnosis (diagnostic rates) of 5.3% PTSD and 12.9% CPTSD in the community sample and 14.6% PTSD and 61.1% CPTSD in the clinical sample were found mirroring outcomes from previous versions of the ITQ and pre-existing literature. Regarding the latent structure, Redican et al. (2021) conducted a systematic review of studies using factor analysis and mixture modelling. They found that the two-factor second-order model (the six symptom clusters as subordinate factors,

PTSD and DSO cluster groups as superordinate factors) was consistently deemed the optimal model in clinical samples whereas in most community samples the six-factor model (the six symptom clusters each measured by two items) was preferred. Both models as well as the results of mixture modelling indicate that the ITQ can distinguish between PTSD and CPTSD. In summary the studies investigated by Redican et al. (2021) suggest that the ITQ is a valid measure of ICD-11 C/PTSD.

Up to now, the ITQ has been frequently applied (Cloitre et al., 2019; Hyland, Shevlin, Fyvie, Cloitre, & Karatzias, 2020; Karatzias et al., 2019; Redican et al., 2021) and recently examined the impact of COVID-19 (Tsur & Abu-Raiya, 2020). The ITQ has been translated into different languages and is publicly available (<https://www.traumameasuresglobal.com/itq>). The German translation was done by Lueger-Schuster, Knefel, and Maercker (2015/2018) but has not yet been validated.

Aim of the Study

In order to be used in clinical practice and research regarding all related areas of C/PTSD the German translation of the ITQ needs to be clinically validated (Delahaye et al., 2015). So far, such a validation is still missing. Furthermore, additional investigations of the ITQ on the item level as well as data about the constructs of C/PTSD would support the understanding of these disorders and thus promote this field of research and its benefits. Therefore, this study aimed to validate the German translation of the ITQ by estimating 1- and 2-parameter logistic IRT models to examine item characteristics.

Method

Participants and Procedures

This is a secondary analysis of the data presented in Maercker, Hecker, Augsburger, and Kliem (2018). With the assistance of a scientific demographic consulting company (USU-MA, Berlin, Germany) a representative sample for the German general population was selected. Participants were visited by a study assistant (trained layperson) and informed about the study. All participants or caregivers for minors provided written informed consent. Measurements were self-rating questionnaires except for the sociodemographic data. Overall, 2524 persons between the age of 14 and 99 years completed the assessment between January and March 2016. Since there is a version of the ITQ designed for children and adolescents from 7 to 17 years (Haselgruber, Sölva, & Lueger-Schuster, 2020), participants under the age of 18 ($n = 84$) were excluded. Further, participants with no traumatic event ($n = 1774$) and with missing values on all items of the ITQ ($n = 166$) were excluded. This resulted in a sample of $N = 500$ for the current study. Ethical approval for the study was granted (452-15-21122015, University of Leipzig, Medical School). Details

are reported in [Maercker et al. \(2018\)](#). The mean age of participants was 52.41 years (SD 17.46, range 18-93).

Measures

Only variables relevant for the current study are reported here. For further information, see [Maercker et al. \(2018\)](#).

Sociodemographic Data

Sex, age, family and partnership status, educational background, and employment status were assessed. The data is shown in [Table 1](#).

Traumatic Events

The trauma list of the Munich version of the Composite International Diagnostic Interview PTSD module ([Perkonig, Kessler, Storz, & Wittchen, 2000](#); [Wittchen & Pfister, 1997](#)) was applied. It assesses exposure to eight traumatic events (war, physical violence, rape, natural disaster, sexual abuse in the childhood, severe accident, kidnapping, life threatening illness) in addition to the category "other severe events and catastrophes" and witnessed events. "Other events" were counted if they met the definition of a traumatic event. Of the participants 14.6% ($n = 73$) reported having experienced war, 26.2% ($n = 131$) physical violence, 10.2% ($n = 51$) rape, 8.6% ($n = 43$) natural disaster, 9.8% ($n = 49$) sexual abuse in the childhood, 29.6% ($n = 148$) severe accident, 1.8% ($n = 9$) kidnapping, 18.0% ($n = 90$) life threatening illness, 41.6% ($n = 208$) witnessed an event and 3.8% ($n = 19$) other kinds of traumatic events. 59.2% ($n = 296$) of participants reported having experienced one traumatic event. 40.8% ($n = 204$) reported two or more traumatic events (mean number of experienced traumatic events = 1.66, $SD = 1.01$).

International Trauma Questionnaire (ITQ)

The German version of the ITQ was used ([Lueger-Schuster et al., 2015/2018](#)). This version has already been used in several studies, e.g. with survivors of institutional abuse ([Lueger-Schuster et al., 2018](#)) and in international network analyses ([Knefel et al., 2019](#); [Knefel et al., 2020](#)). The ITQ assesses each of the three clusters of PTSD (P1-P6) and DSO (C1-C6) by two items as well as three additional items for functional impairment for PTSD (P7-P9) and DSO (C7-C9) each. Items are answered on a five-point Likert scale ranging from "0 = Not at all" to "4 = Extremely". A symptom cluster/the functional impairment is considered fulfilled if at least one of the items is clinically endorsed (score ≥ 2 , "moderately"). A diagnosis of PTSD is indicated if every symptom cluster and the functional impairment item of the PTSD cluster group are fulfilled. If all symptom clusters and both functional impairments (across both PTSD and DSO cluster groups) are fulfilled, a diagnosis of CPTSD is indicated. In the current study the first

Table 1*Sociodemographic Data*

Variable / Category	Response	
	%	<i>n</i>
Sex		
Female	53.0	265
Male	47.0	235
Family status		
Married/living together	36.4	182
Married/living separated	3.4	17
Single	30.0	150
Divorced	16.2	81
Widowed	13.8	69
No answer	0.2	1
Living with a partner		
Yes	12.0	60
No	49.8	249
No answer	38.2	191
Educational background		
No or basic school leaving certificate	36.4	182
Intermediate school leaving certificate	37.2	186
Advanced school leaving certificate (university entrance level) or university degree	26.2	131
Other	0.2	1
Employment status		
Employed (full- or part-time)	47.8	239
Currently not working/unemployed	12.6	63
Studying	5.0	25
Retired	32.6	163
No answer	2.0	10

item for functional impairment of the DSO cluster was not measured due to survey item restrictions.

Statistical Analysis

Statistical analyses were conducted using the Software R (version 3.6.2) with the package *ltm* (Rizopoulos, 2018).

Data Preparation

Missing values in the ITQ (present in $n = 38$, max. of 5 missing values) was imputed by multiple (five) imputation. Analyses with imputed values were compared with complete cases. No significant differences were found.

Analysis of Dimensionality

To choose appropriate IRT models, an analysis of dimensionality of the symptom items for PTSD, DSO and both together (ITQ) was conducted (Mair, 2018). Dimensionality was explored with categorical principal component analyses, item factor analysis models and exploratory factor analyses as no assumption about the factor structure of the translation was made. However, since there are a lot of studies about the factor structure of the ITQ in other languages (Redican et al., 2021) a confirmatory factor analysis was done in addition. More detailed information is reported in Appendix A (see [Supplementary Materials](#)).

IRT Models

IRT focusses explicitly on which conclusions can be drawn from measured values/manifest variables (e.g. answer to an item) on underlying constructs/traits (θ) (e.g. PTSD) which are assumed to have a probabilistic relationship that can be modelled with different grades of complexity. One of the simplest models is the 1-parameter logistic model (Rasch, 1993). It models the dichotomous answer to an item in dependence of θ with a difficulty parameter which indicates at which level of θ the probability of endorsing that item is .5. The more complex model is the 2-parameter logistic model (Birnbaum, 1968) with an additional discrimination parameter, which indicates the discriminatory power of an item (Moosbrugger & Kelava, 2007). Using the marginal maximum likelihood method, unidimensional 1-parameter logistic and 2-parameter logistic IRT models were calculated for the PTSD and DSO cluster groups with dichotomized items. Model fit was assessed via the z-statistics to investigate whether item parameters were significantly different from zero ($z > 1.65$) and models were re-run with randomly generated data and compared to the real dataset. Here, a p -value $< .05$ indicated that an item did not fit the model. 1-parameter and 2-parameter model within each cluster were compared using the Akaike Information Criterion (AIC) (Akaike, 1974) and Bayesian Information Criterion (BIC) (Schwarz, 1978) with lower values indicating the better model. A difference in those values of ≥ 10 was considered "significant" (Raftery, 1995) and on the basis of parsimony, the 1-parameter model was chosen unless the criteria indicated the 2-parameter model is superior. Finally, item information curves were calculated to visualize item parameters and compare the information richness gained (Wood & Molenaar, 2017). Estimated item difficulty and discrimination parameters along with endorsement rates were compared to the results for the community sample of the analysis by Cloitre et

al. (2018), as they used a similar method to validate the English version. Additionally, diagnostic rates for PTSD and CPTSD were compared to previous literature.

Results

Analysis of Dimensionality

Overall, the categorical principal component analysis as well as the criteria very simple structure and minimum average partial supported unidimensionality of PTSD and DSO cluster groups. Exploratory factor analysis models with different numbers of factors all showed insufficient fit and all criteria values of the item factor analysis models laid very close to each other. Confirmatory factor analysis found the six first-order, two second-order factors model to be superior. More detailed results of the analysis of dimensionality are reported in Appendix B (see [Supplementary Materials](#)).

IRT Models

Model fit was good for all four estimated models (1-parameter logistic and 2-parameter logistic models for each the PTSD and DSO cluster groups): None of the z -statistic values were ≤ 1.65 and thus item parameters were significantly different from zero. Item fit within models yielded p -values of $> .05$ for all items, confirming their fit. AIC and BIC of the 1-parameter and 2-parameter models within each cluster group are shown in [Table 2](#). For PTSD, no model was favoured according to the AIC (difference < 10) and according to the BIC the 1-parameter model was superior. For the DSO cluster group both criteria indicated the 2-parameter model was better.

Table 2

Comparison of the 1- and 2-Parameter Logistic Models

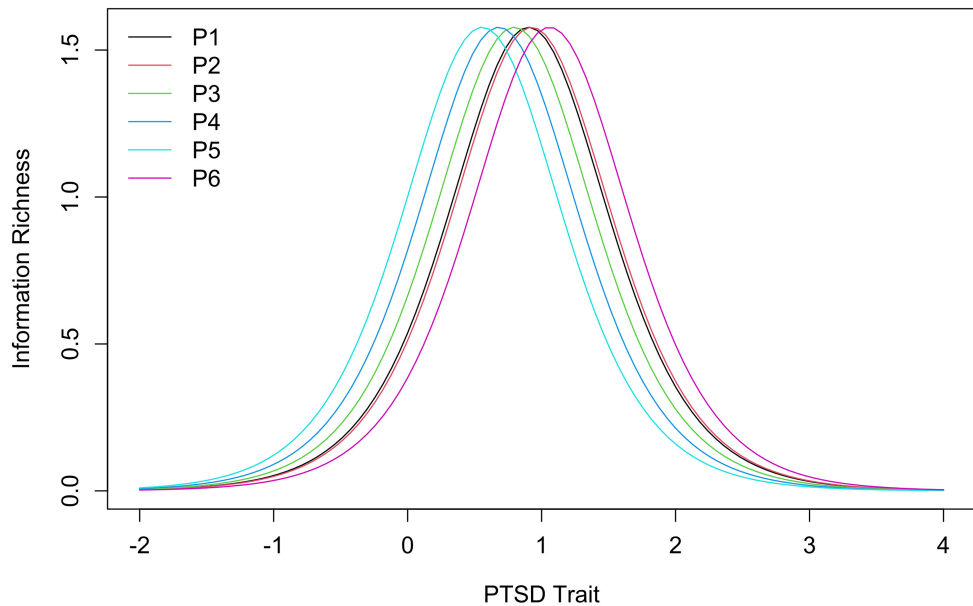
Model	AIC	BIC
PTSD		
1PL	2700.48	2729.98
2PL	2700.39	2750.97
DSO		
1PL	2169.03	2198.54
2PL	2114.77	2165.34

Note. AIC = Akaike information criterion; BIC = Bayesian information criterion; DSO = Disturbances in Self-Organization; PTSD = posttraumatic stress disorder; 1PL = 1-parameter logistic; 2PL = 2-parameter logistic.

Item information curves of the 1-parameter model for the PTSD cluster group are visualized in Figure 1. Item difficulty (left-right shift) showed a narrow, even distribution except for items P1 (Upsetting dreams) and P2 (Powerful images or memories) whose item information curves practically overlapped.

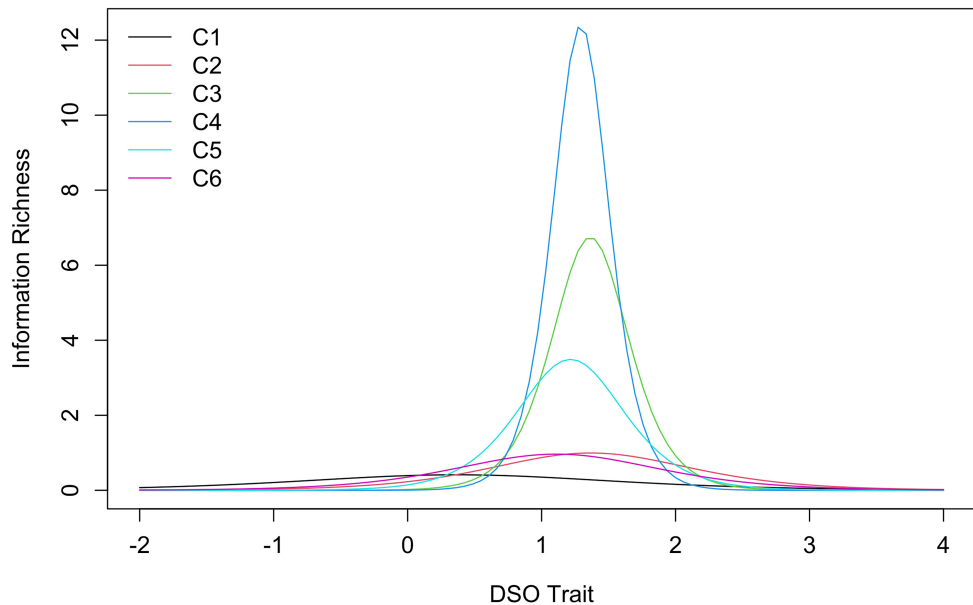
Figure 1

Item Information Curves of the 1-Parameter Logistic Model for the PTSD Cluster Group



Item information curves of the 2-parameter model for the DSO cluster group are visualized in Figure 2. Item difficulty showed a narrow distribution as well, except for item C1 (Long time to calm down) whose item information curve was an outlier on the lower end of DSO trait. Discriminatory power varied largely with item C4 (I feel worthless) on the upper end with a tall narrow curve and item C1 on the lower end showing a flat wide curve.

Item parameters of the models and the endorsement rates from the current study as well as the community sample of the study by Cloitre et al. (2018) are shown in Table 3. For PTSD, endorsement rates of the two studies spread over similarly sized ranges. The ranges overlapped with the highest two endorsement rates of the present study within the range of the study by Cloitre et al. (2018) and their three lowest rates within the range of the present study. Discrimination parameters were the same for all items of the German ITQ and for the items of each cluster in the English ITQ which is due

Figure 2*Item Information Curves of the 2-Parameter Logistic Model for the DSO Cluster Group*

to the use of slightly different 1-parameter logistic models. Discrimination parameters of the German version were lower. In contrast, item difficulty parameters of this study were higher than those reported by Cloitre et al. (2018). Still, difficulty parameters within the two studies scattered over similarly sized areas. Item information curves of the non-favoured models are reported in Appendix C (Supplementary Materials).

For DSO, endorsement rates found in this study were generally lower than the ones reported by Cloitre et al. (2018). Endorsement rate of item C1 (Long time to calm down) constitutes an anomaly within the DSO cluster group of the German version as it is more than double the size of the next highest endorsement rate. This was not the case for any other endorsement rate including the same item in the English version. Discrimination parameters of the German version were descriptively lower and difficulty parameters higher. In the German version the parameters of item C1 again did not align with the other items. 5.0% ($n = 25$) in the current sample exceeded the threshold for an indication of PTSD diagnosis and 3.2% ($n = 16$) indicated CPTSD diagnosis.

Table 3*Endorsement Rates and Item Parameters of the Present Study and Cloitre et al. (2018)*

Item	Endorsement (%)		Discrimination (SE)		Difficulty (SE)	
	Present study	Cloitre et al.	Present study	Cloitre et al.	Present study	Cloitre et al.
PTSD						
P1	22.8	26.8	2.50 (0.17)	3.89 (0.17)	0.91 (0.08)	0.67 (0.05)
P2	22.0	31.8	2.50 (0.17)	3.89 (0.17)	0.94 (0.08)	0.51 (0.04)
P3	25.9	37.7	2.50 (0.17)	6.32 (0.58)	0.79 (0.08)	0.32 (0.04)
P4	28.9	34.6	2.50 (0.17)	6.32 (0.58)	0.69 (0.07)	0.40 (0.04)
P5	32.5	36.0	2.50 (0.17)	6.53 (0.62)	0.56 (0.07)	0.36 (0.04)
P6	19.2	29.5	2.50 (0.17)	6.53 (0.62)	1.06 (0.08)	0.55 (0.04)
DSO						
C1	40.9	42.8	1.34 (0.21)	2.78 (0.21)	0.36 (0.10)	0.22 (0.05)
C2	15.2	36.1	2.09 (0.32)	3.79 (0.33)	1.32 (0.13)	0.41 (0.04)
C3	9.8	36.3	5.48 (1.32)	6.64 (0.91)	1.34 (0.08)	0.37 (0.04)
C4	11.0	34.5	7.05 (2.22)	8.41 (1.43)	1.27 (0.07)	0.42 (0.04)
C5	13.4	40.3	3.64 (0.61)	5.69 (0.74)	1.21 (0.09)	0.27 (0.04)
C6	20.2	39.6	2.03 (0.29)	4.54 (0.48)	1.08 (0.11)	0.30 (0.04)

Note. C1 = Long time to calm down; C2 = Feeling numb; C3 = Feeling like a failure; C4 = Feeling worthless; C5 = Feeling cut off from people; C6 = Finding it hard to stay emotionally close to people; DSO = Disturbances in Self-Organization; PTSD = posttraumatic stress disorder; P1 = Upsetting dreams; P2 = Powerful images or memories; P3 = Avoiding internal reminders; P4 = Avoiding external reminders; P5 = Being “super-alert”; P6 = Feeling jumpy; SE = standard error.

Discussion

This study aimed to validate the German translation of the ITQ. This is essential for the scale to be clinically valid (Delahaye et al., 2015) and enhances the understanding of the C/PTSD disorder structure. Previously this was done successfully for the English version by Cloitre et al. (2018) with a similar analysis.

Due to the strong empirical support, unidimensional IRT models were calculated. For PTSD, the 1-parameter and for DSO, the 2-parameter logistic models were deemed superior. This suggests that the items of the PTSD cluster group do not vary enough in discriminatory power for having to consider this parameter in modelling, whereas in the DSO cluster group discriminatory power seems to vary too much to be omitted as a parameter.

PTSD items showed no excessive high or low endorsement rates and no outlier. Cloitre et al. (2018) found similar values but with higher overall average. This difference could be due to the translation however endorsement rates of all PTSD items were lower indicating that sample differences seem more likely. Such a difference could arise from

the number of traumatic experiences in each sample since this is associated with higher probability of C/PTSD (Karatzias et al., 2016; Kolassa, Kolassa, Ertl, Papassotiropoulos, & De Quervain, 2010). In the community sample of Cloitre et al. (2018) the average number of traumatic experiences was 3.36 while in the current study it was 1.66 with the majority (59.2%) having experienced just a single traumatic event. This could explain higher PTSD traits and thus higher endorsement rates in the sample of Cloitre et al. (2018). Within the DSO cluster group item C1 (Long time to calm down) was an outlier in terms of endorsement rate and had the lowest discrimination parameter. This resulted in relatively little information gained from this item. In the English version, item C1 had a similar endorsement rate however it did not constitute an outlier and had a higher discrimination parameter. A possible reason for this difference could lie in the broader meaning of the German translation. While *upset* ("When I am upset, it takes me a long time to calm down.") represents feelings of worry, unhappiness, or anger, the German equivalent word *aufgeregt* additionally represents the feeling of pleasant anticipation as well as a physiological arousal or agitation. This could lead to higher endorsement of this item in the German translation.

All other DSO items had quite low endorsement rates compared to the PTSD cluster group as well as to the results of Cloitre et al. (2018). Since low endorsement rates were consistent over five items sample differences in CPTSD trait seem a more probable reason than the translation process itself. Differences in the average number in traumatic events could explain these different rates. To better understand the performance of item C1 and the low endorsement rates of items C2 to C6 it would be desirable to have future studies investigate this, for example, using polytomous IRT modelling with a community and a clinical sample.

Combined diagnostic rate of PTSD (5.0%) and CPTSD (3.2%) was 8.2% and thus lower than in comparable studies like Ben-Ezra et al. (2018) (9% PTSD and 2.6% CPTSD), Knefel et al. (2019) (12.9% PTSD and 20.6% CPTSD), and Hyland et al. (2020) (5.0% PTSD and 7.7% CPTSD). In the latter study with a nationally representative sample from Ireland the difference in diagnostic rates was mainly due to the difference in CPTSD rate. The CPTSD rate in the current study was most probably underestimated by omission of item C7 (concern about social life) due to survey item restrictions. Diagnostic rates can thus be considered in accordance with pre-existing literature.

The prevalence ratio of PTSD and CPTSD in different samples is subject to an ongoing scientific debate (Cloitre et al., 2018). There is a dominant hypothesis that community rates of PTSD should be higher than CPTSD while the reverse is true for trauma clinics (Brewin et al., 2009). However, this view is challenged by studies showing that multiple traumatic experiences are associated with higher rates of CPTSD than PTSD (Elklit & Shevlin, 2007) and that in community samples multiple experiences of traumatisation is more common than a single experience (Scott et al., 2013). In the present study the PTSD rate was higher than CPTSD. This is in line with the proposed hypothesis that

in a community sample PTSD is higher. On the other hand, it contradicts the findings that multiple experiences of traumatisation may be more likely in community samples. In comparison to the diagnostic rates of Cloitre et al. (2018) (5.3% PTSD and 12.9% CPTSD) the 5.0% PTSD rate in the present study was similar whereas the 3.2% CPTSD rate was lower. Again, this difference is likely due to the omission of item C7 as well as a higher mean number of traumatic experiences in the sample of Cloitre et al. (2018).

Confirmatory factor analysis showed the six-factors and the six first-order, two second-order factors model to be of good fit and the latter to be superior. This coincides with other studies on community samples e.g. with the Italian (Somma, Maffei, Borroni, Gialdi, & Fossati, 2019) or the Korean translation (Choi, Kim, & Lee, 2021) and speaks for the validity of the German translation of the ITQ (Redican et al., 2021).

Using IRT methods, the German translation of the ITQ was investigated with a special focus on the item level. The results support the validity of all items except for item C1 (Long time to calm down). Additionally, confirmatory factor analysis too, pointed to the validity of the investigated questionnaire. Since the present study used data of a community sample the ITQ could not be tested for differential item functioning, i.e. different performance in a community than in a clinical sample. Differential item functioning, potential changes in diagnostic rates and applicability in clinical samples would be interesting to investigate in the future. Finally, this validation approach should be complemented with classical test theory (e.g., investigating convergent and divergent validity) in other studies.

Limitations

Almost half of the individuals contacted refused to participate in the study. Although this is common in surveys of this kind, a potential selection bias cannot be excluded (Maercker et al., 2018). Individuals who experienced strong avoidance symptoms might have been overlooked due to the inclusion criteria of a subjectively most burdensome event. Further, not all CPTSD impairment items could be included in the study due to survey item restrictions. This did not impact IRT model estimation but might have influenced CPTSD diagnostic rate.

Conclusion

The German translation of the ITQ can be considered a valid measure for ICD-11 C/PTSD. An exceptional case was the item C1 ("When I am upset, it takes me a long time to calm down."), which showed mismatched item parameters in comparison to other items of the same cluster group. As this is the first study to specifically examine the validity of the German version of the ITQ its findings are important in many regards. Having a validated measurement for ICD-11 C/PTSD in German supports future research and its benefits concerning the German speaking population worldwide as well as global research

by providing data from this population. Research and benefits for the population apply to all related areas of C/PTSD, from the disorders themselves, over disorders specifically associated with stress, to anything including C/PTSD as a precursory, accompanying or resulting condition and be it about prevalence, prevention, intervention, rehabilitation, or others. Some studies already used the German translation of the ITQ prior to this validation (Knefel et al., 2019; Knefel et al., 2020; Lueger-Schuster et al., 2018). Results gained this way receive backup through the validation of the instrument. Besides research this study provides an important contribution to the clinical applicability of the ITQ and thus the health care of the German speaking population. As a validated instrument it can be used in practice to screen for ICD-11 C/PTSD, support the diagnostic process, accompany a (therapeutic) process and more. Further, the information gained about the performance of the translated items also furthers the understanding of the appropriate wording and combination of items to measure the C/PTSD constructs in German as well as opens the possibility to improve the ITQ. For the German ITQ, consider renaming the previous translation of "upset", e.g., using the German verb "aufgewühlt" or "aufgebracht". Future studies should try to confirm the present findings including a clinical sample to test for differential item functioning and changes in diagnostic rates and include item C7. Also of interest would be the investigation of different kinds of validity of the German ITQ to consolidate the findings here.

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Competing Interests: The authors have declared that no competing interests exist.

Supplementary Materials

The Supplementary Materials contain the detailed method and results of the analysis of dimensionality and item information curves of the non-favoured IRT-models (for access see [Index of Supplementary Materials](#) below).

Index of Supplementary Materials

Christen, D., Killikelly, C., Maercker, A., & Augsburger, M. (2021). *Supplementary materials to "Item response model validation of the German ICD-11 International Trauma Questionnaire for PTSD and CPTSD"* [Additional information]. PsychOpen GOLD.
<https://doi.org/10.23668/psycharchives.5253>

References

- Akaike, H. (1974). A new look at the statistical model identification. *IEEE Transactions on Automatic Control*, *19*(6), 716-723. <https://doi.org/10.1109/TAC.1974.1100705>
- Ben-Ezra, M., Karatzias, T., Hyland, P., Brewin, C. R., Cloitre, M., Bisson, J. I., . . . Shevlin, M. (2018). Posttraumatic stress disorder (PTSD) and complex PTSD (CPTSD) as per ICD-11 proposals: A population study in Israel. *Depression and Anxiety*, *35*(3), 264-274. <https://doi.org/10.1002/da.22723>
- Birnbaum, A. (1968). Some latent trait models and their use in inferring an examinee's ability. In F. M. Lord & M. R. Novick (Eds.), *Statistical theories of mental test scores* (pp. 395-479). Reading, MA, USA: Addison-Wesley.
- Brewin, C. R., Lanius, R. A., Novac, A., Schnyder, U., & Galea, S. (2009). Reformulating PTSD for DSM-V, life after criterion A. *Journal of Traumatic Stress*, *22*(5), 366-373. <https://doi.org/10.1002/jts.20443>
- Choi, H., Kim, N., & Lee, A. (2021). ICD-11 posttraumatic stress disorder (PTSD) and complex PTSD among organized violence survivors in modern South Korean history of political oppression. *Anxiety, Stress, and Coping*, *34*(2), 203-214. <https://doi.org/10.1080/10615806.2020.1839889>
- Cloitre, M., Courtois, C. A., Charuvastra, A., Carapezza, R., Stolbach, B. C., & Green, B. L. (2011). Treatment of complex PTSD, results of the ISTSS expert clinician survey on best practices. *Journal of Traumatic Stress*, *24*(6), 615-627. <https://doi.org/10.1002/jts.20697>
- Cloitre, M., Garvert, D. W., Weiss, B., Carlson, E. B., & Bryant, R. A. (2014). Distinguishing PTSD, complex PTSD, and borderline personality disorder, a latent class analysis. *European Journal of Psychotraumatology*, *5*(1), Article 25097. <https://doi.org/10.3402/ejpt.v5.25097>
- Cloitre, M., Hyland, P., Bisson, J. I., Brewin, C. R., Roberts, N., Karatzias, T., & Shevlin, M. (2019). ICD-11 PTSD and complex PTSD in the United States, a population-based study. *Journal of Traumatic Stress*, *32*, 833-842. <https://doi.org/10.1002/jts.22454>
- Cloitre, M., Roberts, N. P., Bisson, J. I., & Brewin, C. R. (2015). *The ICD-11 Trauma Questionnaire (ICD-TQ)*. Unpublished measuring instrument.
- Cloitre, M., Shevlin, M., Brewin, C. R., Bisson, J. I., Roberts, N. P., Maercker, A., . . . Hyland, P. (2018). The International Trauma Questionnaire, development of a self-report measure of ICD-11 PTSD and complex PTSD. *Acta Psychiatrica Scandinavica*, *138*(6), 536-546. <https://doi.org/10.1111/acps.12956>
- Delahaye, M., Stieglitz, R. D., Graf, M., Keppler, C., Maes, J., & Pflueger, M. (2015). Deutsche Übersetzung und Validierung des Stress Appraisal Measure (SAM). *Fortschritte der Neurologie · Psychiatrie*, *83*(5), 276-285. <https://doi.org/10.1055/s-0034-1399727>
- Elklit, A., & Shevlin, M. (2007). The structure of PTSD symptoms: A test of alternative models using confirmatory factor analysis. *British Journal of Clinical Psychology*, *46*(3), 299-313. <https://doi.org/10.1348/014466506X171540>
- Gilbar, O. (2020). Examining the boundaries between ICD-11 PTSD/CPTSD and depression and anxiety symptoms: A network analysis perspective. *Journal of Affective Disorders*, *262*, 429-439. <https://doi.org/10.1016/j.jad.2019.11.060>

- Hansen, M., Hyland, P., Armour, C., Shevlin, M., & Elklit, A. (2015). Less is more? Assessing the validity of the ICD-11 model of PTSD across multiple trauma samples. *European Journal of Psychotraumatology*, 6(1), Article 28766. <https://doi.org/10.3402/ejpt.v6.28766>
- Haselgruber, A., Sölva, K., & Lueger-Schuster, B. (2020). Symptom structure of ICD-11 complex posttraumatic stress disorder (CPTSD) in trauma-exposed foster children: Examining the International Trauma Questionnaire – Child and adolescent version (ITQ-CA). *European Journal of Psychotraumatology*, 11(1), Article 1818974. <https://doi.org/10.1080/20008198.2020.1818974>
- Hyland, P., Brewin, C. R., & Maercker, A. (2017). Predictive validity of ICD-11 PTSD as measured by the impact of event scale-revised, a 15-year prospective study of political prisoners, ICD-11 PTSD and the Impact of Event Scale-Revised. *Journal of Traumatic Stress*, 30(2), 125-132. <https://doi.org/10.1002/jts.22171>
- Hyland, P., Shevlin, M., Brewin, C. R., Cloitre, M., Downes, A. J., Jumbe, S., . . . Roberts, N. P. (2017). Validation of post-traumatic stress disorder (PTSD) and complex PTSD using the International Trauma Questionnaire. *Acta Psychiatrica Scandinavica*, 136(3), 313-322. <https://doi.org/10.1111/acps.12771>
- Hyland, P., Shevlin, M., Elklit, A., Murphy, J., Vallières, F., Garvert, D. W., & Cloitre, M. (2017). An assessment of the construct validity of the ICD-11 proposal for complex posttraumatic stress disorder. *Psychological Trauma: Theory, Research, Practice, and Policy*, 9(1), 1-9. <https://doi.org/10.1037/tra0000114>
- Hyland, P., Shevlin, M., Fyvie, C., Cloitre, M., & Karatzias, T. (2020). The relationship between ICD-11 PTSD, complex PTSD and dissociative experiences. *Journal of Trauma & Dissociation*, 21(1), 62-72. <https://doi.org/10.1080/15299732.2019.1675113>
- Karatzias, T., Hyland, P., Bradley, A., Cloitre, M., Roberts, N. P., Bisson, J. I., & Shevlin, M. (2019). Risk factors and comorbidity of ICD-11 PTSD and complex PTSD, findings from a trauma-exposed population based sample of adults in the United Kingdom. *Depression and Anxiety*, 36(9), 887-894. <https://doi.org/10.1002/da.22934>
- Karatzias, T., Shevlin, M., Fyvie, C., Hyland, P., Efthymiadou, E., Wilson, D., . . . Cloitre, M. (2016). An initial psychometric assessment of an ICD-11 based measure of PTSD and complex PTSD (ICD-TQ), evidence of construct validity. *Journal of Anxiety Disorders*, 44, 73-79. <https://doi.org/10.1016/j.janxdis.2016.10.009>
- Keeley, J. W., Reed, G. M., Roberts, M. C., Evans, S. C., Medina-Mora, M. E., Robles, R., . . . Saxena, S. (2016). Developing a science of clinical utility in diagnostic classification systems, field study strategies for ICD-11 mental and behavioral disorders. *The American Psychologist*, 71(1), 3-16. <https://doi.org/10.1037/a0039972>
- Keeley, J. W., Reed, G. M., Roberts, M. C., Evans, S. C., Robles, R., Matsumoto, C., . . . Maercker, A. (2016). Disorders specifically associated with stress: A case-controlled field study for ICD-11 mental and behavioural disorders. *International Journal of Clinical and Health Psychology*, 16(2), 109-127. <https://doi.org/10.1016/j.ijchp.2015.09.002>

- Knefel, M., Garvert, D. W., Cloitre, M., & Lueger-Schuster, B. (2015). Update to an evaluation of ICD-11 PTSD and complex PTSD criteria in a sample of adult survivors of childhood institutional abuse by Knefel & Lueger-Schuster (2013): A latent profile analysis. *European Journal of Psychotraumatology*, *6*(1), Article 25290. <https://doi.org/10.3402/ejpt.v6.25290>
- Knefel, M., Karatzias, T., Ben-Ezra, M., Cloitre, M., Lueger-Schuster, B., & Maercker, A. (2019). The replicability of ICD-11 complex post-traumatic stress disorder symptom networks in adults. *The British Journal of Psychiatry*, *214*(6), 361-368. <https://doi.org/10.1192/bjp.2018.286>
- Knefel, M., Lueger-Schuster, B., Bisson, J. I., Karatzias, T., Kazlauskas, E., & Roberts, N. P. (2020). A cross-cultural comparison of ICD-11 complex posttraumatic stress disorder symptom networks in Austria, the United Kingdom, and Lithuania, a comparison of ICD-11 complex PTSD networks. *Journal of Traumatic Stress*, *33*(1), 41-51. <https://doi.org/10.1002/jts.22361>
- Knefel, M., Tran, U. S., & Lueger-Schuster, B. (2016). The association of posttraumatic stress disorder, complex posttraumatic stress disorder, and borderline personality disorder from a network analytical perspective. *Journal of Anxiety Disorders*, *43*, 70-78. <https://doi.org/10.1016/j.janxdis.2016.09.002>
- Kolassa, I.-T., Kolassa, S., Ertl, V., Papassotiropoulos, A., & De Quervain, D. J.-F. (2010). The risk of posttraumatic stress disorder after trauma depends on traumatic load and the catechol-o-methyltransferase Val¹⁵⁸Met polymorphism. *Biological Psychiatry*, *67*(4), 304-308. <https://doi.org/10.1016/j.biopsych.2009.10.009>
- Lueger-Schuster, B., Knefel, M., Glück, T. M., Jagsch, R., Kantor, V., & Weindl, D. (2018). Child abuse and neglect in institutional settings, cumulative lifetime traumatization, and psychopathological long-term correlates in adult survivors: The Vienna Institutional Abuse Study. *Child Abuse & Neglect*, *76*, 488-501. <https://doi.org/10.1016/j.chiabu.2017.12.009>
- Lueger-Schuster, B., Knefel, M., & Maercker, A. (2015/2018). *Der Internationale Trauma Questionnaire – deutsche Version* [Measuring instrument]. Retrieved from <https://www.psychologie.uzh.ch/dam/jcr:ad66be44-4cd9-44c3-9911-488253de04cc/ITQ%20-%20Fragebogen.pdf>
- Maercker, A., Hecker, T., Augsburger, M., & Kliem, S. (2018). ICD-11 prevalence rates of posttraumatic stress disorder and complex posttraumatic stress disorder in a German nationwide sample. *The Journal of Nervous and Mental Disease*, *206*(4), 270-276. <https://doi.org/10.1097/NMD.0000000000000790>
- Mair, P. (2018). *Modern psychometrics with R*. Cham, Switzerland: Springer Nature Switzerland.
- Møller, L., Augsburger, M., Elklit, A., Søgaard, U., & Simonsen, E. (2020). Traumatic experiences, ICD-11 PTSD, ICD-11 complex PTSD, and the overlap with ICD-10 diagnoses. *Acta Psychiatrica Scandinavica*, *141*(5), 421-431. <https://doi.org/10.1111/acps.13161>
- Moosbrugger, H., & Kelava, A. (2007). *Testtheorie & Fragebogenkonstruktion, mit 43 Tabellen*. Heidelberg, Germany: Springer.
- Nickerson, A., Cloitre, M., Bryant, R. A., Schnyder, U., Morina, N., & Schick, M. (2016). The factor structure of complex posttraumatic stress disorder in traumatized refugees. *European Journal of Psychotraumatology*, *7*(1), Article 33253. <https://doi.org/10.3402/ejpt.v7.33253>

- Perkonig, A., Kessler, R. C., Storz, S., & Wittchen, H. U. (2000). Traumatic events and post-traumatic stress disorder in the community, prevalence, risk factors and comorbidity. *Acta Psychiatrica Scandinavica*, *101*(1), 46-59. <https://doi.org/10.1034/j.1600-0447.2000.101001046.x>
- Raftery, A. E. (1995). Bayesian model selection in social research. *Sociological Methodology*, *25*, 111-163. <https://doi.org/10.2307/271063>
- Rasch, G. (1993). *Probabilistic models for some intelligence and attainment tests*. Chicago, IL, USA: Mesa.
- Redican, E., Nolan, E., Hyland, P., Cloitre, M., McBride, O., Karatzias, T., . . . Shevlin, M. (2021). A systematic literature review of factor analytic and mixture models of ICD-11 PTSD and CPTSD using the International Trauma Questionnaire. *Journal of Anxiety Disorders*, *79*, Article 102381. <https://doi.org/10.1016/j.janxdis.2021.102381>
- Reed, G. M. (2010). Toward ICD-11, improving the clinical utility of WHO's international classification of mental disorders. *Professional Psychology: Research and Practice*, *41*(6), 457-464. <https://doi.org/10.1037/a0021701>
- Rizopoulos, D. (2018). ltm: An R package for latent variable modeling and item response theory analyses. *Journal of Statistical Software*, *17*(5), 1-25. Retrieved from <http://www.jstatsoft.org/v17/i05/>
- Sachser, C., Keller, F., & Goldbeck, L. (2017). Complex PTSD as proposed for ICD-11, validation of a new disorder in children and adolescents and their response to trauma-focused cognitive behavioral therapy. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, *58*(2), 160-168. <https://doi.org/10.1111/jcpp.12640>
- Schwarz, G. (1978). Estimating the dimension of a model. *Annals of Statistics*, *6*(2), 461-464. <https://doi.org/10.1214/aos/1176344136>
- Scott, K. M., Koenen, K. C., Aguilar-Gaxiola, S., Alonso, J., Angermeyer, M. C., Benjet, C., & Kessler, R. C. (2013). Associations between lifetime traumatic events and subsequent chronic physical conditions, a cross-national, cross-sectional study. *PLoS One*, *8*(11), Article e80573. <https://doi.org/10.1371/journal.pone.0080573>
- Shevlin, M., Hyland, P., Karatzias, T., Fyvie, C., Roberts, N., Bisson, J. I., . . . Cloitre, M. (2017). Alternative models of disorders of traumatic stress based on the new ICD-11 proposals. *Acta Psychiatrica Scandinavica*, *135*(5), 419-428. <https://doi.org/10.1111/acps.12695>
- Somma, A., Maffei, C., Borroni, S., Galdi, G., & Fossati, A. (2019). Post traumatic reactions as individual differences: Latent structure analysis of the International Trauma Questionnaire in Italian trauma-exposed and non-trauma exposed adults. *Mediterranean Journal of Clinical Psychology*, *7*(1). <https://doi.org/10.6092/2282-1619/2019.7.2058>
- Tsur, N., & Abu-Raiya, H. (2020). COVID-19-related fear and stress among individuals who experienced child abuse: The mediating effect of complex posttraumatic stress disorder. *Child Abuse & Neglect*, *110*(2), Article 104694. <https://doi.org/10.1016/j.chiabu.2020.104694>
- van der Kolk, B. A., Roth, S., Pelcovitz, D., Sunday, S., & Spinazzola, J. (2005). Disorders of extreme stress, the empirical formation of a complex adaptation to trauma. *Journal of Traumatic Stress*, *18*(5), 389-399. <https://doi.org/10.1002/jts.20047>

- Wittchen, H. U., & Pfister, H. (1997). *DIA-X-Interviews: Manual für Screening-Verfahren und Interview* [Interview]. Frankfurt, Germany: Swets & Zeitlinger.
- Wood, J., & Molenaar, P. C. M. (2017). *Logistic IRT models*. Retrieved from https://quantdev.ssri.psu.edu/sites/qdev/files/IRT_tutorial_FA17_2.html
- World Health Organization. (2018). *International classification of diseases for mortality and morbidity statistics* (11th revision). Geneva, Switzerland: World Health Organization.

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Indirect Prevention and Treatment of Depression: An Emerging Paradigm?

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Abstract

Background: Although depression is one of the main public health challenges of our time, the uptake of interventions aimed at the prevention and treatment is low to modest. New approaches are needed to reduce the disease burden of depression.

Method: Indirect prevention and treatment may be one method to increase uptake of services. Indirect interventions aim at problems related to depression but with lower stigma and prevent or treat depression indirectly. This paper describes the approach, the empirical support and limitations.

Results: A growing number of studies focus on indirect prevention and treatment. Several studies have examining the possibilities to prevent and treat depression through interventions aimed at insomnia. Several other studies focus on indirect interventions aimed at for example stress and perfectionism. Digital 'suites' of interventions may focus on daily problems of for example students or the workplace and offer a broad range of indirect interventions in specific settings.

Conclusion: Indirect prevention and treatment may be a new approach to increase uptake and reduce the disease burden of depression.

Keywords

depression, disease burden, indirect treatment, stigma, prevention



Highlights

- Effective treatments and preventive interventions are available for depression but uptake is low.
- Indirect prevention and treatment focus on problems related to depression.
- Uptake of indirect interventions is higher because they focus on daily problems.
- Indirect interventions may provide a new paradigm for prevention and treatment.

Depressive disorders are highly prevalent (Alonso et al., 2004; Kessler & Bromet, 2013), have a high incidence (Waraich et al., 2004), and are associated with a substantial loss of quality of life for patients and their relatives (Saarni et al., 2007; Vos et al., 2016), increased mortality rates (Cuijpers et al., 2014), high levels of service use, and enormous economic costs (Greenberg et al., 2003; Smit et al., 2006). Major depression is currently ranked fourth worldwide in disease burden, and it is expected to rank first in high-income countries by the year 2030 (Mathers & Loncar, 2006). There is no doubt that depression is one of the most important public health challenges in the coming decades (Cuijpers et al., 2012).

One of the main problems that limits the impact of attempts to reduce the burden of disease of depression is the low uptake of treatments. This uptake is low in the general population, with rates that are often lower than 30%, even in high income countries (Chisholm et al., 2016). In some specific groups, such as adolescents, young adults, older adults and minority groups, the number of those seeking help is even considerably lower. For example, one study found that the uptake in college students in high income countries was only 30% for those with a 12-month depressive disorder (Bruffaerts et al., 2019). The low uptake of treatment is related to several factors, such as lack of financial resources and availability of clinicians. This is an important reason why the uptake of services is low in low- and middle-income countries, where hardly any infrastructure for mental health care exists, too few trained clinicians are available and insufficient resources are available to pay for these services. However, also in high-income settings the uptake is low because of the stigma related to depression, being unaware that existing problems are indeed depression, lack of time and the preference of many patients to manage their problems on their own or with friends and family.

The uptake of preventive services is even lower. In one study we estimated that about 1% of those meeting criteria for participation in indicated prevention actually participated, even when offered free or almost free of charge (Cuijpers et al., 2010). Reasons are comparable to those mentioned earlier for the low uptake of treatments and include stigma, and preference to solve problems her/himself instead of seeking help (Cuijpers et al., 2010).

Another limiting factor in the reduction of the disease burden of depression is that interventions aimed at the prevention and treatment of depression are effective, but

their effects are modest. The impact of interventions can be seen as the product of the uptake and the effects, and when both the uptake and the effects are small, the impact is also small. Meta-analyses of psychological and pharmacological treatments usually find that the interventions improve outcomes in about 20 to 25% of patients, compared to control conditions (Cipriani et al., 2018; Cuijpers et al., 2021b). That means that most patients either improve regardless of treatment or do not respond to them (Cuijpers, 2018). Preventive interventions are also effective and can reduce the risk of developing a depressive disorder in the coming year with about 20% (Cuijpers et al., 2021a), but despite these positive effects the majority of high-risk participants still develop a disorder. Together with the low uptake of these services, it should not come as a surprise that the prevalence of depressive disorders has not been reduced over the past decades, despite the availability of services for prevention and treatment (Ferrari et al., 2013).

The Indirect Approach to Prevention and Treatment

Conventional methods to increase help-seeking rates include universal mental health awareness campaigns (Salerno, 2016; Yamaguchi et al., 2013), gatekeeper training (Lipson et al., 2014) and specific interventions aimed at improving help-seeking behaviours (Ebert et al., 2019). An alternative method to increase uptake is what could be called “indirect” prevention and treatment. The basic idea of these “indirect” interventions is that they focus on problems related to depression, but not directly on depression itself. At the same time the participants learn techniques which not only directly affect the problem, but also have an effect on depression or may prevent future depressive symptoms or disorders. For example, people with insomnia and depression receive an intervention aimed at insomnia, but also learn skills to manage their mood. Insomnia is less stigmatising than depression to talk about or to seek treatment for, and if the intervention aimed at insomnia is also effective in reducing depression, then the participant is still successfully “treated” for depression in an indirect way.

The same idea can be applied to prevention. If someone with insomnia has subthreshold depression but no diagnosis for a depressive disorder, this person meets criteria for participation in an indicated prevention program. An intervention aimed at insomnia for this person could be considered as indicated prevention and has the potential to prevent the onset of depressive disorders in an indirect way. Again, participation in an intervention on insomnia is probably less stigmatising as an intervention to prevent a depressive disorder.

Research on the Indirect Approach

A growing number of studies is focusing on this strategy. For example, recent studies have shown that cognitive behaviour therapy for insomnia in patients with both insomnia and depression, reduces not only insomnia but also depression (van der Zweerde et al., 2019). The effect sizes found for such interventions on depressive symptomatology are comparable to those of ‘regular’ treatment of depression. This is true even though the interventions are not directly aimed at depression, and the stigma to participate in interventions for insomnia is lower than interventions for depression. The generic cognitive behavioural strategies that participants learn for handling insomnia, are in many ways comparable to those that are used in cognitive behavioural therapies for depression. Or it could be the case that improvement of insomnia is the first step to escape from a vicious circle of mood problems. Other research has used the same principle as a preventive strategy. For example, one study found that participants with insomnia and subthreshold depression who receive cognitive behaviour therapy for insomnia had a smaller chance to develop major depression at follow-up (Christensen et al., 2016).

But this principle of ‘indirect’ prevention and treatment of depression is not limited to insomnia. One recent study examined the effects of an intervention aimed at perinatal women scoring high on perfectionism, with depression and anxiety as an outcome (Lowndes et al., 2019). This study found that the intervention significantly reduced perfectionism, and path analyses demonstrated a significant indirect effect of the intervention on depression and anxiety. Another study showed that a considerable part of the participants in interventions aimed at ‘stress management’ also suffer from depression, and that the effects of this stress management training on depression were considerable and comparable to the effects of psychological treatments of depression in general (Weisel et al., 2018). Interventions aimed at problems like perfectionism, procrastination, and low self-esteem have also been found to have considerable effects on depression in those suffering from depression at baseline (Cuijpers et al., 2021). There is much research on interventions for such common psychological problems and for many high-risk groups, but not with a focus on indirect prevention and treatment of depression.

One could argue that this approach is very similar to selective prevention. Selective prevention is aimed at people who have an increased risk to develop a depressive disorder. Selective interventions are for example aimed at children of depressed parents (Clarke et al., 2001), pregnant women with an increased risk for postpartum depression (Phipps et al., 2013; Zlotnick et al., 2016), dementia caregivers (Cheng et al., 2020) or patients with general medical disorders (Rovner et al., 2014). Interventions aimed at these high-risk groups may support participants in coping with their problems but may at the same time prevent or reduce existing depressive symptomatology. However, these studies usually first have the intention to support participants with their problems and have depression only as secondary outcome. They are hardly ever designed as indirect

treatment or prevention of depression in the sense that they report the number of depressed participants at baseline and the effects of the intervention on depression in these participants.

“Suits” of Indirect Interventions for Specific Settings

One important development in recent years may help in disseminating indirect interventions. Internet-based cognitive behavioural interventions have been developed for many different disorders, problems and target groups. Because they can be easily adapted and broadly disseminated it could be possible to develop ‘suites’ of multiple interventions for problems with relatively low stigma that are related to depression. For example, it could be possible to develop a suite of interventions for college students on procrastination, perfectionism, low self-esteem, test-anxiety, stress, worry, and any other common problem that is brought forward by students themselves. Or a suite of interventions for employees in large companies on stress, conflict resolution, assertiveness, time management and problem-solving. Comparable suites could be developed for high-school students, perinatal women, or specific groups of patients in general hospitals. Because such interventions are scalable and not expensive after first development, they could be offered to full populations, but are in fact meant to be early interventions for depression and potentially other common mental disorders.

Challenges and Limitations

It is possible that indirect interventions can be an option for mild depression, but not for moderate and severe depression. However, not every person with severe depression gets treatment, and it is very well possible that they are willing to participate in these ‘indirect’ interventions. It is an empirical question whether indirect treatments in these patients are still better than the current practice of not providing treatment at all if the patient cannot be motivated to get treatment. How other clinical issues, such as suicidality and comorbidity, should be handled is also not yet clear. If patients participate in interventions that are not directly aimed at depression, who will take care of suicide risks and correct diagnoses? In order to avoid risks in these domains extended baseline assessment could be needed for these indirect interventions. It is also uncertain whether such an approach would indeed lead to higher uptake rates of services. Will interventions aimed at reducing insomnia, perfectionism or stress lead indeed to better outcomes than just offering mental health services? These are empirical questions that have to be answered with future research, but at ‘face value’ they can lead to a higher uptake, especially when they are offered as ‘suits’ of interventions.

Conclusion

Depression is a highly heterogeneous condition with largely varying symptoms patterns and associations with other variables. This heterogeneity is typically seen as problematic and hampering progress in our understanding and management of depression. But it may also offer new possibilities for indirect prevention and treatment. A growing number of studies focuses on problems related to depression, and interventions focus not directly on depression itself, but participants learn techniques that not only affect such problems directly, but also depression. This may offer new possibilities to get effective interventions to people who usually do not get treatment for depression. Much research is needed to examine whether this is possible, feasible and effective, but the first findings are hopeful. Maybe we are witnessing the start of a new paradigm in the prevention and treatment of depression.

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References

- Alonso, J., Ferrer, M., Gandek, B., Ware, J. E., Jr., Aaronson, N. K., Mosconi, P., Rasmussen, N. K., Bullinger, M., Fukuhara, S., Kaasa, S., Leplège, A., & IQOLA Project Group. (2004). Health-related quality of life associated with chronic conditions in eight countries: Results from the International Quality of Life Assessment (IQOLA) Project. *Quality of Life Research*, *13*, 283-298. <https://doi.org/10.1023/B:QURE.0000018472.46236.05>
- Bruffaerts, R., Mortier, P., Auerbach, R. P., Alonso, J., Hermosillo De la Torre, A. E., Cuijpers, P., Demyttenaere, K., Ebert, D. D., Green, J. G., Hasking, P., Stein, D. J., Ennis, E., Nock, M. K., Pinder-Amaker, S., Sampson, N. A., Vilagut, G., Zaslavsky, A. M., & Kessler, R. C. (2019). Lifetime and 12-month treatment for mental disorders and suicidal thoughts and behaviors among first year college students. *International Journal of Methods in Psychiatric Research*, *28*, Article e1764. <https://doi.org/10.1002/mpr.1764>
- Cheng, S. T., Li, K. K., Losada, A., Zhang, F., Au, A., Thompson, L. W., & Gallagher-Thompson, D. (2020). The effectiveness of nonpharmacological interventions for informal dementia caregivers: An updated systematic review and meta-analysis. *Psychology and Aging*, *35*, 55-77. <https://doi.org/10.1037/pag0000401>

- Chisholm, D., Sweeny, K., Sheehan, P., Rasmussen, B., Smit, F., Cuijpers, P., & Saxena, S. (2016). Scaling-up treatment of depression and anxiety: A global return on investment analysis. *The Lancet Psychiatry*, 3, 415-424. [https://doi.org/10.1016/S2215-0366\(16\)30024-4](https://doi.org/10.1016/S2215-0366(16)30024-4)
- Christensen, H., Batterham, P. J., Gosling, J. A., Ritterband, L. M., Griffiths, K. M., Thorndike, F. P., Glozier, N., O'Dea, B., Hickie, I. B., & Mackinnon, A. J. (2016). Effectiveness of an online insomnia program (SHUTi) for prevention of depressive episodes (The GoodNight Study): A randomised controlled trial. *The Lancet Psychiatry*, 3, 333-341. [https://doi.org/10.1016/S2215-0366\(15\)00536-2](https://doi.org/10.1016/S2215-0366(15)00536-2)
- Cipriani, A., Furukawa, T. A., Salanti, G., Chaimani, A., Atkinson, L. Z., Ogawa, Y., Leucht, S., Ruhe, H. G., Turner, E. H., Higgins, J. P. T., Egger, M., Takeshima, N., Hayasaka, Y., Imai, H., Shinohara, K., Tajika, A., Ionannidis, J. P. A., & Geddes, J. R. (2018). Comparative efficacy and acceptability of 21 antidepressant drugs for the acute treatment of adults with major depressive disorder: A systematic review and network meta-analysis. *Lancet*, 391, 1357-1366. [https://doi.org/10.1016/S0140-6736\(17\)32802-7](https://doi.org/10.1016/S0140-6736(17)32802-7)
- Clarke, G. N., Hornbrook, M., Lynch, F., Polen, M., Gale, J., Beardslee, W., O'Connor, E., & Seeley, J. (2001). A randomized trial of a group cognitive intervention for preventing depression in adolescent offspring of depressed parents. *Archives of General Psychiatry*, 58, 1127-1134. <https://doi.org/10.1001/archpsyc.58.12.1127>
- Cuijpers, P. (2018). The challenges of improving treatments for depression. *Journal of the American Medical Association*, 320, 2529-2530. <https://doi.org/10.1001/jama.2018.17824>
- Cuijpers, P., Beekman, A. T. F., & Reynolds, C. F. (2012). Preventing depression: A global priority. *Journal of the American Medical Association*, 307, 1033-1034. <https://doi.org/10.1001/jama.2012.271>
- Cuijpers, P., Pineda, B. S., Quero, S., Karyotaki, E., Struijs, S. Y., Figueroa, C. A., Llamas, J. A., Furukawa, T. A., & Muñoz, R. F. (2021a). Psychological interventions to prevent the onset of depressive disorders: A meta-analysis of randomized controlled trials. *Clinical Psychology Review*, 83, Article 101955. <https://doi.org/10.1016/j.cpr.2020.101955>
- Cuijpers, P., Quero, S., Noma, H., Ciharova, M., Miguel, C., Karyotaki, E., Cipriani, A., Cristea, I., & Furukawa, T. A. (2021b). Psychotherapies for depression: A network meta-analysis covering efficacy, acceptability and long-term outcomes of all main treatment types. *World Psychiatry*, 20, 283-293. <https://doi.org/10.1002/wps.20860>
- Cuijpers, P., Smit, F., Aalten, P., de Wit, L., Klein, A., Salemink, E., Spinhoven, P., Struijs, S., Vonk, P., Ebert, D., Bruffaerts, R., Kessler, R., Wiers, R., & Karyotaki, E. (2021). *The associations of common psychological problems with mental disorders among college students*. Manuscript submitted for publication.
- Cuijpers, P., van Straten, A., Warmerdam, L., & van Rooy, M. J. (2010). Recruiting participants for interventions to prevent the onset of depressive disorders: Possible ways to increase participation rates. *BMC Health Services Research*, 10, Article 181. <https://doi.org/10.1186/1472-6963-10-181>

- Cuijpers, P., Vogelzangs, N., Twisk, J., Kleiboer, A., Li, J., & Penninx, B. (2014). Comprehensive meta-analysis of excess mortality in depression in the general community versus patients with specific illnesses. *The American Journal of Psychiatry*, *171*, 453-462. <https://doi.org/10.1176/appi.ajp.2013.13030325>
- Ebert, D. D., Franke, M., Kähler, F., Kähler, A.-M., Bruffaerts, R., Mortier, P., Karyotaki, E., Alonso, J., Cuijpers, P., Berking, M., Auerbach, R. P., Kessler, R. C., Baumeister, H., & WHO World Mental Health – International College Student collaborators. (2019). Increasing intentions to use mental health services among university students: Results of a pilot randomized controlled trial within the World Health Organization's World Mental Health International College Student Initiative. *International Journal of Methods in Psychiatric Research*, *28*, Article e1754.
- Ferrari, A. J., Somerville, A. J., Baxter, A. J., Norman, R., Patten, S. B., Vos, T., & Whiteford, H. A. (2013). Global variation in the prevalence and incidence of major depressive disorder: A systematic review of the epidemiological literature. *Psychological Medicine*, *43*, 471-481. <https://doi.org/10.1017/S0033291712001511>
- Greenberg, P. E., Kessler, R. C., Birnbaum, H. G., Leong, S. A., Lowe, S. W., Berglund, P. A., & Corey-Lisle, P. K. (2003). The economic burden of depression in the United States: How did it change between 1990 and 2000? *The Journal of Clinical Psychiatry*, *64*, 1465-1475. <https://doi.org/10.4088/JCP.v64n1211>
- Kessler, R. C., & Bromet, E. J. (2013). The epidemiology of depression across cultures. *Annual Review of Public Health*, *34*, 119-138. <https://doi.org/10.1146/annurev-publhealth-031912-114409>
- Lipson, S. K., Speer, N., Brunwasser, S., Hahn, E., & Eisenberg, D. (2014). Gatekeeper training and access to mental health care at universities and colleges. *The Journal of Adolescent Health*, *55*, 612-619. <https://doi.org/10.1016/j.jadohealth.2014.05.009>
- Lowndes, T. A., Egan, S. J., & McEvoy, P. M. (2019). Efficacy of brief guided self-help cognitive behavioral treatment for perfectionism in reducing perinatal depression and anxiety: A randomized controlled trial. *Cognitive Behaviour Therapy*, *48*, 106-120. <https://doi.org/10.1080/16506073.2018.1490810>
- Mathers, C. D., & Loncar, D. (2006). Projections of global mortality and burden of disease from 2002 to 2030. *PLoS Medicine*, *3*, Article e442. <https://doi.org/10.1371/journal.pmed.0030442>
- Phipps, M. G., Raker, C. A., Ware, C. F., & Zlotnick, C. (2013). Randomized controlled trial to prevent postpartum depression in adolescent mothers. *American Journal of Obstetrics and Gynecology*, *208*, 192.e1-192.e6. <https://doi.org/10.1016/j.ajog.2012.12.036>
- Rovner, B. W., Casten, R. J., Hegel, M. T., Massof, R. W., Leiby, B. E., Ho, A. C., & Tasman, W. S. (2014). Low vision depression prevention trial in age-related macular degeneration: A randomized clinical trial. *Ophthalmology*, *121*, 2204-2211. <https://doi.org/10.1016/j.ophtha.2014.05.002>
- Saarni, S. I., Suvisaari, J., Sintonen, H., Pirkola, S., Koskinen, S., Aromaa, A., & Lönnqvist, J. (2007). Impact of psychiatric disorders on health-related quality of life: General population survey. *The British Journal of Psychiatry*, *190*, 326-332. <https://doi.org/10.1192/bjp.bp.106.025106>

- Salerno, J. P. (2016). Effectiveness of universal school-based mental health awareness programs among youth in the United States: A systematic review. *The Journal of School Health, 86*, 922-931. <https://doi.org/10.1111/josh.12461>
- Smit, F., Cuijpers, P., Oostenbrink, J., Batelaan, N., de Graaf, R., & Beekman, A. (2006). Excess costs of common mental disorders: Population-based cohort study. *The Journal of Mental Health Policy and Economics, 9*, 193-200.
- van der Zweerde, T., van Straten, A., Eftting, M., Kyle, S. D., & Lancee, J. (2019). Does online insomnia treatment reduce depressive symptoms? A randomized controlled trial in individuals with both insomnia and depressive symptoms. *Psychological Medicine, 49*, 501-509. <https://doi.org/10.1017/S0033291718001149>
- Vos, T., Allen, C., Arora, M., Barber, R. M., Bhutta, Z. A., Brown, A., Carter, A., Casey, D. C., Charlson, F. J., Chen, A. Z., Coggeshall, M., Cornaby, L., Dandona, L., Dicker, D. J., Dilegge, T., Erskine, H. E., Ferrari, A. J., Fitzmaurice, C., Fleming, T., . . . Murray, C. J. L. (2016). Global, regional, and national incidence, prevalence, and years lived with disability for 310 diseases and injuries, 1990–2015: A systematic analysis for the Global Burden of Disease Study 2015. *Lancet, 388*, 1545-1602. [https://doi.org/10.1016/S0140-6736\(16\)31678-6](https://doi.org/10.1016/S0140-6736(16)31678-6)
- Waraich, P., Goldner, E. M., Somers, J. M., & Hsu, L. (2004). Prevalence and incidence studies of mood disorders: A systematic review of the literature. *Canadian Journal of Psychiatry, 49*, 124-138. <https://doi.org/10.1177/070674370404900208>
- Weisel, K. K., Lehr, D., Heber, E., Zarski, A. C., Berking, M., Riper, H., & Ebert, D. D. (2018). Severely burdened individuals do not need to be excluded from internet-based and mobile-based stress management: Effect modifiers of treatment outcomes from three randomized controlled trials. *Journal of Medical Internet Research, 20*, Article e211. <https://doi.org/10.2196/jmir.9387>
- Yamaguchi, S., Wu, S. I., Biswas, M., Yate, M., Aoki, Y., Barley, E., & Thornicroft, G. (2013). Effects of short-term interventions to reduce mental health-related stigma in university or college students: A systematic review. *The Journal of Nervous and Mental Disease, 201*, 490-503. <https://doi.org/10.1097/NMD.0b013e31829480df>
- Zlotnick, C., Tzilos, G., Miller, I., Seifer, R., & Stout, R. (2016). Randomized controlled trial to prevent postpartum depression in mothers on public assistance. *Journal of Affective Disorders, 189*, 263-268. <https://doi.org/10.1016/j.jad.2015.09.059>

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Medication-Enhanced Psychotherapy for Posttraumatic Stress Disorder: Recent Findings on Oxytocin's Involvement in the Neurobiology and Treatment of Posttraumatic Stress Disorder

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Abstract

Background: Traumatic experiences may result in Posttraumatic Stress Disorder (PTSD), which is characterized as an exaggerated fear response that cannot be extinguished over time or in safe environments. What are beneficial psychotherapeutic treatment options for PTSD patients? Can oxytocin (OXT), which is involved in the stress response, and safety learning, ameliorate PTSD symptomatology and enhance psychotherapeutic effects? Here, we will review recent studies regarding OXT's potential to enhance psychotherapeutic therapies for PTSD treatment.

Method: We conducted a literature review on the neurobiological underpinnings of PTSD especially focusing on OXT's involvement in the biology and memory formation of PTSD. Furthermore, we researched successful psychotherapeutic treatments for PTSD patients and discuss how OXT may facilitate observed psychotherapeutic effects.

Results: For a relevant proportion of PTSD patients, existing psychotherapies are not beneficial. OXT may be a promising candidate to enhance psychotherapeutic effects, because it dampens responses to stressful events and allows for a faster recovery after stress. On a neural basis, OXT modulates processes that are involved in stress, arousal and memory. OXT effectively counteracts memory impairments caused by stress and facilitates social support seeking which is a key resilience factor for PTSD and which is beneficial in psychotherapeutic settings.



Conclusion: OXT has many characteristics that are promising to positively influence psychotherapy for PTSD patients. It potentially reduces intrusions, but preserves memory of the event itself. Introducing OXT into psychotherapeutic settings may result in better treatment outcomes for PTSD patients. Future research should directly investigate OXT's effects on PTSD, especially in psychotherapeutic settings.

Keywords

PTSD, oxytocin, treatment, medication-enhanced therapy, stress

Highlights

- Lower endogenous OXT levels after traumatic experiences are associated with developing PTSD.
- OXT administration around the time of the traumatic event may result in fewer intrusive memories.
- Abnormal signaling of the hippocampus and the vmPFC to the amygdala result in hyperactivation of the amygdala in PTSD.
- OXT facilitates social support seeking and safety learning while reducing personal distress.
- OXT's characteristics are promising to enhance psychotherapeutic treatment for PTSD patients.

Traumatic experiences may result in Posttraumatic Stress Disorder (PTSD), which is characterized as an exaggerated fear response that cannot be extinguished over time or in safe environments. The lifetime prevalence of developing PTSD lies at about 4% (Koenen et al., 2017). This number is relatively low considering that 80% of the general population experience traumatic events during their lifetime. Critical factors that determine if someone develops PTSD after experiencing or witnessing traumatic events include female gender, history of mental disorder (Tortella-Feliu et al., 2019), childhood adversities (McLaughlin et al., 2017), but also individual emotional contagion and empathy (Trautmann et al., 2018). In particular, for witnessed trauma, the ability to distinguish own feelings from that of others is crucial to avoid excessive personal distress and anxiety (Preckel, Kanske, & Singer, 2018). Also, emotion regulation abilities may be indicative of PTSD development after a traumatic experience, as prospective studies on emotion regulation and trauma symptoms show (Bardeen, Kumpula, & Orcutt, 2013; Ehring & Ehlers, 2014).

Treatment approaches for PTSD are not yet sufficiently successful, this is shown by patient drop-out rates, for instance, which are highly variable with rates between 16% to 53.1% (Hatchett & Park, 2003; Lewis, Roberts, Gibson, & Bisson, 2020), depending on how the drop-out rates were defined. Importantly, although trauma-focused cognitive behavior therapy is the best-validated treatment for PTSD, it has failed to develop over the

past few decades. Importantly, only two-thirds of PTSD patients respond effectively to this therapy. Besides, the majority of PTSD patients does not take part in evidence-based treatment, this applies predominately to low- and middle-income countries (Bryant, 2019). This underlines the need for better therapeutic approaches and ongoing research on this topic. Behavioral and medication treatment approaches for PTSD have different strengths and weaknesses (Flanagan & Mitchell, 2019), which makes a combination, of a medication-enhanced psychotherapy approach very promising. Regarding the common symptoms of PTSD such as intrusive memories and flashbacks, avoidance behavior, (negative) changes in cognition and in arousal (American Psychiatric Association, 2013), as well as deficits in social cognition (e.g. empathy, compassion and Theory of Mind) (Couette, Mouchabac, Bourla, Nuss, & Ferreri, 2020; Palgi, Klein, & Shamay-Tsoory, 2016), the neuropeptide and hormone Oxytocin (OXT) may bear relevance for the treatment of PTSD (Palgi, Klein, & Shamay-Tsoory, 2016). OXT may be a relevant treatment enhancer, because it has been found to influence memory (Lee et al., 2015), approach-avoidance behavior (Preckel, Scheele, Kendrick, Maier, & Hurlmann, 2014), social cognition (e.g. emotion recognition) (Schwaiger, Heinrichs, & Kumsta, 2019) and arousal (Rash & Campbell, 2014). Due to OXT's broad influence on human well-being, it has been introduced as a promising treatment agent for various disorders including PTSD (Koch et al., 2014; Misrani, Tabassum, & Long, 2017; Preckel, Kanske, Singer, Paulus, & Krach, 2016). Furthermore, OXT attenuates the development of PTSD symptoms after trauma exposure in patients with high acute symptomatology (van Zuiden et al., 2017) and is useful as an early preventive intervention (Frijling, 2017). Another study found that OXT was able to reduce PTSD symptoms which were triggered by trauma-script exposure (Sack et al., 2017).

In this update article, we review the latest literature on the relationship of biological underpinnings of PTSD, memory formation and OXT. We investigate the question: What role can/ does OXT play in PTSD symptom development and how might it improve PTSD symptoms?

We start our article by describing the stress physiology and the roles that OXT and cortisol play in it, we then continue by discussing the influence of OXT on the neural circuits of fear conditioning, PTSD and memory and, before summarizing our thoughts, we discuss the potential benefits of OXT as a treatment enhancer for PTSD psychotherapy.

Stress Physiology and the Roles of Oxytocin and Cortisol

The stress response involves multiple levels, which include cognitive, behavioral and physiological processes. On the physiological level, highly stressful or traumatic experiences, activate the hypothalamic-pituitary-adrenal (HPA) axis as well as the oxytociner-

gic system (Donadon, Martin-Santos, & Osório, 2018). Activity of the HPA axis and its end-product cortisol facilitate adaption to the faced stressor (e.g. de Kloet, Joëls, & Holsboer, 2005). A typical physiological stressful response involves the following steps: The hypothalamus releases the corticotropin-releasing-hormone (CRH) to the pituitary gland, which in turn releases the adrenocorticotrophic hormone (ACTH) into systemic circulation. ACTH prompts the adrenal gland to release glucocorticoids such as cortisol. When cortisol levels in the blood increase, this is perceived by brain regions (e.g. hypothalamus) and the release of CRH is stopped to return to homeostasis (Smith & Vale, 2006).

In PTSD patients, the reinstating of homeostasis fails (Yehuda, 2002), resulting in an indiscriminately heightened physiological stress responses (e.g. McFarlane, Atchison, Rafalowicz, & Papay, 1994). Hypocortisolism is often reported in PTSD patients, which might at first sight be counterintuitive. Yet, the downregulation of available cortisol could be an attempt of the body to compensate for exaggerated stress responses (Thaller, Vrkljan, Hotujac, & Thakore, 1999). This compensatory attempt, however, results in a sensitization to the glucocorticoid system (Rohleder, Wolf, & Wolf, 2010), meaning that low concentrations of cortisol are sufficient to induce a fear or stress response. Furthermore, the observed hypocortisolism may be dependent on the type of cortisol measure, because in the cerebrospinal fluid of patients with PTSD, a sustained increase of the corticotropin-releasing hormone was observed (Sherin & Nemeroff, 2011). While hair cortisol levels are commonly reported to be lower in PTSD patients when compared to those of healthy controls (Steedte-Schmiedgen, Kirschbaum, Alexander, & Stalder, 2016; Steedte-Schmiedgen et al., 2015; van Zuiden et al., 2019), but there are contradictory findings (van den Heuvel et al., 2020).

Exogenously administered OXT promotes a faster recovery after the stress response (Heinrichs, Baumgartner, Kirschbaum, & Ehlert, 2003; Kubzansky, Mendes, Appleton, Block, & Adler, 2012), and it attenuates salivary cortisol elevations after a physical stressor (Cardoso, Ellenbogen, Orlando, Bacon, & Jooper, 2013). Endogenous OXT levels are frequently measured in the periphery and lower endogenous OXT levels after traumatic experiences are associated with developing PTSD (Donadon, Martin-Santos, & Osório, 2018), even though endogenous OXT levels of individuals who suffer from PTSD and those of healthy controls did not differ (Engel et al., 2019). Interestingly, OXT and cortisol levels are positively correlated when participants were able to anticipate a stressor (Brown, Cardoso, & Ellenbogen, 2016). Anticipation and predictability seem to strongly influence OXT's action, because also exogenously administered OXT has ambiguous effects on threatening responses which is partly due to the predictability or unpredictability of threatening cues. This means that OXT administration results in anxiogenic effects when threat cues are unpredictable, because defensive responses to unpredictable shocks were significantly increased by OXT (as compared to placebo and vasopressin administration), while predictable shocks were not influenced by OXT administration

(Grillon et al., 2013). Furthermore, OXT's effects on anxiety depend on the timing of OXT administration and threat content, because both anxiolytic and anxiogenic effects have been reported (Frijling, 2017; Neumann & Slattery, 2016). Importantly though, in people who experienced moderate emotional trauma, anxiolytic effects of OXT have been found (Donadon et al., 2018). While OXT's effects on cortisol are diverse, a recent meta-analysis reported that OXT attenuated the cortisol response to a greater extent, when the HPA-axis was strongly activated and this effect was strongest among clinical populations (patients with PTSD, Major Depressive Disorder and Bipolar Disorder) (Cardoso, Kingdon, & Ellenbogen, 2014). These ambiguous findings may be due to the cross-binding ability of OXT and vasopressin, (for more detail see: Preckel & Kanske, 2018). Moreover, OXT enables rapid and flexible adaptation to fear signals in social contexts, which can be advantageous in preventing PTSD; but simultaneously it may elevate vulnerability for interpersonal trauma (Eckstein et al., 2016).

Thus, we assume that the dampening effect of OXT on the HPA axis (Neumann, Krömer, Toschi, & Ebner, 2000) may act on different levels and result in reduced stress responses, thereby eliciting the opposite effects of typical stress tasks such as the Trier Social Stress Test (TSST; Kirschbaum, Pirke, & Hellhammer, 1993). This assumption is grounded in the observation that OXT is associated with faster recovery of the endocrine and the autonomic system after stressful events (Engert et al., 2016), as well as on skin conductance findings which were measured directly after traumatic events and predicted subsequent chronic PTSD development (Hinrichs et al., 2019). Consequently, OXT's dampening effect on the HPA axis activation may function as a stress-buffer for traumatic events and by buffering stress responses it may prevent the development of chronic PTSD after trauma exposure. The anxiolytic OXT effects may also result in fewer treatment dropouts.

Cortisol, like OXT, has time-sensitive effects on the HPA-axis activity. Activating the HPA-axis by exposing participants to a stress task, for instance the TSST, before they participate in a trauma analogue paradigm (trauma film), results in increased numbers of intrusive memories (in participants who biologically respond to the TSST) as compared to participants who perform a control task (placebo TSST) and are not stressed prior to the trauma film paradigm (Schultebraucks et al., 2019). In contrast, administering cortisol after a trauma results in fewer intrusions (De Quervain, 2006). Outcomes of post-trauma cortisol administration are, however, also somewhat inconclusive, because not all studies report fewer subsequent intrusions (Graebener, Michael, Holz, & Lass-Hennemann, 2017; Ludäscher et al., 2015). Cortisol (here: hydrocortisone) as a treatment enhancer augmented psychological treatment successfully, meaning that prolonged exposure therapy resulted in greater retention when participants received cortisol (Yehuda et al., 2015).

Thus, OXT as well as cortisol are promising agents for medication-tailored treatment for PTSD patients.

OXT's Influence on Fear Conditioning, and its Role in PTSD and Memory

To investigate the mechanisms, which underlie PTSD, Pavlovian fear conditioning paradigms are helpful models. In fear conditioning experiments, an aversive stimulus is used as an unconditioned stimulus (US) in order to establish fear as soon as the conditioned stimulus (CS) is presented. In PTSD, one traumatic event is sufficient to establish a CS. The main brain structures that are involved in fear conditioning and PTSD include the amygdala, the hippocampus and the ventromedial prefrontal cortex (vmPFC) (Careaga, Girardi, & Suchecki, 2016; Koenigs & Grafman, 2009). The amygdala is the core structure of fear conditioning (Duvarci & Pare, 2014; Ehrlich et al., 2009) and extinction (Maren, 2011; Myers & Davis, 2002). The different nuclei of the amygdala have specialized roles in the fear learning and extinction processes. The lateral nucleus of the amygdala (LAn) provides the amygdala primarily with input and is important for mediating fear learning via neural plasticity, while the basolateral and basomedial nuclei converge sensory information of the conditioned stimulus and the unconditioned stimulus (Herry & Johansen, 2014). The hippocampus is important for encoding information, and for modulating appropriate emotional responses to potentially fearful stimuli (Acheson, Gresack, & Risbrough, 2012; Lissek & van Meurs, 2015). Furthermore, lower hippocampal activation has been linked to direct memory suppression in healthy participants (Benoit & Anderson, 2012), that can be interpreted as reduced voluntary recall. The vmPFC mediates the extinction of conditioned fear by inhibiting the amygdala (Koenigs et al., 2008).

In PTSD patients, these brain regions differ on a structural and functional level in comparison to healthy controls. For example, reduced hippocampal volume is associated with PTSD development (Gilbertson et al., 2002; Logue et al., 2018; Pitman et al., 2006) as well as being a consequence of stressful experiences (Admon et al., 2013). On a functional level, abnormal hippocampus activation hindered extinction learning in safe contexts (Patel, Spreng, Shin, & Girard, 2012) and reduced top-down regulation to the amygdala which results in enhanced fear conditioning (Rauch, Shin, & Phelps, 2006). A reduction of functional and structural connectivity between the hippocampus and the vmPFC has also been reported (Admon et al., 2013).

The amygdala is also crucially involved in associative learning (LeDoux, 1996; McGaugh, 2000) and its dysfunction may be responsible for increased fear conditioning responses in PTSD patients, which in turn results in stronger memory formation of the traumatic event (= intrusive memories) (Careaga et al., 2016). Also, vmPFC activation is lower and results in decreased top-down regulation of the amygdala (Rauch, Shin, & Phelps, 2006). The hippocampus as well as the vmPFC project to the amygdala and their failure to adequately inhibit amygdala activation causes its hyperactivity which is frequently found in PTSD patients (Hayes, Hayes, & Makedis, 2012; Liberzon & Abelson, 2016; Patel, Spreng, Shin, & Girard, 2012; Pitman et al., 2012; Shin & Liberzon, 2010).

Amygdala hyperactivation is especially pronounced when compared to non-trauma exposed controls, but not necessarily when compared to trauma-exposed controls (Patel et al., 2012), therefore it cannot be ruled out that this mechanism is related to trauma exposure rather than to PTSD (van Wingen, Geuze, Vermetten, & Fernandez, 2011). However, the evidence that amygdala hyperactivation might be causally related to PTSD development, could be shown by previous lesion studies in veterans with and without PTSD (Koenigs & Grafman, 2009). Another lesion study showed that elevated amygdala activation is related to dysfunctional vmPFC activity (Motzkin et al., 2015). Furthermore, PTSD patients (as compared to healthy controls) display an initially increased amygdala response when confronted with trauma-related negative (vs. non-trauma related negative) stimuli (Protopopescu et al., 2005). The elevated amygdala activation may explain the emotional memory quality in PTSD patients, especially, because this activation does not habituate over time (Protopopescu et al., 2005).

Diminished structural connectivity between the amygdala and vmPFC has been found in PTSD patients (Koch et al., 2017). The functional connectivity between these regions, could be increased by OXT (in men with PTSD), thereby reducing amygdala hyperactivity (Koch et al., 2014).

Returning to fear conditioning experiments, administering intranasal OXT before fear conditioning results in faster fear conditioning, (Eckstein et al., 2016) while administration after fear-conditioning and before fear extinction results in better fear extinction and inhibited amygdala activation (Eckstein et al., 2015). Moreover, reduced skin conductance responses to electric shocks after OXT as opposed to placebo administration in human studies support the notion of OXT's "anti-stress-properties" (Eckstein et al., 2016). Thus, exogenous OXT effects are time sensitive and remain currently inconclusive.

The amygdala is further suggested to mediate influences of medication on memory consolidation (McGaugh, 2000), therefore it may also mediate OXT effects on memory and potentially change the emotional content of memories in PTSD patients. A recent study showed that the severity of childhood trauma exposure (as reported from memory) was related to oxytocin-modulated amygdala responses in patients with PTSD while this was not the case in healthy controls (Flanagan et al., 2019). If OXT has the potential to change the content of memories to turn more positively, this may already result in less hyperactivity of the amygdala, which is strongly influenced by negative valence (Preckel et al., 2019). This is further supported by OXT's inhibiting effects on the activation of (para-)limbic structures, its facilitating action on cognitive performance and its inhibiting effects on arousal (Lischke, Herpertz, Berger, Domes, & Gamer, 2017; Misrani et al., 2017; Solomon et al., 2018). Animal studies report that exogenous OXT has "anti-stress properties" on hippocampal plasticity and memory (Lee et al., 2015). The hippocampus plays an important role in the negative feedback loop of the HPA-axis (Joseph & Whirledge, 2017) and it is altered in PTSD patients (Schumacher et al., 2019).

Regarding OXT's effects on memory, earlier studies found that OXT impairs memory recall, the generation of associated target words, or explicit memory (Heinrichs, Meinlschmidt, Wippich, Ehlert, & Hellhammer, 2004). Recent findings, however, suggest that exogenous OXT may also have positive influences on memory. For example, OXT improves safety learning in healthy humans (Eckstein et al., 2019) and animal studies show that OXT effectively counteracts memory impairments caused by stress on a cellular level, thereby preventing memory impairments (Lee et al., 2015). Another animal study found changes in long-term synaptic plasticity in the amygdala (medial nucleus) due to OXT's action. These oxytocin-induced synaptic changes are strongly related to social recognition memory (Rajamani, Wagner, Grinevich, & Harony-Nicolas, 2018). These findings indicate that OXT may have restoring functions on plasticity related to memory processes.

Furthermore, OXT improves memory performance which is accompanied by increased connectivity between the dorsolateral (dl)PFC and the ACC in traumatized as compared to trauma exposed individuals without PTSD (Flanagan et al., 2018). This is an important finding, because decreased connectivity between the dlPFC and the ACC is described as a maladaptive neural process (= reduced neural processing efficiency) in demanding cognitive tasks. Furthermore, the decrease in connectivity between these brain regions is associated with the trait measure "worry" (as a dimension of anxiety) in healthy individuals (Barker et al., 2018). Regarding the association between worry and PTSD that has been found in previous studies (Blazer, Hughes, & George, 1987), it may be assumed that similar neural maladaptations take place in PTSD and which may be positively influenced by OXT administration. Increased ACC activation after OXT administration has also been reported elsewhere (Preckel, Scheele, Eckstein, Maier, & Hurlmann, 2015). To sum up, OXT positively influences memory on a cellular, neural activation and behavioral level.

Moreover, exogenous OXT was able to improve social behavioral deficits in autism spectrum disorder patients (ASD) via reinstating vmPFC activation, during a social-communication task (Aoki et al., 2015). In male PTSD patients, OXT reinstated diminished connectivity between the amygdala and the vmPFC and in female patients it reestablished increased connectivity between the amygdala and the dorsal anterior cingulate cortex (dACC), accompanied by reduced subjective anxiety and nervousness (Koch et al., 2016b). A recent study showed that OXT dampened amygdala activation in PTSD patients, when they saw emotional faces (regardless of valence), while amygdala activation was increased in trauma-exposed control participants (Koch et al., 2016a). Assuming that OXT's action in ASD patients is the same as in PTSD patients, as the common action on brain activity suggests, OXT may also improve social and affective functioning in PTSD by restoring vmPFC activation.

Oxytocin's Potential Benefit in Psychotherapy for PTSD

Apart from different comorbidities such as depression, anxiety or alcohol abuse, social support is one of the strongest predictors for successful PTSD therapy (Dewar, Paradis, & Fortin, 2020), just like therapeutic alliance (Lantz, 2004). The willingness to share thoughts and emotions is clearly related to perceived social support (Kahn & Cantwell, 2017). As mentioned previously, OXT increases social support seeking and the perception of received social support (Cardoso, Valkanas, Serravalle, & Ellenbogen, 2016) and it also increases the willingness to verbally share one's emotions with someone else (Lane et al., 2013). This makes it specifically promising for medication-enhanced psychotherapeutic interventions, because it might facilitate emotional disclosure. OXT increases social support seeking and the perception of received social support (Cardoso, Valkanas, Serravalle, & Ellenbogen, 2016) as well as safety learning (Eckstein et al., 2019) in healthy individuals. Assuming that OXT unfolds the same characteristics in PTSD patients, it is likely that OXT can ameliorate PTSD symptoms successfully. In a study on trauma disclosure, OXT alone did not increase the tendency to disclose trauma (Scheele et al., 2019). This might be due to insufficient(ly perceived) social support, because it has also been suggested that the presence of social support might be necessary to elicit prosocial OXT effects (Cardoso et al., 2016), to mention one of many context-dependent OXT effects. Therefore, administering OXT in a psychotherapeutic setting, where social support is available, might result in increased disclosure. Concerning the therapeutic relationship which is important for successful therapy outcomes, increased sensitivity to social reward may result in increased social support seeking and may thus increase the likelihood of a positive psychotherapeutic relationship. Notably, it has been found that anterior insula activation was normalized, during social reward processing, in PTSD patients after OXT administration (Nawijn et al., 2017).

Psychotherapeutic interventions that have been successful in ameliorating PTSD symptoms include eye movement desensitization and reprocessing (Shapiro, 2014) prolonged exposure (Singh, 2019), imagery rescripting and reprocessing therapy (Grunert, Weis, Smucker, & Christianson, 2007), exposure therapy (Paunovic & Ost, 2001) as well as exposure-based cognitive-behavioral group therapy (CBGT) (Schwartz, Barkowski, Strauss, Knaevelsrud, & Rosendahl, 2019). Clinical trials which have investigated OXT's enhancing effects on different treatment options, revealed that OXT could enhance exposure-therapy in PTSD patients (Flanagan et al., 2019) and patients with arachnophobia (Acheson et al., 2015). A study, which focused on physiological responses to OXT, found one notable difference and that was a higher skin conductance baseline level in the OXT group (Pitman et al., 1993).

Here, we take CBGT as an example to explain how simultaneous OXT administration can enhance psychotherapy.

OXT improves various aspects of social cognition, for example trust (Kosfeld, Heinrichs, Zak, Fischbacher, & Fehr, 2005). Trust is an essential component of psychotherapy that needs to be established first, before the actual therapy can begin (Wampold, 2015). Therefore, if OXT facilitates trust, by decreasing amygdala and dorsal striatum activation as neuroimaging studies were also able to show (Baumgartner, Heinrichs, Vonlanthen, Fischbacher, & Fehr, 2008), it may have beneficial effects on psychotherapeutic outcomes. A recent study on food intake reported that OXT enhances brain activation in areas that govern cognitive control, including the vmPFC (Spetter et al., 2018). Should OXT have the same effects on the vmPFC in PTSD patients, OXT might be particularly beneficial for PTSD patients who take part CBGT. There is a growing literature body which investigates OXT's potential on psychotherapies for PTSD patients (e.g. Engel et al., 2021; Koch et al., 2014; Koch et al., 2019). Though OXT appears to be a promising candidate to ameliorate PTSD symptoms, especially when combined with psychotherapies, further studies are required to disentangle the exact mechanism of OXT. It is also crucial to find out which PTSD patients can benefit most from OXT-enhanced psychotherapy, because OXT has many person-specific characteristics, ranging from a person's attachment style to oxytocin receptor gene variations which differentially influence OXT's action in individuals (Bartz, Zaki, Bolger, & Ochsner, 2011; Olf et al., 2013). Thus, studies with precise designs which combine behavioral, biological, imaging and clinical aspects are required to further address these questions (Giovanna et al., 2020).

Conclusion and Outlook

In this update paper, we described the mechanisms underlying PTSD by discussing the most recent studies on structural and functional brain changes associated with PTSD, including findings on structural and functional connectivity. We have discussed potential OXT mechanisms of action from the healthy population and ASD patients and related these to mechanisms that are malfunctioning in PTSD patients, thereby building direct implications for OXT's potential action mechanism. Most importantly, we like to emphasize OXT's promising characteristics as a psychotherapeutic enhancer. However, there are still uncertainties, which need further investigation. These include the critical aspects of pharmacodynamics and the ideal dosage. It became clear that therapeutic approaches are not yet sufficiently successful in treating PTSD patients, because patients drop out of therapy frequently and some symptoms remain after treatment. OXT remains a promising candidate for medication-tailored PTSD therapy and research on this topic should be continued.

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References

- Acheson, D. T., Feifel, D., Kamenski, M., Mckinney, R., & Risbrough, V. B. (2015). Intranasal oxytocin administration prior to exposure therapy for arachnophobia impedes treatment response. *Depression and Anxiety*, 32(6), 400-407. <https://doi.org/10.1002/da.22362>
- Acheson, D. T., Gresack, J. E., & Risbrough, V. B. (2012). Hippocampal dysfunction effects on context memory: Possible etiology for posttraumatic stress disorder. *Neuropharmacology*, 62(2), 674-685. <https://doi.org/10.1016/j.neuropharm.2011.04.029>
- Admon, R., Leykin, D., Lubin, G., Engert, V., Andrews, J., Pruessner, J., & Hendler, T. (2013). Stress-induced reduction in hippocampal volume and connectivity with the ventromedial prefrontal cortex are related to maladaptive responses to stressful military service. *Human Brain Mapping*, 34(11), 2808-2816. <https://doi.org/10.1002/hbm.22100>
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA, USA: Author.
- Aoki, Y., Watanabe, T., Abe, O., Kuwabara, H., Yahata, N., Takano, Y., & Yamasue, H. (2015). Oxytocin's neurochemical effects in the medial prefrontal cortex underlie recovery of task-specific brain activity in autism: A randomized controlled trial. *Molecular Psychiatry*, 20(4), 447-453. <https://doi.org/10.1038/mp.2014.74>
- Bardeen, J. R., Kumpula, M. J., & Orcutt, H. K. (2013). Emotion regulation difficulties as a prospective predictor of posttraumatic stress symptoms following a mass shooting. *Journal of Anxiety Disorders*, 27(2), 188-196. <https://doi.org/10.1016/j.janxdis.2013.01.003>
- Barker, H., Munro, J., Orlov, N., Morgenroth, E., Moser, J., Eysenck, M. W., & Allen, P. (2018). Worry is associated with inefficient functional activity and connectivity in prefrontal and cingulate cortices during emotional interference. *Brain and Behavior*, 8(12), Article e01137. <https://doi.org/10.1002/brb3.1137>

- Bartz, J. A., Zaki, J., Bolger, N., & Ochsner, K. N. (2011). Social effects of oxytocin in humans: Context and person matter. *Trends in Cognitive Sciences*, 15(7), 301-309. <https://doi.org/10.1016/j.tics.2011.05.002>
- Baumgartner, T., Heinrichs, M., Vonlanthen, A., Fischbacher, U., & Fehr, E. (2008). Oxytocin shapes the neural circuitry of trust and trust adaptation in humans. *Neuron*, 58(4), 639-650. <https://doi.org/10.1016/j.neuron.2008.04.009>
- Benoit, R. G., & Anderson, M. C. (2012). Opposing mechanisms support the voluntary forgetting of unwanted memories. *Neuron*, 76(2), 450-460. <https://doi.org/10.1016/j.neuron.2012.07.025>
- Blazer, D., Hughes, D., & George, L. K. (1987). Stressful life events and the onset of a generalized anxiety syndrome. *The American Journal of Psychiatry*, 144(9), 1178-1183. <https://doi.org/10.1176/ajp.144.9.1178>
- Brown, C. A., Cardoso, C., & Ellenbogen, M. A. (2016). A meta-analytic review of the correlation between peripheral oxytocin and cortisol concentrations. *Frontiers in Neuroendocrinology*, 43, 19-27. <https://doi.org/10.1016/j.yfrne.2016.11.001>
- Bryant, R. A. (2019). Post-traumatic stress disorder: A state-of-the-art review of evidence and challenges. *World Psychiatry*, 18(3), 259-269. <https://doi.org/10.1002/wps.20656>
- Cardoso, C., Ellenbogen, M. A., Orlando, M. A., Bacon, S. L., & Joober, R. (2013). Intranasal oxytocin attenuates the cortisol response to physical stress: A dose-response study. *Psychoneuroendocrinology*, 38(3), 399-407. <https://doi.org/10.1016/j.psyneuen.2012.07.013>
- Cardoso, C., Kingdon, D., & Ellenbogen, M. A. (2014). A meta-analytic review of the impact of intranasal oxytocin administration on cortisol concentrations during laboratory tasks: Moderation by method and mental health. *Psychoneuroendocrinology*, 49, 161-170. <https://doi.org/10.1016/j.psyneuen.2014.07.014>
- Cardoso, C., Valkanas, H., Serravalle, L., & Ellenbogen, M. A. (2016). Oxytocin and social context moderate social support seeking in women during negative memory recall. *Psychoneuroendocrinology*, 70, 63-69. <https://doi.org/10.1016/j.psyneuen.2016.05.001>
- Careaga, M. B. L., Girardi, C. E. N., & Suchecki, D. (2016). Understanding posttraumatic stress disorder through fear conditioning, extinction and reconsolidation. *Neuroscience and Biobehavioral Reviews*, 71, 48-57. <https://doi.org/10.1016/j.neubiorev.2016.08.023>
- Couette, M., Mouchabac, S., Bourla, A., Nuss, P., & Ferreri, F. (2020). Social cognition in post-traumatic stress disorder: A systematic review. *British Journal of Clinical Psychology*, 59(2), 117-138. <https://doi.org/10.1111/bjc.12238>
- de Kloet, E. R., Joëls, M., & Holsboer, F. (2005). Stress and the brain: From adaptation to disease. *Nature Reviews Neuroscience*, 6(6), 463-475. <https://doi.org/10.1038/nrn1683>
- De Quervain, D. J. F. (2006). Glucocorticoid-induced inhibition of memory retrieval: Implications for posttraumatic stress disorder. *Annals of the New York Academy of Sciences*, 1071(1), 216-220. <https://doi.org/10.1196/annals.1364.016>
- Dewar, M., Paradis, A., & Fortin, C. A. (2020). Identifying trajectories and predictors of response to psychotherapy for post-traumatic stress disorder in adults: A systematic review of literature. *Canadian Journal of Psychiatry*, 65(2), 71-86. <https://doi.org/10.1177/0706743719875602>

- Donadon, M. F., Martin-Santos, R., & Osório, F. L. (2018). The associations between oxytocin and trauma in humans: A systematic review. *Frontiers in Pharmacology*, *9*, Article 154. <https://doi.org/10.3389/fphar.2018.00154>
- Duvarci, S., & Pare, D. (2014). Amygdala microcircuits controlling learned fear. *Neuron*, *82*(5), 966-980. <https://doi.org/10.1016/j.neuron.2014.04.042>
- Eckstein, M., Almeida de Minas, A. C., Scheele, D., Kreuder, A. K., Hurlmann, R., Grinevich, V., & Ditzen, B. (2019). Oxytocin for learning calm and safety. *International Journal of Psychophysiology*, *136*, 5-14. <https://doi.org/10.1016/j.ijpsycho.2018.06.004>
- Eckstein, M., Becker, B., Scheele, D., Scholz, C., Preckel, K., Schlaepfer, T. E., & Hurlmann, R. (2015). Oxytocin facilitates the extinction of conditioned fear in humans. *Biological Psychiatry*, *78*(3), 194-202. <https://doi.org/10.1016/j.biopsych.2014.10.015>
- Eckstein, M., Scheele, D., Patin, A., Preckel, K., Becker, B., Walter, A., & Hurlmann, R. (2016). Oxytocin facilitates Pavlovian fear learning in males. *Neuropsychopharmacology*, *41*(4), 932-939. <https://doi.org/10.1038/npp.2015.245>
- Ehring, T., & Ehlers, A. (2014). Does rumination mediate the relationship between emotion regulation ability and posttraumatic stress disorder? *European Journal of Psychotraumatology*, *5*, Article 23547. <https://doi.org/10.3402/ejpt.v5.23547>
- Ehrlich, I., Humeau, Y., Grenier, F., Ciochi, S., Herry, C., & Luthi, A. (2009). Amygdala inhibitory circuits and the control of fear memory. *Neuron*, *62*(6), 757-771. <https://doi.org/10.1016/j.neuron.2009.05.026>
- Engel, S., Klusmann, H., Laufer, S., Pfeifer, A. C., Ditzen, B., van Zuiden, M., & Schumacher, S. (2019). Trauma exposure, posttraumatic stress disorder and oxytocin: A meta-analytic investigation of endogenous concentrations and receptor genotype. *Neuroscience and Biobehavioral Reviews*, *107*, 560-601. <https://doi.org/10.1016/j.neubiorev.2019.08.003>
- Engel, S., Schumacher, S., Niemeyer, H., Kuester, A., Burchert, S., Klusmann, H., Rau, H., Willmund, G. D., & Knaevelsrud, C. (2021). Associations between oxytocin and vasopressin concentrations, traumatic event exposure and posttraumatic stress disorder symptoms: Group comparisons, correlations, and courses during an internet-based cognitive-behavioural treatment. *European Journal of Psychotraumatology*, *12*(1), Article 1886499. <https://doi.org/10.1080/20008198.2021.1886499>
- Engert, V., Koester, A. M., Riepenhausen, A., & Singer, T. (2016). Boosting recovery rather than buffering reactivity: Higher stress-induced oxytocin secretion is associated with increased cortisol reactivity and faster vagal recovery after acute psychosocial stress. *Psychoneuroendocrinology*, *74*, 111-120. <https://doi.org/10.1016/j.psyneuen.2016.08.029>
- Flanagan, J. C., Hand, A., Jarnecke, A. M., Moran-Santa Maria, M. M., Brady, K. T., & Joseph, J. E. (2018). Effects of oxytocin on working memory and executive control system connectivity in posttraumatic stress disorder. *Experimental and Clinical Psychopharmacology*, *26*(4), 391-402. <https://doi.org/10.1037/pha0000197>

- Flanagan, J. C., & Mitchell, J. M. (2019). Augmenting treatment for posttraumatic stress disorder and co-occurring conditions with oxytocin. *Current Treatment Options in Psychiatry*, 6(2), 132-142. <https://doi.org/10.1007/s40501-019-00171-1>
- Flanagan, J. C., Sippel, L. M., Santa Maria, M. M. M., Hartwell, K. J., Brady, K. T., & Joseph, J. E. (2019). Impact of oxytocin on the neural correlates of fearful face processing in PTSD related to childhood Trauma. *European Journal of Psychotraumatology*, 10(1), Article 1606626. <https://doi.org/10.1080/20008198.2019.1606626>
- Frijling, J. L. (2017). Preventing PTSD with oxytocin: Effects of oxytocin administration on fear neurocircuitry and PTSD symptom development in recently trauma-exposed individuals. *European Journal of Psychotraumatology*, 8(1), Article 1302652. <https://doi.org/10.1080/20008198.2017.1302652>
- Gilbertson, M. W., Shenton, M. E., Ciszewski, A., Kasai, K., Lasko, N. B., Orr, S. P., & Pitman, R. K. (2002). Smaller hippocampal volume predicts pathologic vulnerability to psychological trauma. *Nature Neuroscience*, 5(11), 1242-1247. <https://doi.org/10.1038/nn958>
- Giovanna, G., Damiani, S., Fusar-Poli, L., Rocchetti, M., Brondino, N., de Cagna, F., & Politi, P. (2020). Intranasal oxytocin as a potential therapeutic strategy in post-traumatic stress disorder: A systematic review. *Psychoneuroendocrinology*, 115, Article 104605. <https://doi.org/10.1016/j.psyneuen.2020.104605>
- Graebener, A. H., Michael, T., Holz, E., & Lass-Hennemann, J. (2017). Repeated cortisol administration does not reduce intrusive memories – A double blind placebo controlled experimental study. *European Neuropsychopharmacology*, 27(11), 1132-1143. <https://doi.org/10.1016/j.euroneuro.2017.09.001>
- Grillon, C., Krinsky, M., Charney, D. R., Vytal, K., Ernst, M., & Cornwell, B. (2013). Oxytocin increases anxiety to unpredictable threat. *Molecular Psychiatry*, 18(9), 958-960. <https://doi.org/10.1038/mp.2012.156>
- Grunert, B. K., Weis, J. M., Smucker, M. R., & Christianson, H. F. (2007). Imagery rescripting and reprocessing therapy after failed prolonged exposure for post-traumatic stress disorder following industrial injury. *Journal of Behavior Therapy and Experimental Psychiatry*, 38(4), 317-328. <https://doi.org/10.1016/j.jbtep.2007.10.005>
- Hatchett, G. T., & Park, H. L. (2003). Comparison of four operational definitions of premature termination. *Psychotherapy*, 40(3), 226-231. <https://doi.org/10.1037/0033-3204.40.3.226>
- Hayes, J. P., Hayes, S. M., & Mikedis, A. M. (2012). Quantitative meta-analysis of neural activity in posttraumatic stress disorder. *Biology of Mood & Anxiety Disorders*, 2, Article 9. <https://doi.org/10.1186/2045-5380-2-9>
- Heinrichs, M., Baumgartner, T., Kirschbaum, C., & Ehlert, U. (2003). Social support and oxytocin interact to suppress cortisol and subjective responses to psychosocial stress. *Biological Psychiatry*, 54(12), 1389-1398. [https://doi.org/10.1016/S0006-3223\(03\)00465-7](https://doi.org/10.1016/S0006-3223(03)00465-7)
- Heinrichs, M., Meinschmidt, G., Wippich, W., Ehlert, U., & Hellhammer, D. H. (2004). Selective amnesic effects of oxytocin on human memory. *Physiology & Behavior*, 83(1), 31-38. [https://doi.org/10.1016/S0031-9384\(04\)00346-4](https://doi.org/10.1016/S0031-9384(04)00346-4)

- Herry, C., & Johansen, J. P. (2014). Encoding of fear learning and memory in distributed neuronal circuits. *Nature Neuroscience*, *17*(12), 1644-1654. <https://doi.org/10.1038/nn.3869>
- Hinrichs, R., van Rooij, S. J., Michopoulos, V., Schultebrasucks, K., Winters, S., Maples-Keller, J., & Jovanovic, T. (2019). Increased skin conductance response in the immediate aftermath of trauma predicts PTSD risk. *Chronic Stress*, *3*. <https://doi.org/10.1177/2470547019844441>
- Joseph, D. N., & Whirledge, S. (2017). Stress and the HPA axis: Balancing homeostasis and fertility. *International Journal of Molecular Sciences*, *18*(10), Article 2224. <https://doi.org/10.3390/ijms18102224>
- Kahn, J. H., & Cantwell, K. E. (2017). The role of social support on the disclosure of everyday unpleasant emotional events. *Counselling Psychology Quarterly*, *30*(2), 152-165. <https://doi.org/10.1080/09515070.2016.1163524>
- Kirschbaum, C., Pirke, K. M., & Hellhammer, D. H. (1993). The 'Trier Social Stress Test' – A tool for investigating psychobiological stress responses in a laboratory setting. *Neuropsychobiology*, *28*(1-2), 76-81. <https://doi.org/10.1159/000119004>
- Koch, S. B. J., van Zuiden, M., Nawijn, L., Frijling, J. L., Veltman, D. J., & Olf, M. (2014). Intranasal oxytocin as strategy for medication-enhanced psychotherapy of PTSD: Salience processing and fear inhibition processes. *Psychoneuroendocrinology*, *40*, 242-256. <https://doi.org/10.1016/j.psyneuen.2013.11.018>
- Koch, S. B. J., van Zuiden, M., Nawijn, L., Frijling, J. L., Veltman, D. J., & Olf, M. (2016a). Intranasal oxytocin administration dampens amygdala reactivity towards emotional faces in male and female PTSD patients. *Neuropsychopharmacology*, *41*(6), 1495-1504. <https://doi.org/10.1038/npp.2015.299>
- Koch, S. B. J., van Zuiden, M., Nawijn, L., Frijling, J. L., Veltman, D. J., & Olf, M. (2016b). Intranasal oxytocin normalizes amygdala functional connectivity in posttraumatic stress disorder. *Neuropsychopharmacology*, *41*(8), 2041-2051. <https://doi.org/10.1038/npp.2016.1>
- Koch, S. B. J., van Zuiden, M., Nawijn, L., Frijling, J. L., Veltman, D. J., & Olf, M. (2017). Decreased uncinate fasciculus tract integrity in male and female patients with PTSD: A diffusion tensor imaging study. *Journal of Psychiatry & Neuroscience*, *42*(5), 331-342. <https://doi.org/10.1503/jpn.160129>
- Koch, S. B. J., van Zuiden, M., Nawijn, L., Frijling, J. L., Veltman, D. J., & Olf, M. (2019). Effects of intranasal oxytocin on distraction as emotion regulation strategy in patients with post-traumatic stress disorder. *European Neuropsychopharmacology*, *29*(2), 266-277. <https://doi.org/10.1016/j.euroneuro.2018.12.002>
- Koenen, K. C., Ratanatharathorn, A., Ng, L., McLaughlin, K. A., Bromet, E. J., Stein, D. J., . . . Kessler, R. C. (2017). Posttraumatic stress disorder in the World Mental Health Surveys. *Psychological Medicine*, *47*(13), 2260-2274. <https://doi.org/10.1017/S0033291717000708>
- Koenigs, M., & Grafman, J. (2009). Posttraumatic stress disorder: The role of medial prefrontal cortex and amygdala. *The Neuroscientist*, *15*(5), 540-548. <https://doi.org/10.1177/1073858409333072>

- Koenigs, M., Huey, E. D., Raymond, V., Cheon, B., Solomon, J., Wassermann, E. M., & Grafman, J. (2008). Focal brain damage protects against post-traumatic stress disorder in combat veterans. *Nature Neuroscience*, *11*(2), 232-237. <https://doi.org/10.1038/nn2032>
- Kosfeld, M., Heinrichs, M., Zak, P. J., Fischbacher, U., & Fehr, E. (2005). Oxytocin increases trust in humans. *Nature*, *435*(7042), 673-676. <https://doi.org/10.1038/nature03701>
- Kubzansky, L. D., Mendes, W. B., Appleton, A. A., Block, J., & Adler, G. K. (2012). A heartfelt response: Oxytocin effects on response to social stress in men and women. *Biological Psychology*, *90*(1), 1-9. <https://doi.org/10.1016/j.biopsycho.2012.02.010>
- Lane, A., Luminet, O., Rime, B., Gross, J. J., de Timary, P., & Mikolajczak, M. (2013). Oxytocin increases willingness to socially share one's emotions. *International Journal of Psychology*, *48*(4), 676-681. <https://doi.org/10.1080/00207594.2012.677540>
- Lantz, J. (2004). Research and evaluation issues in existential psychotherapy. *Journal of Contemporary Psychotherapy*, *34*(4), 331-340. <https://doi.org/10.1007/s10879-004-2527-5>
- LeDoux, J. E. (1996). *The emotional brain: The mysterious underpinnings of emotional life*. Simon & Schuster.
- Lee, S. Y., Park, S. H., Chung, C., Kim, J. J., Choi, S. Y., & Han, J. S. (2015). Oxytocin protects hippocampal memory and plasticity from uncontrollable stress. *Scientific Reports*, *5*, Article 18540. <https://doi.org/10.1038/srep18540>
- Lewis, C., Roberts, N. P., Gibson, S., & Bisson, J. I. (2020). Dropout from psychological therapies for post-traumatic stress disorder (PTSD) in adults: Systematic review and meta-analysis. *European Journal of Psychotraumatology*, *11*(1), Article 1709709. <https://doi.org/10.1080/20008198.2019.1709709>
- Liberzon, I., & Abelson, J. L. (2016). Context processing and the neurobiology of post-traumatic stress disorder. *Neuron*, *92*(1), 14-30. <https://doi.org/10.1016/j.neuron.2016.09.039>
- Lischke, A., Herpertz, S. C., Berger, C., Domes, G., & Gamer, M. (2017). Divergent effects of oxytocin on (para-)limbic reactivity to emotional and neutral scenes in females with and without borderline personality disorder. *Social Cognitive and Affective Neuroscience*, *12*(11), 1783-1792. <https://doi.org/10.1093/scan/nsx107>
- Lissek, S., & van Meurs, B. (2015). Learning models of PTSD: Theoretical accounts and psychobiological evidence. *International Journal of Psychophysiology*, *98*(3), 594-605. <https://doi.org/10.1016/j.ijpsycho.2014.11.006>
- Logue, M. W., van Rooij, S. J. H., Dennis, E. L., Davis, S. L., Hayes, J. P., Stevens, J. S., & Morey, R. A. (2018). Smaller hippocampal volume in posttraumatic stress disorder: a multisite ENIGMA-PGC study: Subcortical volumetry results from posttraumatic stress disorder consortia. *Biological Psychiatry*, *83*(3), 244-253. <https://doi.org/10.1016/j.biopsycho.2017.09.006>
- Ludäscher, P., Schmahl, C., Feldmann, R. E., Jr., Kleindienst, N., Schneider, M., & Bohus, M. (2015). No evidence for differential dose effects of hydrocortisone on intrusive memories in female patients with complex post-traumatic stress disorder – A randomized, double-blind, placebo-controlled, crossover study. *Journal of Psychopharmacology*, *29*(10), 1077-1084. <https://doi.org/10.1177/0269881115592339>

- Maren, S. (2011). Seeking a spotless mind: Extinction, deconsolidation, and erasure of fear memory. *Neuron*, 70(5), 830-845. <https://doi.org/10.1016/j.neuron.2011.04.023>
- McFarlane, A. C., Atchison, M., Rafalowicz, E., & Papay, P. (1994). Physical symptoms in post-traumatic stress disorder. *Journal of Psychosomatic Research*, 38(7), 715-726. [https://doi.org/10.1016/0022-3999\(94\)90024-8](https://doi.org/10.1016/0022-3999(94)90024-8)
- McGaugh, J. L. (2000). Memory – A century of consolidation. *Science*, 287(5451), 248-251. <https://doi.org/10.1126/science.287.5451.248>
- McLaughlin, K. A., Koenen, K. C., Bromet, E. J., Karam, E. G., Liu, H., Petukhova, M., & Kessler, R. C. (2017). Childhood adversities and post-traumatic stress disorder: Evidence for stress sensitisation in the World Mental Health Surveys. *The British Journal of Psychiatry*, 211(5), 280-288. <https://doi.org/10.1192/bjp.bp.116.197640>
- Misrani, A., Tabassum, S., & Long, C. (2017). Oxytocin system in neuropsychiatric disorders: Old concept, new insights. *Sheng Li Xue Bao / Acta Physica Sinica*, 69(2), 196-206. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/28435979>
- Motzkin, J. C., Philippi, C. L., Wolf, R. C., Baskaya, M. K., & Koenigs, M. (2015). Ventromedial prefrontal cortex is critical for the regulation of amygdala activity in humans. *Biological Psychiatry*, 77(3), 276-284. <https://doi.org/10.1016/j.biopsych.2014.02.014>
- Myers, K. M., & Davis, M. (2002). Behavioral and neural analysis of extinction. *Neuron*, 36(4), 567-584. [https://doi.org/10.1016/S0896-6273\(02\)01064-4](https://doi.org/10.1016/S0896-6273(02)01064-4)
- Nawijn, L., van Zuiden, M., Koch, S. B. J., Frijling, J. L., Veltman, D. J., & Olf, M. (2017). Intranasal oxytocin increases neural responses to social reward in post-traumatic stress disorder. *Social Cognitive and Affective Neuroscience*, 12(2), 212-223. <https://doi.org/10.1093/scan/nsw123>
- Neumann, I. D., Krömer, S. A., Toschi, N., & Ebner, K. (2000). Brain oxytocin inhibits the (re)activity of the hypothalamo-pituitary-adrenal axis in male rats: Involvement of hypothalamic and limbic brain regions. *Regulatory Peptides*, 96(1-2), 31-38. [https://doi.org/10.1016/S0167-0115\(00\)00197-X](https://doi.org/10.1016/S0167-0115(00)00197-X)
- Neumann, I. D., & Slattery, D. A. (2016). Oxytocin in general anxiety and social fear: A translational approach. *Biological Psychiatry*, 79(3), 213-221. <https://doi.org/10.1016/j.biopsych.2015.06.004>
- Olf, M., Frijling, J. L., Kubzansky, L. D., Bradley, B., Ellenbogen, M. A., Cardoso, C., & van Zuiden, M. (2013). The role of oxytocin in social bonding, stress regulation and mental health: An update on the moderating effects of context and interindividual differences. *Psychoneuroendocrinology*, 38(9), 1883-1894. <https://doi.org/10.1016/j.psyneuen.2013.06.019>
- Palgi, S., Klein, E., & Shamay-Tsoory, S. G. (2016). Oxytocin improves compassion toward women among patients with PTSD. *Psychoneuroendocrinology*, 64, 143-149. <https://doi.org/10.1016/j.psyneuen.2015.11.008>
- Patel, R., Spreng, R. N., Shin, L. M., & Girard, T. A. (2012). Neurocircuitry models of posttraumatic stress disorder and beyond: A meta-analysis of functional neuroimaging studies. *Neuroscience and Biobehavioral Reviews*, 36(9), 2130-2142. <https://doi.org/10.1016/j.neubiorev.2012.06.003>

- Paunovic, N., & Ost, L. G. (2001). Cognitive-behavior therapy vs exposure therapy in the treatment of PTSD in refugees. *Behaviour Research and Therapy*, *39*(10), 1183-1197. [https://doi.org/10.1016/S0005-7967\(00\)00093-0](https://doi.org/10.1016/S0005-7967(00)00093-0)
- Pitman, R. K., Gilbertson, M. W., Gurvits, T. V., May, F. S., Lasko, N. B., Metzger, L. J., & Orr, S. P. (2006). Clarifying the origin of biological abnormalities in PTSD through the study of identical twins discordant for combat exposure. *Annals of the New York Academy of Sciences*, *1071*(1), 242-254. <https://doi.org/10.1196/annals.1364.019>
- Pitman, R. K., Orr, S. P., & Lasko, N. B. (1993). Effects of intranasal vasopressin and oxytocin on physiologic responding during personal combat imagery in Vietnam veterans with posttraumatic stress disorder. *Psychiatry Research*, *48*(2), 107-117. [https://doi.org/10.1016/0165-1781\(93\)90035-F](https://doi.org/10.1016/0165-1781(93)90035-F)
- Pitman, R. K., Rasmusson, A. M., Koenen, K. C., Shin, L. M., Orr, S. P., Gilbertson, M. W., & Liberzon, I. (2012). Biological studies of post-traumatic stress disorder. *Nature Reviews Neuroscience*, *13*(11), 769-787. <https://doi.org/10.1038/nrn3339>
- Preckel, K., & Kanske, P. (2018). Amygdala and oxytocin functioning as keys to understanding and treating autism: Commentary on an RDoC based approach. *Neuroscience and Biobehavioral Reviews*, *94*, 45-48. <https://doi.org/10.1016/j.neubiorev.2018.08.012>
- Preckel, K., Kanske, P., & Singer, T. (2018). On the interaction of social affect and cognition: Empathy, compassion and theory of mind. *Current Opinion in Behavioral Sciences*, *19*, 1-6. <https://doi.org/10.1016/j.cobeha.2017.07.010>
- Preckel, K., Kanske, P., Singer, T., Paulus, F. M., & Krach, S. (2016). Clinical trial of modulatory effects of oxytocin treatment on higher-order social cognition in autism spectrum disorder: A randomized, placebo-controlled, double-blind and crossover trial. *BMC Psychiatry*, *16*(329), Article 329. <https://doi.org/10.1186/s12888-016-1036-x>
- Preckel, K., Scheele, D., Eckstein, M., Maier, W., & Hurlermann, R. (2015). The influence of oxytocin on volitional and emotional ambivalence. *Social Cognitive and Affective Neuroscience*, *10*(7), 987-993. <https://doi.org/10.1093/scan/nsu147>
- Preckel, K., Scheele, D., Kendrick, K. M., Maier, W., & Hurlermann, R. (2014). Oxytocin facilitates social approach behavior in women. *Frontiers in Behavioral Neuroscience*, *8*, Article 191. <https://doi.org/10.3389/fnbeh.2014.00191>
- Preckel, K., Trautwein, F. M., Paulus, F. M., Kirsch, P., Krach, S., Singer, T., & Kanske, P. (2019). Neural mechanisms of affective matching across faces and scenes. *Scientific Reports*, *9*(1), Article 1492. <https://doi.org/10.1038/s41598-018-37163-9>
- Protopopescu, X., Pan, H., Tuescher, O., Cloitre, M., Goldstein, M., Engeli, W., & Stern, E. (2005). Differential time courses and specificity of amygdala activity in posttraumatic stress disorder subjects and normal control subjects. *Biological Psychiatry*, *57*(5), 464-473. <https://doi.org/10.1016/j.biopsych.2004.12.026>
- Rajamani, K. T., Wagner, S., Grinevich, V., & Harony-Nicolas, H. (2018). Oxytocin as a modulator of synaptic plasticity: Implications for neurodevelopmental disorders. *Frontiers in Synaptic Neuroscience*, *10*, Article 17. <https://doi.org/10.3389/fnsyn.2018.00017>

- Rash, J. A., & Campbell, T. S. (2014). The effect of intranasal oxytocin administration on acute cold pressor pain: A placebo-controlled, double-blind, within-participants crossover investigation. *Psychosomatic Medicine*, 76(6), 422-429. <https://doi.org/10.1097/PSY.000000000000068>
- Rauch, S. L., Shin, L. M., & Phelps, E. A. (2006). Neurocircuitry models of posttraumatic stress disorder and extinction: Human neuroimaging research – Past, present, and future. *Biological Psychiatry*, 60(4), 376-382. <https://doi.org/10.1016/j.biopsych.2006.06.004>
- Rohleder, N., Wolf, J. M., & Wolf, O. T. (2010). Glucocorticoid sensitivity of cognitive and inflammatory processes in depression and posttraumatic stress disorder. *Neuroscience and Biobehavioral Reviews*, 35(1), 104-114. <https://doi.org/10.1016/j.neubiorev.2009.12.003>
- Sack, M., Spieler, D., Wizelman, L., Epple, G., Stich, J., Zaba, M., & Schmidt, U. (2017). Intranasal oxytocin reduces provoked symptoms in female patients with posttraumatic stress disorder despite exerting sympathomimetic and positive chronotropic effects in a randomized controlled trial. *BMC Medicine*, 15, Article 40. <https://doi.org/10.1186/s12916-017-0801-0>
- Scheele, D., Lieberz, J., Goertzen-Patin, A., Engels, C., Schneider, L., Stoffel-Wagner, B., & Hurlmann, R. (2019). Trauma disclosure moderates the effects of oxytocin on intrusions and neural responses to fear. *Psychotherapy and Psychosomatics*, 88(1), 61-63. <https://doi.org/10.1159/000496056>
- Schultebrucks, K., Rombold-Bruehl, F., Wingenfeld, K., Hellmann-Regen, J., Otte, C., & Roepke, S. (2019). Heightened biological stress response during exposure to a trauma film predicts an increase in intrusive memories. *Journal of Abnormal Psychology*, 128(7), 645-657. <https://doi.org/10.1037/abn0000440>
- Schumacher, S., Niemeyer, H., Engel, S., Cwik, J. C., Laufer, S., Klusmann, H., & Knaevelsrud, C. (2019). HPA axis regulation in posttraumatic stress disorder: A meta-analysis focusing on potential moderators. *Neuroscience and Biobehavioral Reviews*, 100, 35-57. <https://doi.org/10.1016/j.neubiorev.2019.02.005>
- Schwaiger, M., Heinrichs, M., & Kumsta, R. (2019). Oxytocin administration and emotion recognition abilities in adults with a history of childhood adversity. *Psychoneuroendocrinology*, 99, 66-71. <https://doi.org/10.1016/j.psyneuen.2018.08.025>
- Schwartz, D., Barkowski, S., Strauss, B., Knaevelsrud, C., & Rosendahl, J. (2019). Efficacy of group psychotherapy for posttraumatic stress disorder: Systematic review and meta-analysis of randomized controlled trials. *Psychotherapy Research*, 29(4), 415-431. <https://doi.org/10.1080/10503307.2017.1405168>
- Shapiro, F. (2014). The role of eye movement desensitization and reprocessing (EMDR) therapy in medicine: Addressing the psychological and physical symptoms stemming from adverse life experiences. *The Permanente Journal*, 18(1), 71-77. <https://doi.org/10.7812/TPP/13-098>
- Sherin, J. E., & Nemeroff, C. B. (2011). Post-traumatic stress disorder: The neurobiological impact of psychological trauma. *Dialogues in Clinical Neuroscience*, 13(3), 263-278. <https://doi.org/10.31887/DCNS.2011.13.2/jsherin>
- Shin, L. M., & Liberzon, I. (2010). The neurocircuitry of fear, stress, and anxiety disorders. *Neuropsychopharmacology*, 35(1), 169-191. <https://doi.org/10.1038/npp.2009.83>

- Singh, J. (2019). Intranasal oxytocin: A therapeutic option for treatment of post-traumatic stress disorder (PTSD). *International Journal of Scientific Research*, 8(4), 51-54.
<https://doi.org/10.36106/ijsr>
- Smith, S. M., & Vale, W. W. (2006). The role of the hypothalamic-pituitary-adrenal axis in neuroendocrine responses to stress. *Dialogues in Clinical Neuroscience*, 8(4), 383-395.
<https://doi.org/10.31887/DCNS.2006.8.4/ssmith>
- Solomon, D. T., Nietert, P. J., Calhoun, C., Smith, D. W., Back, S. E., Barden, E., & Flanagan, J. C. (2018). Effects of oxytocin on emotional and physiological responses to conflict in couples with substance misuse. *Couple & Family Psychology*, 7(2), 91-102. <https://doi.org/10.1037/cfp0000103>
- Spetter, M. S., Feld, G. B., Thienel, M., Preissl, H., Hege, M. A., & Hallschmid, M. (2018). Oxytocin curbs calorie intake via food-specific increases in the activity of brain areas that process reward and establish cognitive control. *Scientific Reports*, 8, Article 2736.
<https://doi.org/10.1038/s41598-018-20963-4>
- Stuedte-Schmiedgen, S., Kirschbaum, C., Alexander, N., & Stalder, T. (2016). An integrative model linking traumatization, cortisol dysregulation and posttraumatic stress disorder: Insight from recent hair cortisol findings. *Neuroscience and Biobehavioral Reviews*, 69, 124-135.
<https://doi.org/10.1016/j.neubiorev.2016.07.015>
- Stuedte-Schmiedgen, S., Stalder, T., Schonfeld, S., Wittchen, H. U., Trautmann, S., Alexander, N., . . . Kirschbaum, C. (2015). Hair cortisol concentrations and cortisol stress reactivity predict PTSD symptom increase after trauma exposure during military deployment. *Psychoneuroendocrinology*, 59, 123-133. <https://doi.org/10.1016/j.psyneuen.2015.05.007>
- Thaller, V., Vrkljan, M., Hotujac, L., & Thakore, J. (1999). The potential role of hypocortisolism in the pathophysiology of PTSD and psoriasis. *Collegium Antropologicum*, 23(2), 611-619.
- Tortella-Feliu, M., Fullana, M. A., Perez-Vigil, A., Torres, X., Chamorro, J., Littarelli, S. A., & de la Cruz, L. F. (2019). Risk factors for posttraumatic stress disorder: An umbrella review of systematic reviews and meta-analyses. *Neuroscience and Biobehavioral Reviews*, 107, 154-165.
<https://doi.org/10.1016/j.neubiorev.2019.09.013>
- Trautmann, S., Reineboth, M., Trikojat, K., Richter, J., Hagenaars, M. A., Kanske, P., & Schafer, J. (2018). Susceptibility to others' emotions moderates immediate self-reported and biological stress responses to witnessing trauma. *Behaviour Research and Therapy*, 110, 55-63.
<https://doi.org/10.1016/j.brat.2018.09.001>
- van den Heuvel, L. L., Stalder, T., du Plessis, S., Suliman, S., Kirschbaum, C., & Seedat, S. (2020). Hair cortisol levels in posttraumatic stress disorder and metabolic syndrome. *Stress*, 23(5), 577-589. <https://doi.org/10.1080/10253890.2020.1724949>
- van Wingen, G. A., Geuze, E., Vermetten, E., & Fernandez, G. (2011). Consequences of combat stress on brain functioning. *Molecular Psychiatry*, 16(6), Article 583.
<https://doi.org/10.1038/mp.2011.55>
- van Zuiden, M., Frijling, J. L., Nawijn, L., Koch, S. B. J., Goslings, J. C., Luitse, J. S., & Olf, M. (2017). Intranasal oxytocin to prevent posttraumatic stress disorder symptoms: A randomized

- controlled trial in emergency department patients. *Biological Psychiatry*, *81*(12), 1030-1040. <https://doi.org/10.1016/j.biopsych.2016.11.012>
- van Zuiden, M., Savas, M., Koch, S. B. J., Nawijn, L., Staufenbiel, S. M., Frijling, J. L., Veltman, D. J., van Rossum, E. F. C., & Olf, M. (2019). Associations among hair cortisol concentrations, posttraumatic stress disorder status, and amygdala reactivity to negative affective stimuli in female police officers. *Journal of Traumatic Stress*, *32*(2), 238-248. <https://doi.org/10.1002/jts.22395>
- Wampold, B. E. (2015). How important are the common factors in psychotherapy? An update. *World Psychiatry*, *14*(3), 270-277. <https://doi.org/10.1002/wps.20238>
- Yehuda, R. (2002). Post-traumatic stress disorder [Reply]. *The New England Journal of Medicine*, *346*(19), 1497.
- Yehuda, R., Bierer, L. M., Pratchett, L. C., Lehrner, A., Koch, E. C., Van Manen, J. A., & Hildebrandt, T. (2015). Cortisol augmentation of a psychological treatment for warfighters with posttraumatic stress disorder: Randomized trial showing improved treatment retention and outcome. *Psychoneuroendocrinology*, *51*, 589-597. <https://doi.org/10.1016/j.psyneuen.2014.08.004>

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In the originally published version of the above mentioned article, there was a typographical error in Table 4. In the second row ("LSAS"), an incorrect value in the "p" column was provided (.19). Instead, the correct data for "LSAS" under the "p" column is: .019. This change has no effect on the conclusions drawn in the article as the authors had already explained correctly that there was a significant decrease ($p = .019$) in social anxiety symptoms assessed with the LSAS. The corrected table can be found below (see Table 4). The authors apologize for any inconveniences caused.

Table 4

Pretest and Posttest Comparison for the CBPT Intervention

Scale	Pre		Post		t (4)	M difference [CI 99%]			Cohen's d	Hedges' g
	M	SD	M	SD		LL	UL	p		
BFNE	35.60	7.02	28.40	4.10	2.86	-4.39	18.79	.046	1.03	0.82
LSAS	99.40	16.99	58.40	24.81	3.82	-8.44	90.44	.019	2.41	1.93
SADS	14.40	5.64	11.80	7.73	1.31	-6.56	11.76	.261	0.46	0.37
PAS	133.20	13.88	131.60	17.21	0.20	-34.67	37.87	.849	-0.12	-0.09
OPQ	56.20	23.18	35.80	16.63	3.22	-8.74	49.54	.032	0.88	0.70



Scale	Pre		Post		<i>t</i> (4)	<i>M</i> difference [CI 99%]			Cohen's <i>d</i>	Hedges' <i>g</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		<i>LL</i>	<i>UL</i>	<i>p</i>		
OCQ	64.80	23.47	47.00	26.67	5.95	4.03	31.57	.004	0.76	0.61
BDI	19.60	5.86	12.60	8.20	2.03	-8.82	22.82	.111	1.19	0.96
QOLI	29.40	21.31	36.00	25.17	-0.88	-41.13	27.93	.429	0.31	0.25

Note. Observed Means (*M*) and Standard Deviations (*SD*) for the Pre and Post assessment points; results of *t*-test analyses (*t*, *p*-value) and effect sizes Cohen's *d* and Hedges' *g*. BFNE = Brief Fear of Negative Evaluation; LSAS = Liebowitz Social Anxiety Scale; SADS = Social Avoidance and Distress Scale; PAS = Personal Attitude Scale-II; OPQ = Social cost and probability by the Outcome Probability Questionnaire; OCQ = Outcome Cost Questionnaire; BDI = Beck Depression Inventory; QOLI = Quality of Life Inventory. Cohen's *d* was estimated as $d = (\text{mean pre-post change}) / (\text{pretest } SD)$. Hedges' *g* was calculated as follows: $g = J * d$, with $d = \text{Cohen's } d$; $J = (1 - 3 / (4 * df - 1))$; $df = N - 1$. The sign of the effect size was chosen so that a positive effect size indicates improvement and negative effect size represents worsening.

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