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Internet-based CBT for adolescents with low self-esteem: a pilot randomized controlled trial

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ABSTRACT

Low self-esteem is a common problem among adolescents and is related to psychiatric problems such as depression and anxiety. However, effective and available interventions primarily targeting low self-esteem are scarce, in particular for youths. To address this gap, the aim of this pilot study was to evaluate a novel internet-based Cognitive Behavioral Therapy (ICBT) program for low self-esteem in adolescents using a randomized controlled design. Fifty-two participants (15-19 years) were recruited and randomly allocated to seven weeks of therapist-supported ICBT (n=26) or to a waitlist control condition (n=26). The primary outcome was the Rosenberg Self-Esteem Scale (RSES). Secondary outcomes measured domain-specific aspects of self-esteem, self-compassion, quality of life, depression and anxiety. The treatment group showed significantly higher levels of self-rated self-esteem compared to the control group at post-treatment, with a large between-group effect-size (RSES, $d = 1.18$). Further, the treatment had significant positive impact on secondary measures of self-esteem, self-compassion, quality of life, depression and anxiety. The results of this pilot-RCT suggest that ICBT can be effective for treating low self-esteem in adolescents, decrease depression and anxiety levels, and increasing quality of life. Replication of the results in larger samples is needed.

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Adolescents; cognitive behavior therapy; internet; self-esteem

Introduction

Self-esteem can be broadly defined as an overall evaluation of one's self-concept (Ngo et al., 2020). Various definitions of self-esteem exist in the literature. For example, Baumeister et al. (2003) defined self-esteem as the global amount of value people assign to themselves. When measured, high ratings on questions, such as experienced level of

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worthiness, having good qualities and an ability to do things as well as others are seen to be indicative of a high self-esteem. Low self-esteem, on the other hand, is revealed by high ratings on statements, such as experiencing oneself as a failure and wishes to have more self-respect (Robson, 1989). In addition, more specific ways to conceptualize and operationalize self-esteem exist. Some researchers have described self-esteem as a schema, that is, as a pervasive pattern of cognitions, emotions, bodily sensations about oneself, ones relationships and self-worth (Waite et al., 2012). Others have focused on domain-specific aspects, such as family, peers or academic self-esteem (Ngo et al., 2020).

Low self-esteem is a common problem among adolescents that has negative associations with, for instance, life satisfaction and physical and mental well-being (Arsandaux et al., 2020; Moksnes & Espnes, 2013). Further, self-esteem in youths has consistently been associated with internalizing problems such as depression and anxiety (Keane & Loades, 2017; Ngo et al., 2020). Some researchers have argued that low self-esteem increases vulnerability and cause mental health problems while others have suggested that it is rather mental health problems that result in low self-esteem (McManus et al., 2009; Ngo et al., 2020). Given the high rates of mental health problems among youths (Ebert et al., 2015; Merikangas et al., 2010) and the association with poor self-esteem, self-esteem could be an important target for assessment and psychological treatment.

Thus, low self-esteem is a transdiagnostic construct found across and in association with several psychological disorders (Waite et al., 2012). In recent years, interventions based on Cognitive Behavioral Therapy (CBT) have begun to target transdiagnostic issues such as perfectionism (Lloyd et al., 2015; Rozental et al., 2017) and loneliness (Käll et al., 2021), showing positive results in reducing targeted symptoms. Unfortunately, interventions for self-esteem in adolescents have rarely been evaluated. In general, there is a lack of treatment studies on low self-esteem, and those that exists have mainly been developed for adults, delivered within a group format (Kolubinski et al., 2018). The interventions have commonly been based on CBT where most use the schematic, cognitive model by Fennell (2016). Briefly, the focus in this model is to identify and challenge negative self-evaluations and life rules, and to foster greater self-acceptance (Fennell, 2016). Both traditional CBT and CBT administered through the internet (ICBT) have shown promising results on improved self-esteem in adults (Kolubinski et al., 2018; MacBeth & Gumley, 2012; Waite et al., 2012). However, when studied among adolescents, self-esteem has rarely been the main focus of the intervention but one of many topics (Berg et al., 2020; Taylor & Montgomery, 2007). Further, the effect sizes have been low to moderate when targeted as a secondary outcome (Berg et al., 2020; Taylor & Montgomery, 2007). For instance, in Berg et al. (2020), pp. 120 adolescents (15–19 years old) received ICBT for anxiety and comorbid depressive symptoms and small effects in increasing self-esteem were found at post treatment and medium effects at 6 month follow-up. However, in a study of ICBT for perfectionism in 94 female adolescents (14–19 years), another transdiagnostic construct, large effects for increasing self-esteem were found in the intervention group compared to both an active treatment group and a control group at both 3 and 6 months follow-up ($d = 0.91\text{--}0.93$; Shu et al., 2019). Thus, to develop and evaluate a specific ICBT program with a primary focus on transdiagnostic issues, such as low self-esteem among youths, is therefore highly motivated.

As mentioned above, CBT interventions can be delivered in different formats, including via the internet. ICBT has been shown to be an effective treatment to reduce symptoms of depression and anxiety among adolescents (Ebert et al., 2015; Vigerland et al., 2016), and can be a way to make treatment more accessible to those in need (Andersson, 2016). Moreover, ICBT can more easily be evaluated in controlled trials as both costs and development times are lower than in regular intervention research (Andersson et al., 2019). As mentioned, ICBT for transdiagnostic issues, such as perfectionism, have become more common, showing positive results among both adults and adolescents (Rozental et al., 2017; Shu et al., 2019). Attending transdiagnostic issues in addition to disorder-specific approaches can have several advantages when developing new treatments. For instance, given that low self-esteem has been associated with many psychiatric conditions and found to be involved in its etiology and persistence, a primary focus on self-esteem could potentially improve treatment outcome (Waite et al., 2012). Further, it would be a way to increase scalability of internet-delivered transdiagnostic treatments in young people. Despite this, ICBT has to our knowledge not been developed or evaluated as an intervention for low self-esteem in youths.

When developing interventions for low self-esteem it is important to acknowledge that improving self-esteem can be difficult (Neff, 2015). Several researchers mention the importance of addressing potential risks of pursuing high self-esteem when constructing interventions (Baumeister et al., 2003; Crocker & Park, 2004). For instance, high self-esteem can become contingent on extrinsic factors of success and admiration (Kolubinski et al., 2018). This can result in feeling self-worth only when things are going well or when being superior to others, and paradoxically increase vulnerability in presence of set-backs and stressful situations since they become a threat to ones self-esteem (Baumeister et al., 2003; Crocker & Park, 2004). Thus, when helping youths to improve their self-esteem, it is important to ensure that interventions focus on more stable, unconditional foundations of self-esteem. For example, some researchers stress the need to focus on experienced autonomy, healthy relationships and fostering a learning mind-set to change self-esteem in a sustainable way, that is, Self Determination Theory (SDT; Crocker & Park, 2004). Moreover, compassion-focused therapy has been found to be effective in strengthening self-esteem (Thomason & Moghaddam, 2021). In other words, treatments are motivated that integrate CBT with other theories and methods that acknowledge the *how* of improving self-esteem.

To summarize, low self-esteem is a common problem among youths. It can be distressing in its own right, but is also found across and in association to psychiatric conditions, such as depression and anxiety. Treatment studies with a specific focus on self-esteem in younger populations are lacking. Therefore, in this pilot study, we aimed to develop and test an ICBT intervention for low self-esteem among adolescents. More specifically, we evaluated whether guided ICBT for low self-esteem in adolescents could result in statistically and clinically significant effects, in terms of a strengthened self-esteem, higher quality of life and reduced symptoms of depression and anxiety, compared to a wait-list control condition.

Method

The study protocol was approved by the Swedish Ethical Review Authority (no. 2020–05697).

Recruitment & Inclusion Procedure

The recruitment took place in January and February 2021. The aim was to recruit at least 50 participants for this phase 1 pilot study to inform a planned larger trial, registered in clinicaltrials.org (NCT04737356). The study was advertised via high schools, youth clinics, social media and websites. Paid ads were published on the websites Facebook and Instagram. All ads referred to the project platform (www.siastudien.se). The platform contained information about the study, the screening procedure, inclusion and exclusion criteria, and how to register interest in the study.

Participants who registered their interest received a link to their email providing an informed consent sheet and the full range of screening measures; Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965); Robson Self-Concept Questionnaire (RSCQ; Robson, 1989); Performance-based Self-Esteem (PBSE; Hallsten et al., 2005); Self-compassion Scale Short Format (SCS-SF; Raes et al., 2011), Brunnsvikens Brief Quality of Life Scale (BBQ; Lindner et al., 2016); Patient Health Questionnaire (PHQ-9; Löwe et al., 2004); Generalised Anxiety Disorder-7-item scale, (GAD-7; Spitzer et al., 2006); Alcohol Use Disorder Identification Test (AUDIT; Saunders et al., 1993), and finally a 6 item-version of the Rathus Assertiveness Scale (RAS-6; Rathus, 1973), adapted for this study. The aim was to capture both global aspects of self-esteem through the RSES and RSCQ, and more domain-specific aspects of self-esteem targeted in the treatment modules with measures, such as the PBSE, as well as other relevant aspects of mental illness through the BBQ, PHQ-9 and GAD-7.

Participants who completed the screening assessment and met inclusion criteria were contacted for a clinical telephone interview in which the Mini International Psychiatric Interview (M.I.N.I.; Sheehan et al., 1997) was administered. This was done by four MSc psychology students who had completed their clinical training. Participants who did not meet inclusion criteria received a personal explanation via telephone and was guided to other health-care options when needed.

A total of 177 individuals registered their interest for the study. Among these, 100 completed the screening procedure and were subsequently contacted for the clinical interview. Interviewed participants ($n = 64$) were discussed for eligibility in the study project group during clinical conferences. The project group consisted of licensed psychologists, a psychiatrist and the four psychology students who conducted the clinical interviews as well as the principal investigator (GA). The principal investigator made the final decision on inclusion or exclusion together with the team. A total of 52 individuals were included in the study and subsequently randomized in a 1:1 ratio to ICBT ($n = 26$) or to the waitlist control condition ($n = 26$) using a random number generator (www.random.org). The randomization was performed by a person not involved in the study. A flowchart of the process can be seen in [Figure 1](#).

Participants in the treatment group received access to the treatment platform containing the seven-week-long ICBT program and were assigned a therapist. The control group were given restricted access to the platform (i.e. no treatment content) with the possibility to initiate and receive contact with a therapists in case of emergency during the waiting period. All participants received a weekly measure in order to monitor potential symptom deterioration. This included the Patient Health Questionnaire-2 (PHQ-2)

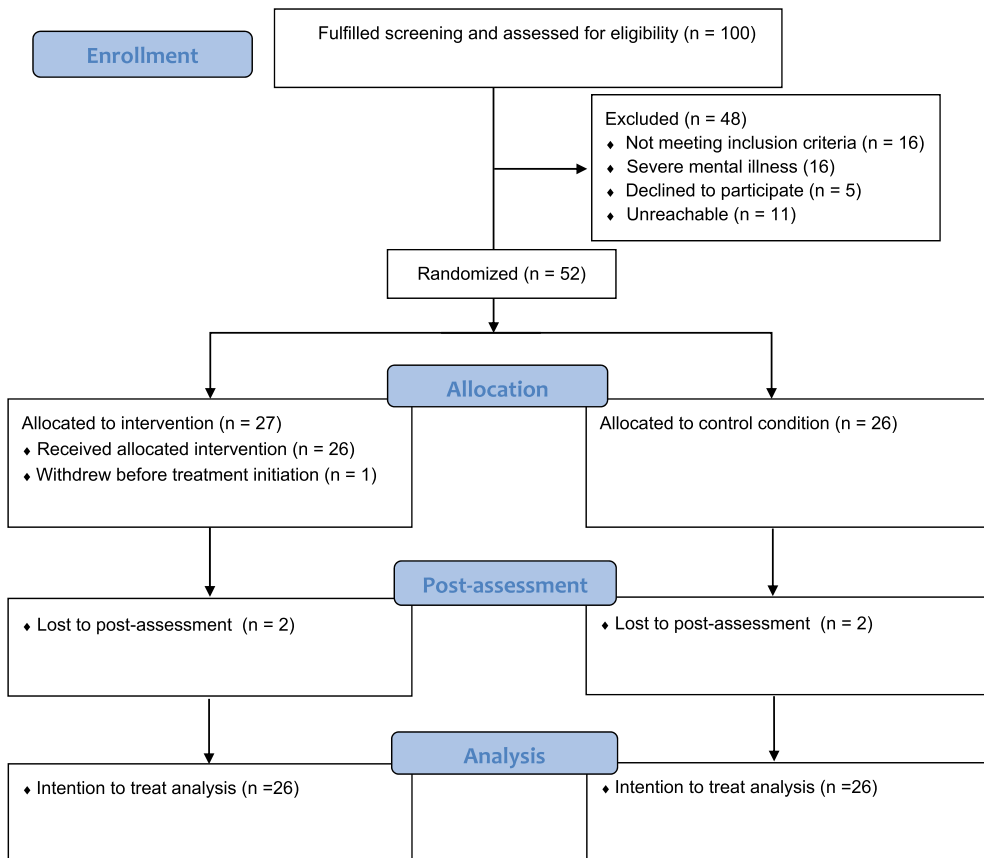


Figure 1. Flow diagram.

along with two questions from RSES “*I feel that I am a valuable person, at least as much as others*” (item 1) and “*Every now and then I think I am useless*” (item 10). In presence of sudden deterioration on PHQ-2, participants were contacted.

Participants

For inclusion in the study, participants were required to: experience clinically significant low self-esteem as indicated by the Rosenberg Self-Esteem Scale (≤ 20 points) and the Robson Self-concept Questionnaire (< 120 points); be 15–19 years old and deemed to be mature enough to participate in a research project; have access to computer, iPad, mobile or smartphone with internet connection; speak and write Swedish; have a stable medication dosage for at least one month if on psychotropic medication; not participate in any other psychological treatment that could interfere with the current study; not suffer from severe depression or suicidal ideation, substance or alcohol abuse or other severe psychiatric problems, such as bipolar disorder, anorexia or psychosis. The included participants had a mean age of 17.3 years ($SD = 2.1$) and were mostly girls (96.2%). More information about the participants can be found in [Table 1](#).

Table 1. Sociodemographic description of the included participants.

		ICBT n = 26	Control n = 26	Total n = 52
Gender n (%)	<i>Men</i>	0 (0%)	2 (7.7%)	2 (3.8%)
	<i>Women</i>	26 (100%)	24 (92.3%)	50 (96.2%)
	<i>Intersexual</i>	0 (0%)	0 (0%)	0 (0%)
Age Mean (SD)		16.85 (2.62)	17.73 (1.15)	17.29 (2.05)
Living situation n (%)	<i>With both parents</i>	14 (53.8%)	12 (46.2%)	26 (50%)
	<i>With one parent</i>	1 (3.8%)	2 (7.7%)	3 (5.8%)
	<i>Alternating between parents</i>	7 (26.9%)	6 (23%)	13 (25%)
	<i>Alone</i>	2 (7.7%)	3 (11.5%)	5 (9.6%)
	<i>With friend or partner</i>	0 (0%)	1 (3.8%)	1 (1.9%)
	<i>Other</i>	2 (7.7%)	2 (7.7%)	4 (7.7%)
Occupation n (%)	<i>Studying</i>	23 (88.5%)	23 (88.5%)	46 (88.5%)
	<i>Working</i>	3 (11.5%)	2 (7.7%)	5 (9.6%)
	<i>Unemployed</i>	0 (0%)	1 (3.8%)	1 (1.9%)
Previous psychological treatment n (%)	<i>Yes</i>	9 (34.6%)	13 (50%)	22 (42.3%)
Psychotropic medication n (%)	<i>No</i>	22 (84.6%)	23 (88.5%)	45 (86.5%)
	<i>Yes (ongoing)</i>	3 (11.5%)	1 (3.8%)	4 (7.7%)
	<i>Yes (previous)</i>	1 (3.8%)	2 (7.7%)	3 (5.8%)
Presence of psychiatric diagnoses n (%)	<i>Depression</i>	15 (57.7%)	13 (50%)	28 (53.8%)
	<i>Social anxiety</i>	11 (42.3%)	9 (34.6%)	20 (38.5%)
	<i>OCD*</i>	3 (11.5%)	2 (7.7%)	5 (9.6%)
	<i>GAD*</i>	7 (26.9%)	5 (19.2%)	12 (23.1%)
	<i>Other anxiety disorder*</i>	7 (27.0%)	8 (30.8%)	15 (57.7%)
	<i>Eating disorders</i>	2 (7.7%)	4 (15.4%)	6 (11.5%)
	<i>Autism</i>	1 (3.8%)	0 (0%)	1 (1.9%)
	<i>ADHD*</i>	1 (3.8%)	1 (3.8%)	2 (3.8%)
	<i>None</i>	8 (30.8%)	6 (23%)	14 (26.9%)

* OCD = Obsessive Compulsive Disorder; GAD = Generalised Anxiety Disorder; Other anxiety disorder = Panic Disorder, Agoraphobia, Posttraumatic stress disorder; ADHD = Attention-Deficit Hyperactive Disorder.

Measures

All measures were administered at pre- and post-treatment. More detailed information about the measures is given below. The PHQ-2 along with two questions from the RSES (“*I feel that I am a valuable person, at least as much as others*” and “*Every now and then I think I am useless*”) were used as a weekly measure to monitor symptoms and sudden deterioration. At week three, the full RSES was re-administered.

In the pre-treatment interview, the full M.I.N.I 7.0 was administered to screen for psychiatric diagnoses and severity of symptoms. M.I.N.I. 7.0 has good psychometric properties (Sheehan et al., 1997). For the post-treatment interview, a short interview guide was created including broad questions about the overall experiences of treatment, as well as the Clinical Global Impression-Improvement Scale (CGI; Guy, 1976). CGI is a brief assessment tool where clinicians rate experienced clinical change in the participant on a graded scale ranging from 1 (Very much improved) to 7 (Very much deteriorated).

The control group were also contacted via phone in connection to the post-treatment assessment. They were asked if their interest in treatment still remained, and if there was something that had occurred during the waiting period that could be of importance for the upcoming treatment period.

Primary outcome

The primary outcome in the study was the *RSES*. *RSES* is a measure that aims to measure global self-esteem (Rosenberg, 1965). It consists of 10 statements, both positively formulated statements such as “*I feel that I am a valuable person, at least as much as others*” and statements that are coded reversibly, for example, “*Every now and then I think I am useless*”. It is scored from 0 to 30 where a higher score indicates a higher self-esteem. A score of >15 can be used as a cut-off for low self-esteem using *RSES*, but no widely used cut-off exists (Isomaa et al., 2013). *RSES* has shown high test–retest correlation and good internal consistency (Torrey et al., 2000; Isomaa et al., 2013). In the present sample, Cronbach’s alpha for the *RSES* was .73, indicating a satisfactory internal consistency.

Secondary outcomes

RSCQ. *RSCQ* is a measure intended to measure global self-esteem (Robson, 1989). It consists of 30 items and is scored from 0 to 210. A higher score indicates higher self-esteem. As with *RSES*, no widely used cut-off exists, but a previous treatment study on low self-esteem used a score of ≤ 120 as an inclusion criteria (Waite et al., 2012). In the present sample, Cronbach’s alpha for the *RSCQ* was .78. *RSCQ* had a high correlation with *RSES* ($r = .85$).

PBSE. *PBSE* aims to measure performance-based self-esteem (Hallsten et al., 2005). It consists of four items and the lowest total score is 1 and the highest 5 since the result is calculated by arithmetic mean, where higher scores indicate higher self-esteem (Hallsten et al., 2002). Cronbach’s alpha for *PBSE* in this study was .75.

SCS-SF. *SCS-SF* contains 12 items that aims to measure how individuals typically act in difficult times, in terms of self-compassion. The lowest total score is 1 and the highest 5 since the result is calculated by arithmetic mean. A higher score indicates higher self-compassion. Cronbach’s alpha for *SCS-SF* in this study was .78.

RAS-6. This version was adapted specifically to this study. It contains 6 treatment relevant items from the original 30-item measure for assessing assertive behaviour. The lowest total score is –18 and the highest score is 18. Higher score indicates a higher level of assertiveness. Cronbach’s alpha for *RAS-6* in this study was .45.

BBQ. *BBQ* is a measure that aims to measure perceived quality of life (Lindner et al., 2016). The form consists of 12 different items in six different areas of life. The lowest score is 0 and the highest is 96, and higher values on the form indicate higher perceived quality of life. Cronbach’s alpha for *BBQ* in this study was .75.

GAD-7. GAD-7 is a measure that aims to measure generalized anxiety disorder based on diagnostic criteria for generalized anxiety disorder according to the DSM-IV (Spitzer et al., 2006). It consists of seven items. The lowest possible score is 0 and the highest is 21. A lower score indicates lower levels of anxiety. Cronbach's alpha for GAD-7 in this study was .81.

PHQ-9. PHQ-9 is a measure that aims to measure depressive symptoms and is based on criteria for the diagnosis of actual depression according to DSM-IV (Kroenke et al., 2001). The form consists of 10 items where the lowest score is 0 and the highest is 27. Cronbach's alpha for PHQ-9 in this study was .86.

Treatment

Participants were assigned a maximum of seven modules (one per week). The modules relied on generic CBT principles and were inspired by previous ICBT programs for adolescents in which self-esteem has been addressed and evaluated as a secondary outcome (Berg et al., 2020). Due to lack of interventions with a specific focus on low self-esteem among adolescents, however, a novel intervention was created, using different sources on how to strengthen a healthy and sustainable self-esteem (for instance, Baumeister et al., 2003). The exercises and rationales were mainly inspired by Fennell's (2016) cognitive model of self-esteem and focused on cognitive aspects of CBT and how to challenge unhelpful thoughts and assumptions via cognitive restructuring and behavioral experiments. Further, the material was inspired by Self Determination Theory (SDT; Deci & Ryan, 2000), connecting self-esteem to areas of experienced competence, relationships and autonomy, as well as theoretical key components from self-compassion theory that aims to foster a more friendly and non-judgmental attitude towards mistakes and personal flaws and failures (Neff, 2015). The theories of SDT and self-compassion were added to the traditional cognitive model of Fenell with the aim to meet and thoroughly prevent the potential risks connected to pursuing a better self-esteem among youths, as stressed by several researchers within the field (Baumeister et al., 2003; Crocker & Park, 2004). Researchers have stressed risks such as becoming dependent on particular outcomes or social approval, inaccurate self-concept, unhelpful social comparison, and unconstructive behaviors in relation to people or situations that may threaten the ego (Baumeister et al., 2003; Crocker & Park, 2004; Neff & Vonk, 2009). By connecting better self-esteem to the three life-areas within SDT in the treatment rationales, and adding content that encourage a more self-compassionate way in presence of set-backs, we aimed to clearly direct the attention towards aspects beyond pursuing a sense of high self-esteem. Rather, we wanted the participants to engage in the practice of an open, learning mindset in relation to achievements, focus on healthy, constructive ways to relating to oneself and others, as well as becoming less avoidant in relation to the risk of failure and personal inadequacy.

The introduction module contained information about low self-esteem and its origins from a CBT perspective, a maintenance model based on SDT and how the treatment would proceed to strengthen a higher, more sustainable self-esteem. Three fictive cases were presented to illustrate how low self-esteem can be experienced and expressed for different individuals. These fictive cases were incorporated in each module in order to illustrate concrete application of the rationales and exercises throughout the treatment.

Module two focused on self-esteem related to experienced competence and how to identify and challenge unhelpful thoughts about achievements and performances via cognitive restructuring. Module three focused on relationships and how to identify and challenge previously avoided situations via behavioral experiments. Module four focused on autonomy and how to increase healthy self-assertiveness. Additionally, two additional modules were included with the intention of supporting module 1–4. Module five focused on self-compassion in the presence of setbacks (see, Brach, 2020; Neff, 2015) and module six focused on self-acceptance and allowing negative emotions. Module seven contained a maintenance plan focusing on how to prevent relapses. Appendix A contains a detailed account of the content of each module in the ICBT program. The treatment group began their treatment in February 2021. The control group received treatment immediately after the treatment group.

Therapists

All participants were assigned a therapist who gave feedback on the module exercises once a week through asynchronous messages via the study platform (Vlaescu et al., 2016). The assigned therapist also answered potential questions about the treatment within 24 hours. The therapists were the same four MSc psychology students who had performed the pre- and post-treatment interviews. They received group supervision once a week by two licensed psychologists.

Response and deterioration rates

Response to treatment was calculated using the Reliable Change Index (RCI) on the RSES. RCI is a way to evaluate if participants change significantly and not due to measurement errors, defined by having a change score exceeding 1.96 times the SD of the measurement (Jacobson & Truax, 1991). In the present study, a change score had to be >3.99 to be defined as reliable.

Further, as mentioned, the CGI (Guy, 1976) was used in connection to the post-treatment interview to assess clinician rated improvement and deterioration.

Deterioration was defined by using the same change score, but reversed (-3.99), as recommended by Jacobson and Truax (1991). Further, a question about negative treatment-related experiences were used to assess potential negative effects of treatment, as suggested by Rozentel et al. (2018).

Module ratings and treatment acceptance

Since this was a pilot study, we included ratings of experienced acceptability for each module in order to develop and improve treatment content for potential future trials. At the end of each module, participants could rate the following questions: level of perceived helpfulness, ranging from 1 (not at all helpful) to 5 (very helpful); how well the content of the module fitted their experienced problems, ranging from 1 (Not at all fitting) to 5 (fitted very well); and whether they would recommend the chapter to a friend with similar problems, 1 (yes) or no (0). Finally, they could give an overall rating of the module, ranging between 1 to 5 stars, where 1 star indicated a low rating and 5 indicated a high rating.

Data analysis

All descriptive statistics were analyzed using SPSS v27. For the analysis of the primary outcome measure, a latent growth model was used. This type of model allows for individual variability in change rate (slope) and initial starting point (intercept; Hesser, 2015). In addition, it also takes into account dependence of repeated measures over time, making it suitable for the longitudinal design of the present study (Hesser, 2015).

For the secondary outcome measures, regression for continuous outcome variables was estimated using maximum likelihood. For each analysis, the pre-treatment value of the respective outcome measure was included in the analysis as a predictor to control for any differences between the two groups at baseline, making the analysis similar to an ANCOVA model (Muthén et al., 2016). All analysis were conducted using full information maximum likelihood estimation according to the intention-to-treat principle, making use of all available data. Both the primary and secondary analysis were carried out using Mplus version 8.1 (Muthén & Muthén, 2017).

For the latent growth model used for the primary outcome, a Cohen's d between-group effect size was calculated by dividing the model estimated end point difference between the two groups with the square root of the sum of the residual plus the estimate of the random intercept at pre-treatment (Feingold, 2009). For the secondary outcomes, Cohen's d between-group effect sizes were calculated by dividing the model-estimated mean difference between the two groups with the standard deviation at pre-treatment. According to Cohen (1992), the strength of the between-group effect size was defined as small ($d = 0.20$), moderate ($d = 0.50$) and large ($d = 0.80$).

In order to assess dose-response associations, that is, the correlations between number of completed modules and change scores on the outcome measures, the Pearson correlation coefficient was used. Therapist time, treatment acceptance and feasibility are presented as means and standard deviations.

Results

Attrition and adherence

A total of 48 (92%) participants completed the post-treatment questionnaire measurements. One participant initiated the post-measurement battery but did not complete it. In the treatment group, 20 (77%) participated in the follow-up telephone interview. Independent samples t -test and χ^2 tests revealed no significant differences between the treatment and the control group at baseline, nor between the participants who completed the post-assessment and those who did not. Thus, there was no obvious systematic pattern related to missing data.

With regard to treatment adherence, here defined as completing at least one exercise in the module, the average number of completed modules was 4.92 ($SD = 2.3$) out of 7. Thus, on average, participants completed about 70% of the modules. A total of 10 (38%) participants completed all the modules. The minimum number of completed modules was 0. A total of 14 participants (54%) completed the last module. For a complete overview of module completion, see, Table 2. Treatment adherence was not related with change scores on any of the outcome measures, $r = -.024$ -.268; $p = .94$ -.327. Thus, the results revealed no dose-response effect.

Table 2. Number of completed modules during treatment.

Number of completed modules*	N completed <i>n</i> = 26	Percent %
No module	1	3.8
1 module	1	3.8
2 modules	4	15.4
3 modules	2	7.7
4 modules	2	7.7
5 modules	1	3.8
6 modules	5	19.2
7 modules	10	38.5

Primary outcome measure

On RSES, the intervention group had a mean score of $M = 9.88$, $SD = 3.70$ at pre-treatment and the control group had a mean score of $M = 9.15$, $SD = 4.03$. The results from the latent growth curve model revealed significant individual variability in initial levels of the RSES (intercept) but no significant individual variability in rate of change (slope) on the RSES. The covariance between the random intercept and the random slope was not statistically significant meaning that initial symptom level did not correlate with rate of change. A significant effect was found for Group by Time 0.51 (95% CI [0.17, 0.85], $z = 2.97$, $p = .003$) on the RSES, showing that the treatment group improved on average 0.51 points per week more than the control group. The between-group treatment effect was Cohen's $d = 1.18$ [0.44, 1.92], which is a large effect size.

Secondary outcome measures

For the RSCQ, a regression model showed that there was a significant difference between the two groups at post-treatment, $b = 0.29$, $p = .006$. The between-group effect was Cohen's $d = 0.75$ 95% CI [0.19, 1.31], in favor of the treatment group. For the SCS-SF, the regression model showed that there was a significant difference between the two groups at post-treatment, $b = 0.44$, $p < .001$. The between-group effect was Cohen's $d = 1.18$ 95% CI [0.57, 1.8], in favor of the treatment group. For the PBSE, a regression model showed that there was a significant difference between the two groups at post-treatment, $b = -0.26$, $p = .014$. The between-group effect was Cohen's $d = 0.52$ 95% CI [0.1, 0.94], in favor of the treatment group. For the RAS-6, a regression model showed that there was no significant difference between the two groups at post-treatment, $b = 0.08$, $p = .490$. The between-group effect was Cohen's $d = 0.20$ 95% CI [-0.36, 0.76], in favor of the treatment group. For the BBQ, a regression model showed that there was a significant difference between the two groups at post-treatment, $b = 0.39$, $p < .001$. The between-group effect was Cohen's $d = 0.80$ 95% CI [0.35, 1.25], in favor of the treatment group. For the PHQ-9, a regression model showed that there was a significant difference between the two groups at post-treatment, $b = -0.3$, $p = .005$. The between-group effect was Cohen's $d = 0.61$ 95% CI [0.16, 1.06], in favor of the treatment group. Finally, for the GAD-7, a regression model showed that there was a significant difference between the two groups at post-treatment, $b = -0.33$, $p = .003$. The between-group effect was Cohen's $d = 0.69$ 95% CI [0.19, 1.19], in favor of the treatment group.

Table 3. Observed means, standard deviations, effect sizes and 95% CI for all outcome measures.

Variable	ICBTM (SD)	ControlM (SD)	Effect size	95% CI
RSES-10				
Pre	9.88 (3.70)	9.15 (4.03)	1.18**	0.44–1.92
Post	15.40 (4.88)	10.63 (3.70)		
RSCQ				
Pre	85.54 (17.22)	84.73 (19.07)	0.75**	0.19–1.31
Post	106.48 (25.56)	90.38 (16.98)		
SCS-SF				
Pre	2.04 (0.49)	1.94 (0.44)	1.18**	0.57–1.80
Post	2.64 (0.69)	2.03 (0.43)		
Pbse-scale				
Pre	4.6 (0.70)	4.33 (0.78)	0.52*	0.10–0.94
Post	3.77 (0.77)	4.24 (0.68)		
RAS-6				
Pre	-6.92 (6.16)	-6.46 (4.6)	0.20	-0.36–0.76
Post	-3.54 (7.30)	-4.29 (6.13)		
BBQ				
PrePost	38.15 (17.86)	37.54 (17.16)	0.80**	0.35–1.25
	50.04 (18.03)	35.79 (14.50)		
PHQ-9				
Pre	13.73 (6.56)	13.65 (5.97)	0.61**	0.16–1.06
Post	6.50 (5.46)	10.67 (6.60)		
GAD-7				
Pre	11.27 (4.70)	10.69 (5.02)	0.69**	0.19–1.19
Post	6.25 (4.50)	9.25 (5.24)		

* $p < .05$. ** $p < .01$. RSES-10 = Rosenberg self-esteem scale, RSCQ = Robson self-concept questionnaire, SCS-SF = Self Compassion Scale Short Format, Pbse-scale = Performance based self-esteem scale, RAS-6 = Rathus Assertiveness Scale, BBQ = Brunnsviken Brief Quality of Life Scale, PHQ-9 = Patient Health Questionnaire 9, GAD-7 = Generalised Anxiety Disorder 7-item scale.

Thus, the treatment had significant effects on the domain-specific aspects of self-esteem, self-compassion, quality of life, depression and anxiety, compared to the control group. For an overview of the observed means, standard deviations and effect sizes, see, [Table 3](#).

Response and deterioration

A total of 15 (58%) participants in the treatment group ($n = 26$) had a reliable change. In the control group ($n = 26$), a total of 6 (23%) participants had a reliable change. The difference was statistically significant $\chi^2(1) = 6.47$, $p = .011$.

None of the participants had a reliable deterioration. None of the participants reported experiences of negative effects when asked, neither during the telephone interview, nor in connection to the specific question among the post-treatment measures.

CGI

Of all participants in the treatment group who participated in the telephone interview ($n = 20$), 16 (80%) were judged to be improved to some degree (CGI scores of 1–3) and 4 (20%) to be unimproved (CGI scores of 4). None of the participants were rated as having deteriorated (5–7).

Table 4. Mean rating and SD for treatment modules (range 1–5).

Module (number of ratings)	Perceived helpfulness M (SD)	Perceived suitability for the experienced problems M (SD)	Overall grade M (SD)	Recommend to a friend n (%)
1. Introduction (n = 24)	3.71 (1.04)	4.29 (0.81)	3.83 (0.82)	23 (95.8)
2. Competence and self-esteem (n = 23)	3.96 (0.77)	4.13 (0.82)	3.91 (0.73)	23 (100)
3. Relationships and self-esteem (n = 19)	4.11 (0.88)	4.21 (0.92)	4.11 (0.81)	19 (100)
4. Autonomy and self-esteem (n = 17)	3.41 (0.87)	3.65 (1.17)	3.82 (0.73)	16 (94.1)
5. Using self-compassion in presence of setbacks (n = 16)	4.31 (0.79)	4.44 (0.73)	4.31 (0.79)	16 (100)
6. Self-acceptance (n = 15)	4.07 (0.80)	3.93 (0.80)	3.87 (0.74)	15 (100)
7. Maintenance (n = 14)	3.86 (1.35)	3.71 (1.33)	4.14 (1.10)	13 (92.9)

Module ratings

Overall, the participants rated the modules as acceptable, all ratings scoring were over 3 and close to 4 (range: 1–5). The most popular modules were module 5 about self-compassion in the presence of setbacks (Overall grade: $M = 4.31$; $SD = 0.79$) and module 3 about relationships and self-esteem (Overall grade: $M = 4.11$; $SD = 0.88$). The least popular module was module 4 about autonomy and healthy self-assertiveness (Overall grade: $M = 3.31$; $SD = 0.79$). More information about module ratings and acceptance are summarized in [Table 4](#).

Therapist time

The therapist spent on average 16.2 minutes ($SD = 17.8$) on each participant per week. The minimum average time per week for one of the participants was 1.4 min and the highest one was 31.6 min.

Discussion

The present pilot study is to our knowledge the first to examine the effects of an ICBT intervention on low self-esteem in adolescents in a randomized controlled trial. The results revealed that ICBT was effective in increasing self-esteem with a large between-group effect ($d = 1.18$) on the main outcome, the RSES, compared to the wait-list control group. A total of 15 (58%) participants in the treatment group had a reliable change on RSES, compared with 6 in the control group. None of the participants had a reliable deterioration.

Importantly, the cut-off used for RSES in this study was ≤ 20 , which is five points more than the suggested cut-off for low self-esteem made by previous researchers (i.e. ≤ 15 ; Isomaa et al., 2013). We decided to broaden the cut-off since this was a pilot study and we wanted to be explorative and inclusive given the lack of previous research on treatments for adolescents with low self-esteem. In light of that the intervention group mean was far below ≤ 20 at pre-treatment ($M = 9.88$, $SD = 3.70$), future studies might benefit from using a lower cut-off, such as the recommended one by Isomaa et al. (2013) on ≤ 15 .

On the secondary outcomes, ICBT was superior to the control group with moderate to large effects on the measures of global self-esteem (RSCQ; $d = 0.75$), self-compassion (SCS-SF; $d = 1.18$), performance-based self-esteem (PBSE, $d = 0.52$), and quality of life (BBQ $d = 0.80$). Thus, the treatment had positive effects on self-esteem, self-compassion and quality of life in favor of the treatment group. Further, the treatment had moderate effects on measures of depression (PHQ-9, $d = 0.61$) and anxiety (GAD-7; $d = 0.69$) compared with the control group. The treatment had no significant effect on assertiveness compared to the control group (RAS-6; $d = 0.20$).

The results suggest that ICBT can be an effective intervention for adolescents with low self-esteem with comorbid symptoms of depression and anxiety. The overall observed between-group effect-sizes are in line with previous studies showing that ICBT can be an effective treatment for adolescents (Ebert et al., 2015; Vigerland et al., 2016). Further, the specific effects on self-esteem and quality of life are higher in the present study compared to previous ICBT studies targeting adolescents with anxiety and depression (Berg et al., 2020; Topooco et al., 2018, 2019). This indicates that ICBT could have better effects on self-esteem and quality of life when self-esteem is targeted as the main outcome rather than a secondary one. In addition, the results are in line with other ICBT treatments targeting transdiagnostic issues such as perfectionism and loneliness (Käll et al., 2021; Rozental et al., 2017; Shu et al., 2019), suggesting that interventions for transdiagnostic constructs have an important future role in the treatment of mental health problems.

The moderate to large effect sizes on self-esteem and quality of life also indicate the potential helpfulness in incorporating SDT and self-compassion with the more traditional cognitive rationales and techniques described by Fennell (2016). One explanation for this could be that SDT's conceptualization of self-esteem as being related to experienced competence, autonomy and healthy relationships made sense to the participants, and that the focus on how self-esteem can be affected through changes in different aspects of one's life was helpful for them. With regard to self-compassion, previous research has shown positive, moderate effects on outcomes, such as depression, self-criticism and anxiety in adults following self-compassion interventions (Ferrari et al., 2019). Lack of self-compassion have been connected to emotional difficulties in adolescents, and researchers have suggested self-compassion to be an important factor when constructing mental health interventions for youths (Marsh et al., 2018), which is supported by the findings in the present study. Finally, the results also support the usefulness of Fennell (2016) cognitive techniques and rationales when treating adolescents with low self-esteem, in line with studies showing strengthened self-esteem in adults by using Fennell's treatment model (Waite et al., 2012). However, the design in the present study does not allow any definite conclusions about the active mechanisms of the treatment. Future studies should investigate the potential role of additive components, such as SDT and self-compassion in ICBT for adolescents with low self-esteem. For instance, it would be of interest to compare a treatment based on Fenells theoretical model only with a treatment blending Fenell components with SDT, or self-comapsson, and evaluate if there are any difference in effect or treatment adherence and acceptance. Further, it would be of interest to do process research, using a design that allows the measurement of weekly experiences of self-compassion

and how it relates to changes in self-esteem. Finally, qualitative studies could give valuable insights in how participants can perceive treatment content in relation to its intended active mechanisms.

Further, the module ratings support the general results of the study. Overall, the participants liked the modules and perceived them as helpful. They also experienced them as relevant to their problems and the majority of participants (93–100% across modules) would recommend them to a friend. The most popular module was the one focusing on relationships and the one about using self-compassion in presence of set-backs (see, [Table 4](#)). This supports the potential importance of focusing on these aspects when treating low self-esteem. The least popular module was the one about autonomy and self-esteem. This could suggest that that autonomy is a less relevant or helpful focus when working with low self-esteem in adolescents.

With regard to adherence and attrition, the participants completed about 70% of the modules, and 92% completed the post-treatment measurement. Thus, the present study had a high adherence rate and a low drop-out rate, similar to our previous studies on ICBT for adolescents (Berg et al., 2020; Topooco et al., 2018, 2019).

Thus, taken together, the results indicates that the present treatment is an effective program for adolescents with low self-esteem. However, given the relatively small sample size in the present study, a larger trial is needed to validate the results presented here.

Limitations

This pilot study suffered from some limitations. One is the relatively small sample size in the study. It could be related to the Covid-19 pandemic, such as being tired of being in front of computer or that internalized problems feel less acute while facing a pandemic. One idea would be to evaluate the program's effect on a somewhat older population, such as young adults (18–25 years), to possibly increase the number of participants. The results we report here are preliminary and follow-ups are needed as well as replication of the results in larger trials. However, given the short-time period for recruitment (two weeks) and that this was a pilot study, the recruitment can be regarded as satisfactory. Also, despite the small sample size, the study still had sufficient power to detect significant effects on all but one of the outcome measures.

Another potential limitation when evaluating the present trial, and especially in comparison to other ICBT treatments, is the sometimes unclear difference between interventions targeting self-esteem versus those targeting depression or anxiety (Ngo et al., 2020). For example, common CBT techniques, such as cognitive restructuring and behavioral experiments, which are normally used in the treatment of depression and anxiety, were also used in the present treatment, which means that there is a significant overlap between these treatments. However, this pilot study did result in larger effects on self-esteem than depression studies targeting self-esteem as a secondary outcome (Taylor & Montgomery, 2007). Therefore, it is possible that the specific focus on self-esteem throughout the modules had a positive effect on the treatment results in this regard. Further, this treatment contained rationales and aspects not commonly used in depression treatments, such as SDT (Crocker & Park, 2004) and self-compassion (Neff, 2011).

Further, the study used a wait-list as a control group, which limits the ability to isolate the active components of the treatment program. We do not know if the observed effects were due to general effects of being part of an active treatment condition, or active ingredients of the program.

Also, one of the secondary outcome measures (RAS-6) was constructed for this specific study, using six items from the original measure to evaluate aspects of assertiveness that were targeted in the modules. Thus, this short version of RAS has not been validated in an adolescent population and had low internal consistency in the present study. This raises questions regarding the measures capability to capture the construct of assertiveness in the present population.

Finally, M.I.N.I-7 was used at pre-treatment to assess presence of psychiatric diagnoses, but not at post treatment. Presence of psychiatric diagnoses post treatment would have been a valuable complement to the self-report measures when evaluating the treatment effects. The aim of this study was, however, not to assess changes in psychiatric diagnoses during treatment, but to evaluate a novel treatment targeting self-esteem as the primary outcome. Assessing psychiatric diagnoses post treatment could be a suggestion for future trials evaluating ICBT for adolescents with low self-esteem.

Conclusion

In conclusion, the results of the present pilot study provide preliminary evidence that self-esteem can be successfully targeted in an adolescent population using a novel ICBT intervention, based on a combination of Fennell's cognitive model for low self-esteem, SDT and self-compassion. The intervention resulted in large increases in self-reported self-esteem compared to a wait-list control condition, as well as moderate to large effects on all secondary outcomes except for assertiveness. The intervention was deemed acceptable to the target population with a high adherence and completion rate in comparison to similar trials. However, the results of the study need to be replicated in a larger treatment trial.

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References

- Andersson, G. (2016). Internet-delivered psychological treatments. *Annual Review of Clinical Psychology*, 12(1), 157–179. <https://doi.org/10.1146/annurev-clinpsy-021815-093006>
- Andersson, G., Titov, N., Dear, B. F., Rozental, A., & Carlbring, P. (2019). Internet-delivered psychological treatments: From innovation to implementation. *World Psychiatry*, 18(1), 20–28. <https://doi.org/10.1002/wps.20610>
- Arsandaux, J., Galéra, C., & Salamon, R. (2020). The association of self-esteem and psychosocial outcomes in young adults: A 10-year prospective study. *Child and Adolescent Mental Health*, 25(1), 1–8. <https://doi.org/10.1111/camh.12392>
- Baumeister, R. F., Campbell, J. D., Krueger, J. I., & Vohs, K. D. (2003). Does high self-esteem cause better performance, interpersonal success, happiness, or healthier lifestyles? *Psychological Science in the Public Interest*, 4(1), 1–44. <https://doi.org/10.1111/1529-1006.01431>
- Berg, M., Rozental, A., de Brun Mangs, J., Näsman, M., Strömberg, K., Viberg, L., Wallner, E., Åhman, H., Silfvernagel, K., Zetterqvist, M., Topooco, N., Capusan, A., & Andersson, G. (2020). The role of learning support and chat-sessions in guided internet-based cognitive behavioral therapy for adolescents with anxiety: A factorial design study. *Frontiers in Psychiatry*, 11, 503. <https://doi.org/10.3389/fpsy.2020.00503>
- Brach, T. (2020). *Radical compassion: Learning to love yourself and your world with the practice of RAIN*. Rider Books.
- Cohen, J. (1992). Statistical power analysis. *Current Directions in Psychological Science*, 1(3), 98–101. <https://doi.org/10.1111/1467-8721.ep10768783>
- Crocker, J., & Park, L. E. (2004). The costly pursuit of self-esteem. *Psychological Bulletin*, 130(3), 392–414. <https://doi.org/10.1037/0033-2909.130.3.392>
- Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11(4), 227–268. https://doi.org/10.1207/S15327965PLI1104_01
- Ebert, D. D., Zarski, A.-C., Christensen, H., Stikkelbroek, Y., Cuijpers, P., Berking, M., Riper, H., & Wallander, J. L. (2015). Internet and computer-based cognitive behavioral therapy for anxiety and depression in youth: A meta-analysis of randomized controlled outcome trials. *PloS One*, 10(3), e0119895. <https://doi.org/10.1371/journal.pone.0119895>
- Feingold, A. (2009). Effect sizes for growth-modeling analysis for controlled clinical trials in the same metric as for classical analysis. *Psychological Methods*, 14(1), 43–53. <https://doi.org/10.1037/a0014699>
- Fennell, M. (2016). *Overcoming Low Self-Esteem (2nd edition): A self-help guide using cognitive behavioural techniques*. Little, Brown Book Group.
- Ferrari, M., Hunt, C., Harrysunker, A., Abbott, M. J., Beath, A. P., & Einstein, D. A. (2019). Self-compassion interventions and psychosocial outcomes: A meta-analysis of RCTs. *Mindfulness*, 10(8), 1455–1473. <https://doi.org/10.1007/s12671-019-01134-6>
- Guy, W. (1976). Clinical global impressions. In I. W. Guy (Ed.), *ECDEU assessment manual for psychopharmacology* (pp. 217–222). National Institute of Mental Health.

- Hallsten, L., Bellaagh, K., & Gustafsson, K. (2002). Utbränning i Sverige : En populationsstudie (Arbete och Hälsa 2002:06). https://gupea.ub.gu.se/bitstream/2077/4287/1/ah2002_06.pdf
- Hallsten, L., Josephson, M., & Torgén, M. (2005). *Performance-based self-esteem. A driving force in burnout processes and its assessment* (Arbete och Hälsa 2005:04). https://gupea.ub.gu.se/bitstream/2077/4355/1/ah2005_04.pdf
- Hesser, H. (2015). Modeling individual differences in randomized experiments using growth models: Recommendations for design, statistical analysis and reporting of results of internet interventions. *Internet Interventions*, 2(2), 110–120. <https://doi.org/10.1016/j.invent.2015.02.003>
- Isomaa, R., Väänänen, J.-M., Fröjd, S., Kaltiala-Heino, R., & Marttunen, M. (2013). How low is low? Low self-esteem as an indicator of internalizing psychopathology in adolescence. *Health Education & Behavior*, 40(4), 392–399. <https://doi.org/10.1177/1090198112445481>
- Jacobson, N. S., & Truax, P. (1991). Clinical significance: A statistical approach to defining meaningful change in psychotherapy research. *Journal of Consulting and Clinical Psychology*, 59(1), 12–19. <https://doi.org/10.1037/0022-006X.59.1.12>
- Käll, A., Bäck, M., Welin, C., Åman, H., Bjerkander, R., Wänman, M., Lindegaard, T., Berg, M., Moche, H., Shafran, R., & Andersson, G. (2021). Therapist-guided internet-based treatments for loneliness: A randomized controlled three-arm trial comparing cognitive behavioral therapy and interpersonal psychotherapy. *Psychotherapy and Psychosomatics*, 90(5), 351–358. <https://doi.org/10.1159/000516989>
- Keane, L., & Loades, M. (2017). Review: Low self-esteem and internalizing disorders in young people – A systematic review. *Child and Adolescent Mental Health*, 22(1), 4–15. <https://doi.org/10.1111/camh.12204>
- Kolubinski, D., Frings, D., Nikcevic, A., Lawrence, J., & Spada, M. (2018). A systematic review and meta-analysis of CBT interventions based on the Fennell model of low self-esteem. *Psychiatry Research*, 267, 296–305. <https://doi.org/10.1016/j.psychres.2018.06.025>
- Kroenke, K., Spitzer, R. L., & Williams, J. B. W. (2001). The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine*, 16(9), 606–613. <https://doi.org/10.1046/j.1525-1497.2001.016009606.x>
- Lindner, P., Frykheden, O., Forsström, D., Andersson, E., Ljótsson, B., Hedman, E., Andersson, G., & 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>
- Lloyd, S., Schmidt, U., Khondoker, M., & Tchanturia, K. (2015). Can psychological interventions reduce perfectionism? A systematic review and meta-analysis. *Behavioural and Cognitive Psychotherapy*, 43(6), 705–731. doi:10.1017/S1352465814000162.
- 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)
- MacBeth, A., & Gumley, A. (2012). Exploring compassion: A meta-analysis of the association between self-compassion and psychopathology. *Clinical Psychology Review*, 32(6), 545–552. <https://doi.org/10.1016/j.cpr.2012.06.003>
- Marsh, I. C., Chan, S. W., & MacBeth, A. (2018). Self-compassion and psychological distress in adolescents—a meta-analysis. *Mindfulness*, 9(4), 1011–1027. <https://doi.org/10.1007/s12671-017-0850-7>
- McManus, F., Waite, P., & Shafran, R. (2009). Cognitive-behavior therapy for low self-esteem: A case example. *Cognitive and Behavioral Practice*, 16(3), 266–275. <https://doi.org/10.1016/j.cbpra.2008.12.007>
- Merikangas, K. R., He, J. P., Burstein, M., Swanson, S. A., Avenevoli, S., Cui, L., Benjet, C., Georgiades, K., & Swendsen, J. (2010). Lifetime prevalence of mental disorders in US adolescents: Results from the National Comorbidity Survey Replication—Adolescent Supplement (NCS-A). *Journal of the American Academy of Child & Adolescent Psychiatry*, 49(10), 980–989. <https://doi.org/10.1016/j.jaac.2010.05.017>

- Moksnes, U. K., & Espnes, G. A. (2013). Self-esteem and life satisfaction in adolescents – Gender and age as potential moderators. *Quality and Life Research*, 22(10), 2921–2928. <https://doi.org/10.1007/s11136-013-0427-4>
- Muthén, L. K., & Muthén, B. O. (2017). *Mplus user's guide (8th ed.)*. Muthén & Muthén.
- Muthén, B. O., Muthén, L. K., & Asparouhov, T. (2016). *Regression and mediation analysis using mplus*. Muthén & Muthén.
- Neff, K. (2011). *Self-Compassion: The proven power of being kind to yourself*. Hachette UK.
- Neff, K. (2015). *Self-compassion: The proven power of being kind to yourself*. (First William Morrow paperback edition). New York, NY: William Morrow, an imprint of HarperCollinsPublishers.
- Neff, K. D., & Vonk, R. (2009). Self-compassion versus global self-esteem: Two different ways of relating to oneself. *Journal of Personality*, 77(1), 23–50. <https://doi.org/10.1111/j.1467-6494.2008.00537.x>
- Ngo, H., VanderLaan, D. P., & Aitken, M. (2020). Self-esteem, symptom severity, and treatment response in adolescents with internalizing problems. *Journal of Affective Disorders*, 273, 183–191. <https://doi.org/10.1016/j.jad.2020.04.045>
- 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>
- Rathus, S. A. (1973). A 30-item schedule for assessing assertive behavior. *Behavior Therapy*, 4(3), 398–406. [https://doi.org/10.1016/S0005-7894\(73\)80120-0](https://doi.org/10.1016/S0005-7894(73)80120-0)
- Robson, P. (1989). Development of a new self-report questionnaire to measure self esteem. *Psychological Medicine*, 19, 513–518. <https://doi.org/10.1017/S003329170001254X>
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton University Press.
- Rozenal, A., Castonguay, L., Dimidjian, S., Lambert, M., Shafran, R., Andersson, G., & Carlbring, P. (2018). Negative effects in psychotherapy: Commentary and recommendations for future research and clinical practice. *BJ Psych Open*, 4(4), 307–312. <https://doi.org/10.1192/bjo.2018.42>
- Rozenal, A., Shafran, R., Wade, T., Egan, S., Nordgren, L. B., Carlbring, P., Landström, A., Roos, S., Skoglund, M., Thelander, E., Trosell, L., Örténholm, A., & Andersson, G. (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>
- Saunders, J. B., Aasland, O. G., Babor, T. F., De la Fuente, J. R., & Grant, M. (1993). Development of the alcohol use disorders identification test (AUDIT): WHO collaborative project on early detection of persons with harmful alcohol consumption-ii. *Addiction*, 88(6), 791–804.
- Sheehan, D. V., Lecrubier, Y., Harnett Sheehan, K., Janavs, J., Weiller, E., Keskiner, A., Schinka, J., Knapp, E., Sheehan, M. F., & Dunbar, G. C. (1997). The validity of the Mini International Neuropsychiatric Interview (MINI) according to the SCID-P and its reliability. *European Psychiatry*, 5(12), 232–241. [https://doi.org/10.1016/S0924-9338\(97\)83297-X](https://doi.org/10.1016/S0924-9338(97)83297-X)
- Shu, C., Watson, H. J., Anderson, R. A., Wade, T. D., Kane, R. T., & Egan, S. J. (2019). A randomized controlled trial of unguided internet cognitive behavior therapy for perfectionism: Impact on risk for eating disorders. *Behaviour Research and Therapy*, 120, 103429. <https://doi.org/10.1016/j.brat.2019.103429>
- Spitzer, R. L., Kroenke, K., Williams, J. B. W., & 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>
- Taylor, T. L., & Montgomery, P. (2007). Can cognitive-behavioral therapy increase self-esteem among depressed adolescents? A systematic review. *Children and Youth Services Review*, 29(7), 823–839. <https://doi.org/10.1016/j.childyouth.2007.01.010>
- Thomason, S., & Moghaddam, N. (2021). Compassion-focused therapies for self-esteem: A systematic review and meta-analysis. *Psychology and Psychotherapy: Theory, Research and Practice*, 94(3), 737–759. <https://doi.org/10.1111/papt.12319>

- Topooco, N., Berg, M., Johansson, S., Liljethörn, L., Radvogin, E., Vlaescu, G., Bergman Nordgren, L., Zetterqvist, M., & Andersson, G. (2018). Chat- and internet-based cognitive-behavioural therapy in treatment of adolescent depression: Randomized controlled trial. *BJPsych Open*, 4(4), 199–207. <https://doi.org/10.1192/bjo.2018.18>
- Topooco, N., Bylehn, S., Dahlström Nysäter, E., Holmlund, J., Lindegaard, J., Johansson, S., Åberg, L., Bergman Nordgren, L., Zetterqvist, M., & Andersson, G. (2019). Evaluating the efficacy of internet-delivered cognitive behavioral therapy blended with synchronous chat sessions to treat adolescent depression: Randomized controlled trial. *Journal of Medical Internet Research*, 21(11), e13393. <https://doi.org/10.2196/13393>
- Torrey, W. C., Mueser, K. T., McHugo, G. H., & Drake, R. E. (2000). *Self-Esteem as an outcome measure in studies of vocational rehabilitation for adults with severe mental illness*. *Psychiatric Services*, Vol. 51(2), pp. 229–233. <https://doi.org/10.1176/appi.ps.51.2.229>
- Vigerland, S., Lenhard, F., Bonnert, M., Lalouni, M., Hedman, E., Åhlén, J., Olen, O., Serlachius, E., & Ljotsson, B. (2016). Internet-delivered cognitive behavior therapy for children and adolescents: A systematic review and meta-analysis. *Clinical Psychology Review*, 50, 1–10. <https://doi.org/10.1016/j.cpr.2016.09.005>
- 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>
- Waite, P., McManus, F., & Shafran, R. (2012). Cognitive behaviour therapy for low self-esteem: A preliminary randomized controlled trial in a primary care setting. *Journal of Behavior Therapy and Experimental Psychiatry*, 43(4), 1049–1057. <https://doi.org/10.1016/j.jbtep.2012.04.006>