A transdiagnostic model of low self-esteem: pathway analysis in a heterogeneous clinical sample

Szilvia Kresznerits¹, Sándor Rózsa² and Dóra Perczel-Forintos¹*¹

¹Department of Clinical Psychology, Semmelweis University, Budapest, Hungary and ²Department of Personality Psychology, Károli Gáspár University of the Reformed Church, Budapest, Hungary

*Corresponding author. Email: perczel-forintos.dora@med.semmelweis-univ.hu

(Received 23 September 2020; revised 4 October 2021; accepted 12 October 2021)

Abstract

Background: Low self-esteem (LSE) has been associated with several psychiatric disorders, and is presumably influenced by transdiagnostic factors. Our study was based both on investigations of the relationship between depression and LSE (vulnerability, scar, reciprocal models) and on theories of cognitive factors contributing to the development and maintenance of LSE, such as Melanie Fennell’s model, the catalyst model and the Self-Regulatory Executive Function model.

Aims: Based on the theories above, in our cross-sectional study we aimed at understanding more specifically the transdiagnostic factors that can maintain LSE in a heterogeneous clinical sample.

Method: Six hundred and eleven out-patients were assessed by SCID-I and self-report questionnaires. The model was tested by structural equation modelling.

Results: Based on the fit indices, the hypothesis model did not fit the data; therefore, a modified transdiagnostic model was emerged. This model made a good fit to the data \(\chi^2 (12, n=611)=76.471, p<.001; \text{RMSEA}=.080, \text{CFI}=.950, \text{TLI}=.913\) with a strong explanatory power (\(\text{adj } R^2=.636\)). Severe stressful life events and depressive symptoms lead to LSE indirectly. Self-blame, perfectionism, seeking love and hopelessness have been identified as mediating factors in the relationship between depressive symptoms and LSE. Although there was a significant correlation between state-anxiety and LSE, as well as LSE and rumination, these two factors did not fit into the model.

Conclusions: The new transdiagnostic model of LSE has great potential in the treatment of various mental conditions and may serve as a guide to developing more focused and more effective therapeutic interventions.

Keywords: dysfunctional attitudes; emotion regulation; perfectionism; structural equation modelling; transdiagnostic approach

Introduction

Self-esteem is a complex construct. According to Rosenberg’s theory (1965), it means the evaluation of self-worth, the sense of one’s value as a person, and contains both beliefs and emotional states (Brown and Marshall, 2006; Rosenberg, 1965; Zeigler-Hill, 2011). Low self-esteem (LSE) does not stand as a distinct diagnostic category; it can be interpreted as a continuum, from moments of discomfort in specific situations with little impact on overall functioning, to the sort of self-hatred and intense distress we see in borderline personality disorder. We can distinguish ‘fragile/unstable and ‘secure/stable self-esteem (Borton et al., 2012; Kernis, 2003), or implicit (automatic, unconscious self-evaluation) and explicit

© The Author(s), 2021. Published by Cambridge University Press on behalf of the British Association for Behavioural and Cognitive Psychotherapies. This is an Open Access article, distributed under the terms of the Creative Commons Attribution licence (https://creativecommons.org/licenses/by/4.0/), which permits unrestricted re-use, distribution, and reproduction in any medium, provided the original work is properly cited.
self-esteem (direct reflection to self-worth) (Borton et al., 2012; Bosson et al., 2000; van Tuijl et al., 2014; Zeigler-Hill and Terry, 2007).

**Relationship between LSE and mental disorders**

LSE is closely related to a number of psychiatric disorders including depression, eating disorders, personality disorders and social phobia (APA, 2013; Fairburn et al., 2003; Fennell, 1998; Sowislo and Orth, 2013; Zeigler-Hill, 2011). Decreased self-esteem plays a role in obsessive-compulsive disorders (Coughtrey et al., 2018), psychosis (Tarrier et al., 2004; Xu et al., 2013). Furthermore, LSE is also related to addictive behaviours (Arsandaux et al., 2020; Kim et al., 2020), and self-harm or suicide attempts (Bhar et al., 2008; Palmer, 2004; Tarrier et al., 2004; Wisman et al., 2015). LSE has been shown to have a significant effect on people’s lives, not just in the context of psychopathology, but in a broader sense; for instance, dropping out of school early, teenage pregnancy and poor lifelong employment history (Mann et al., 2004; Waite et al., 2012).

Based on longitudinal studies and meta-analyses, the vulnerability, scar and reciprocal models of LSE (Johnson et al., 2014; Johnson et al., 2016; Ort et al., 2016; Sowislo and Orth, 2013; Zeigler-Hill, 2011) have demonstrated correlations between depressive symptomatology and low self-evaluation mostly in non-clinical samples. Based on a diathesis-stress framework (Clark et al., 2000), the vulnerability model described by several authors (Johnson et al., 2014; Johnson et al., 2016; Ort et al., 2016; Sowislo and Orth, 2013; Zeigler-Hill, 2011) considers LSE as a risk factor for depressive and anxiety symptoms later on in life. In a two-year follow-up study, van Tuijl et al. (2014) found partial support for the vulnerability model in adolescence: LSE predicted increased symptoms of depression and social anxiety. Conversely, the scar model of LSE is based on the assumption that psychopathology, e.g. depressive episodes, leaves ‘scars’ on the person’s self-assessment, contributing to the development of LSE in the long run (Johnson et al., 2016; Ort et al., 2016; van Tuijl et al., 2014). Sowislo and Orth (2013) examined the two models in a meta-analysis and found a bi-directional connection between self-esteem and depressive symptoms, although the vulnerability model had stronger explanatory power and better fit indicators than the scar model. Johnson et al. (2016) also demonstrated a reciprocal relationship between depressive symptoms and self-esteem in their longitudinal large-scale study. Although the studies focused primarily on the direction of relationships, all three models (vulnerability, scar and reciprocal) suggest that interpersonal as well as intrapersonal mechanisms mediate the relationship between psychopathology and self-esteem.

**Fennell’s cognitive model of LSE**

Despite the fact that LSE is associated with many mental disorders and is a key issue for psychological research, Melanie Fennell’s model (Fennell, 1997) seems to be the only comprehensive cognitive model of LSE. Based on Beck’s theory (Beck, 1967; Beck, 1979), in Fennell’s (1997) cognitive model LSE is a learned pattern; early life events and temperament would establish negative core beliefs about the self (e.g. ‘I am worthless’, ‘I am stupid’), which lead to dysfunctional assumptions (e.g. ‘If I’m worthless, I’d better shut up’). This belief system can be activated by critical incidents, so the person will believe that he or she might not be able to meet the requirements of his/her assumptions, which in turn will lead to negative predictions, anxiety and maladaptive behaviour (avoidance, safety-seeking behaviours). This process may also lead to a sense that negative core beliefs have once again been confirmed, and may prompt self-criticism, which leads to depressed mood. This circle results in a sense that ‘negative beliefs about the self’ have been confirmed again and thus continue to maintain the activation of these beliefs and the entrapment in LSE.
In Fennell’s model LSE is based on patterns learned in the past that create a vulnerability to present events. LSE in the present is maintained by the sort of unhelpful behaviours/strategies which are then captured by the vicious circle. The circle is making the person vulnerable for a whole range of other difficulties in life; some of them are psychiatric issues. In other words, it creates a vulnerability to events which relate specifically to the person’s particular idiosyncratic self-beliefs, and which suggest that they might not be able to meet the terms of the dysfunctional attitudes they have adopted to cope with the negative core beliefs. This clash between current events and idiosyncratic, enduring cognitive patterns, leads to the activation of negative self-beliefs, followed by anxiety and depression (Fennell, 1997; Fennell, 1998). Despite the fact that at the cross-sectional level the self-maintaining cycle is based on reciprocal processes, the model as a whole can best be interpreted as a vulnerability model.

**LSE as a consequence of transdiagnostic processes**

Fennell’s model served as the basis for the development of cognitive therapy of LSE (Kolubinski et al., 2018). However, the model is more than 20 years old, and yet there had been almost no research done that would have tried to prove the validity of the model. In addition, during this time, the need to treat co-morbid and persistent mental disorders has posed new challenges for cognitive behavioural therapy (Clark and Taylor, 2009; Hayes and Hofmann, 2017; Newby et al., 2015a). The transdiagnostic approach allows a greater transfer of theoretical and treatment advances between disorders (Harvey et al., 2015). In co-morbid conditions, the effectiveness of therapy can be significantly improved by focusing on common processes in the background (such as rumination, perfectionism, intrusive thoughts, avoidant behaviour), rather than thinking in separate diagnostic categories regarding the patient’s treatment. There is evidence that by addressing these patterns specifically, symptoms are better reduced in co-morbid conditions than with diagnosis-specific treatments (Barlow et al., 2016; Newby et al., 2015b; Sakiris and Berle, 2019).

**Dysfunctional beliefs**

According to Beck’s cognitive theory (Beck, 1967; Beck, 1979) and the diathesis-stress model (Clark et al., 2000; Lewinsohn et al., 2001) depressive schemata are organized into dysfunctional beliefs. In the presence of negative life events these attitudes can be activated easily, triggering cognitive distortions in views of the self, the world and the future. Dysfunctional attitudes play a similarly essential role in the development of LSE within Fennell’s model (Fennell, 1997; Fennell, 1998). The severity of dysfunctional attitudes also predicts treatment outcome in depression, while fewer dysfunctional attitudes can predict a better response to anti-depressant therapy (Pedrelli et al., 2008; Sotsky et al., 1991) as well as to cognitive behaviour therapy (Jarrett et al., 2012; Sotsky et al., 1991). Dysfunctional attitudes correlate with low self-esteem (Fuhr et al., 2017) and CBT interventions addressing LSE also emphasize the change of dysfunctional or negative core beliefs in general (Fennell, 2006; Griffioen et al., 2017; Kolubinski et al., 2018; Waite et al., 2012). While the relationship between dysfunctional beliefs in general and self-esteem appears to be fundamental during interventions, less research has been done on identifying the types of beliefs associated with LSE. Beliefs related to perfectionism receive the most attention: ‘People will probably think less of me if I make a mistake’ or ‘If I don’t set the highest standards for myself, I am likely to end up a second-rate person’. Transdiagnostic research has shown that maladaptive perfectionism is often manifested in the form of self-critical perfectionism, which can erode explicit self-esteem (Grzegorek et al., 2004; Moroz and Dunkley, 2015; Zeigler-Hill and Terry, 2007), social self-esteem in the long run (Smith et al., 2017) or self-esteem connected to body image (Taylor et al., 2016) as well.
Emotion regulation

On the one hand, maladaptive cognitive emotion regulation strategies (such as rumination, catastrophizing or self-blame) maintain and increase the effect of depressive symptoms and anxiety (Garnefski et al., 2001; Kuster et al., 2012; Miklósi et al., 2011; Neff and Vonk, 2009; Owens and Rosenberg, 2006). Studies based on the cognitive catalyst model (Ciesla et al., 2011; Ciesla and Roberts, 2007; Sova and Roberts, 2018) demonstrated that the intensity of rumination can be a predictor of the duration of depressive episodes, and correlates with LSE and dysfunctional attitudes. Self-blame is related to decreased self-esteem and higher levels of depression (Grzegorek et al., 2004; Johnson et al., 2014; Moroz and Dunkley, 2015). In Fennell’s cognitive model of LSE, self-criticism is an important element of the vicious circle maintaining LSE (Fennell, 1997; Fennell, 1998). The Self-Regulatory Executive Function model (Wells and Matthews, 1996) and study results based on this theory (Kolubinski et al., 2019; Kolubinski et al., 2016) also support that as a result of self-critical rumination, a person’s attention is drawn to the self-critical thoughts that contribute to the maintenance of LSE. On the other hand, adaptive emotion regulation strategies (Garnefski et al., 2001) or skills (Fehlinger et al., 2013) may help to improve depressive symptoms and increase self-esteem.

Aims of the study

In our cross-sectional study we aim to understand more specifically what subtypes of dysfunctional attitudes and emotion regulation processes may play a role in maintaining LSE. As can be seen from the summary above, LSE is associated with several psychiatric disorders and transdiagnostic processes, therefore we expected that an explanatory model of LSE would emerge to fit the whole heterogeneous sample properly.

The first aim of the research was to test the fit of the hypothesis model. Our hypothesis model (Fig. 1) is based on the vicious circle of Fennell’s model (Fennell, 1997; Fennell, 1998), in which the following processes are involved in maintaining LSE: effects of stressful life events, depression, anxiety, the activation of dysfunctional beliefs, and self-blame as a maladaptive emotion regulation strategy. However, we supplemented our hypothesis model with rumination based on the ‘cognitive catalyst’ model (Ciesla et al., 2011; Ciesla and Roberts, 2007; Sova and Roberts, 2018) and the ‘self-regulatory executive function’ model (Wells and Matthews, 1996). Figure 1 represents our hypothesis model of LSE, as described above. We assumed that the higher number of stressful life events and the increased value of their subjective severity are associated with an increase in depressive symptoms and a higher level of anxiety. We also expected that higher level of depression leads directly to a lower level of self-esteem, but it also reduces self-esteem indirectly, through the mediating effect of increased dysfunctional attitudes (e.g. seeking approval, seeking love, perfectionism, etc.), self-blame and rumination as maladaptive emotion regulation strategies and hopelessness. Finally, we expected that a high level of anxiety also has a similar effect on self-esteem as depression has, i.e. it leads directly to LSE and indirectly through the processes listed above, as shown in Fig. 1.

Another aim of our study was to set up a properly fitted modified transdiagnostic model by considering the fit indices and the theories above, if the hypothesis model does not fit the sample properly.

Method

Study sample and procedure

Six hundred and eleven patients (70.9% women), between the age of 18 and 67 years (mean=32.84 years, SD=10.80) were treated at our highly specialized psychotherapeutic out-patient unit. Patients come to the out-patient clinic from primary and specialist care, mainly for
psychotherapeutic treatment, in some cases for diagnostic purposes at their own request or on the recommendation of the referring doctor. Descriptive values and diagnosis groups are shown in Table 1. Inclusion criteria were: anxiety disorders (panic disorder, agoraphobia, social phobia, serious health anxiety, post-traumatic stress disorder and other phobias); mood disorders (depression); obsessive-compulsive disorder or psychosomatic disorders. Exclusion criteria were: acute psychotic state or a history of regular alcohol or drug use (based on information collected as part of the socio-demographic data). Individuals with incomplete test results were excluded from the database.

The study protocol was approved by the Scientific Ethical Committee of Semmelweis University. Participants completed the questionnaires while waiting for their first interview with a clinical psychologist, as part of the initial assessment procedure at the participating clinic. Diagnostic information was obtained during an intake interview conducted by trained or intern clinical psychologists under the supervision of the second author. Diagnoses were established according to ICD-10 (WHO, 2016).

**Measures**

*Rosenberg Self-Esteem Scale – Hungarian version (RSES-H)*

The RSES-H is 10-item scale that measures global self-worth on a 4-point Likert scale – from '0' (strongly disagree) to '3' (strongly agree). There are five reversed and five straightforward items. We used the scale as unidimensional (Rosenberg, 1965; Sallay et al., 2014).
Cognitive Emotion Regulation Questionnaire (CERQ)
The CERQ is a self-report measure to evaluate cognitive strategies in emotion regulation, consisting of 36 Likert-type items [from 1 (almost never) to 5 (almost always)] (Garnefski and Kraaij, 2007) with nine subscales based on the original factor analysis (Geisler et al., 2010) and its Hungarian adaptation (Miklósi et al., 2011). Higher scores represent greater use of the specific strategy: self-blame, rumination, catastrophizing and blaming others as maladaptive strategies. Refocus on planning, positive reappraisal, putting into perspective, positive refocusing and acceptance represent the adaptive strategies. CERQ reference values for a Hungarian healthy sample can be found in the study of Miklósi et al. (2011).

Beck Depression Inventory (BDI)
The most widely used self-rated scale, the BDI, was used to measure the severity of depressive symptoms (Beck et al., 1961; Kopp and Fóris, 1993). Twenty-one questions on a 4-point Likert-scale (0 to 3) evaluate key symptoms of depression (such as mood, pessimism, self-dissatisfaction, self-dislike, suicidal ideas, irritability, indecisiveness, body image change, work difficulty, insomnia, loss of appetite and weight, somatic symptoms, loss of libido, etc.). A higher score correlates with more severe depression.

Beck Hopelessness Scale (BHS)
To measure negative predictions for the future (hopelessness), we used the BHS, a self-report inventory designed to measure three major aspects of hopelessness: feelings about the future, loss of motivation, and expectations. The test consists of 20 true or false items; scores above 7 indicate mild suicide risk, and above 9 reflects severe suicide risk (Beck et al., 1974; Perczel-Forintos et al., 2010; Szabó et al., 2016).
**Dysfunctional Attitudes Scale (DAS)**

To measure the intensity of dysfunctional attitudes we used this 35-item self-report questionnaire. The DAS has seven subscales: seeking approval, seeking love, perfectionism, achievement, entitlement, omnipotence and external control/autonomy (Kopp, 1985; Weismann and Beck, 1979). Six points or more (on a subscale) indicate activation of that scale. Higher scores reflect more strongly believed dysfunctional attitudes.

**Paykel Life Events Questionnaire, Hungarian shortened, modified version (PLEQ-H)**

The PLEQ-H is a self-report questionnaire based on the Paykel Stressful Life Events Questionnaire (Paykel et al., 1971; Tringer and Veér, 1977). The PLEQ-H is a 28-item scale that lists different stressful life events such as death of a family member or close friend, being a survivor of violence, change of residence or divorce. Patients indicate whether they have experienced each event, and rate how stressful they found it on a 6-point Likert scale (0–5). We examined two indicators: the total number and the average severity of stressful life events.

**Cumulative anxiety indicator**

To measure the level of anxiety, based on the Hungarian norms of STAI-S we used a three-level anxiety indicator, where 0 means no anxiety or a low level of anxiety, and 2 means a high level of anxiety (Sipos and Sipos, 1978; Spielberger et al., 1970). This was necessary because the database contained only a three-level anxiety index calculated from STAI-S results in the case of some patients (n=46).

**Statistics**

Data were analysed using IBM SPSS Statistics 24. There were no missing values in the sample as patients with missing values in the test results were excluded from the analysis. To test the possible mediational effects of cognitive emotion regulation strategies and dysfunctional attitudes on the relationship between depressive symptoms and self-esteem structural equation modelling (SEM), path analysis in AMOS 18 was used. As Hu and Bentler (1999) and MacCallum and Austin (2000) suggested, a model fit was assessed by the comparative fit index (CFI), the Tucker-Lewis index (TLI), and the root-mean-square error of approximation (RMSEA). A good fit is indicated by values greater than or equal to .95 for the CFI and the TLI, and less than or equal to .05 for RMSEA. A moderate fit is indicated by values between .05 and .08 for RMSEA.

**Results**

Means and standard deviations for the measures of interest are shown in Table 2. All clinical scales indicated a critical value: mild anxiety (ANX), moderate depression (BDI), a high level of negative predictions/hopelessness (BHS), and very low self-esteem (RSES) were measured. On average, 2.31 (SD_DAS=2.07) dysfunctional attitudes reached the 6-point limit; subscales with the highest value in the total sample were: seeking love (Mean=3.12, SD=4.29), entitlement (Mean=3.08, SD=4.08), and omnipotence (Mean=2.39, SD=3.81). Compared with a healthy Hungarian control sample (Miklósi et al., 2011), maladaptive cognitive emotion regulation strategies (rumination, catastrophizing, self-blame, blaming others) were increased (Mean=44.88, SD=9.47). In contrast, adaptive strategies (positive refocusing, refocus on planning, positive reappraisal) were decreased (Mean=54.06, SD=12.43).

The bivariate correlations between different scales and self-esteem are also shown in Table 2. There was a strong negative correlation between self-esteem and depressive symptoms (r=-.639) as well as self-esteem and hopelessness (r=-.604). Moderate correlations were shown between self-esteem and the elevated number of activated dysfunctional attitudes (r_DAS*=-.495), and
also between the elevated level of maladaptive emotion regulation strategies and self-esteem ($r=-.426$), especially self-blame ($r=-.486$).

**SEM analysis of the transdiagnostic model of LSE**

SEM pathway analysis implemented through AMOS Graphics 18 was used to test the hypothesis transdiagnostic model of LSE (Fig. 1). The hypothesis model did not fit the data [$\chi^2 (80, n=611) = 544.648, p<.001; \text{RMSEA}=.097, \text{CFI}=.853, \text{TLI}=.808$]. The variables in the model accounted for 53% of the variance in self-esteem level ($R^2=.53$). All standardized regression weights estimated for the hypothesis model with $p$-values and the standardized indirect (mediated) effects of variables on self-esteem are shown in Table 3.

From the hypothesis model, taking into account the fit indices ($p$-values, estimated regression weights, direct and indirect effects), we created a modified transdiagnostic model that fits the sample appropriately (Fig. 2). Based on fit indicators, anxiety was removed from the model, because it has a significant direct effect on BHS alone, although the effect size was weak ($\beta=.10$). The indirect effect of anxiety on self-esteem was low (Table 3), and the fit of the model was greatly impaired. Similarly, the number of life events showed only a weak correlation directly with depression and indirectly with low self-esteem. In the case of the latent variable showing dysfunctional attitudes, the variables with low factor weights were removed from the model in multiple steps, so that eventually only perfectionism and seeking love remained in the model. Due to the exclusion of poorly matched variables from the model, the direct effect of depression on self-esteem became non-significant ($\beta=-.078, p=.243$). Regarding maladaptive emotion regulation strategies, the direct effect of rumination

### Table 2. Means and standard deviations for the measure, correlations with RSES

| Measure                          | Mean | SD  | r    | p    |
|---------------------------------|------|-----|------|------|
| 1. RSES                         | 14.28| 6.41|      |      |
| 2. ANX                          | 0.69 | .75 | -.381| <.001|
| 3. BDI                          | 20.77| 10.90|-.639| <.001|
| 4. BHS                          | 8.40 | 5.16| -.604| <.001|
| 5. DAS*                         | 2.31 | 2.08| -.495| <.001|
| 6. Approval                     | 1.97 | 3.83| -.457| <.001|
| 7. Love                         | 3.12 | 4.29| -.436| <.001|
| 8. Achievement                  | 1.17 | 5.21| -.473| <.001|
| 9. Perfectionism                | 2.37 | 4.14| -.470| <.001|
| 10. Entitlement                 | 3.08 | 4.08| -.039| .339 |
| 11. Omnipotence                 | 2.39 | 3.81| -.330| <.001|
| 12. Autonomy                    | 1.77 | 4.14| -.437| <.001|
| 13. CERQ_adaptive               | 54.06| 12.43 | .308| <.001|
| 14. CERQMaladaptive            | 44.88| 9.47 | -.426| <.001|
| 15. Self-blame                  | 12.30| 3.69 | -.486| <.001|
| 16. Acceptance                  | 11.42| 3.21 | -.128| .002 |
| 17. Rumination                  | 14.79| 3.73 | -.294| <.001|
| 18. Positive refocusing         | 8.36 | 3.44 | .323 | <.001|
| 19. Refocus on planning         | 13.53| 3.74 | .283 | <.001|
| 20. Positive reappraisal        | 10.89| 3.98 | .336 | <.001|
| 21. Putting on perspective      | 9.87 | 3.50 | .211 | <.001|
| 22. Catastrophizing             | 9.88 | 3.58 | -.303| <.001|
| 23. Blaming others              | 7.91 | 3.13 | -.018| .653 |
| SFLE (severity)                 | 3.52 | 1.11 | -.128| .002 |
| SFLE (number)                   | 6.99 | 4.60 | -.058| .152 |

**SD**, standard deviation; **r**, Pearson’s correlation; **ANX**, Cumulative Anxiety Indicator (0–2); **BDI**, Beck Depression Inventory; **BHS**, Beck Hopelessness Scale; **RSES**, Rosenberg Self-Esteem Scale; **DAS**, numbers of activated dysfunctional attitudes; **CERQ**, Cognitive Emotion Regulation Questionnaire; **SFLE**, stressful life events
Table 3. Regression weights in the hypothesis model

| Variable | Standardized direct effect | p   | Standardized indirect effect |
|----------|----------------------------|-----|-----------------------------|
| BDI      | ← SFLE number              | .178| <.001                       |
| ANX      | ← SFLE number              | .165| <.001                       |
| BDI      | ← SFLE severity            | .190| <.001                       |
| ANX      | ← SFLE severity            | .056| .169                        |
| CERQ mal | ← BDI                      | .606| <.001                       |
| BHS      | ← BDI                      | .629| <.001                       |
| DAS      | ← BDI                      | .511| <.001                       |
| CERQ mal | ← ANX                      | -.001| .973                        |
| BHS      | ← ANX                      | .108| .001                        |
| DAS      | ← ANX                      | .076| .049                        |
| DAS approval | ← DAS                        | .736|                             |
| DAS love | ← DAS                      | .662| <.001                       |
| DAS achievement | ← DAS                        | .735| <.001                       |
| DAS perfectionism | ← DAS                        | .686| <.001                       |
| DAS entitlement | ← DAS                        | .355| <.001                       |
| DAS omnipotence | ← DAS                        | .637| <.001                       |
| DAS external control | ← DAS                        | .610| <.001                       |
| CERQ sb | ← CERQ mal                  | .752|                             |
| CERQ rum | ← CERQ mal                  | .605| <.001                       |
| RSES     | ← CERQ mal                  | -.221| <.001                       |
| RSES     | ← BHS                      | -.256| <.001                       |
| RSES     | ← DAS                      | -.296| <.001                       |
| RSES     | ← BDI                      | -.177| <.001                       |
| RSES     | ← ANX                      | .355| .267                       |
| RSES     | ← SFLE number              | —   |                             |
| RSES     | ← SFLE severity            | —   |                             |

ANX, Cumulative Anxiety Indicator; BDI, Beck Depression Inventory; BHS, Beck Hopelessness Scale; CERQ mal/sb/rum, Cognitive Emotion Regulation Questionnaire maladaptive strategies/self-blame/rumination; DAS, Dysfunctional Attitude Scale; RSES, Rosenberg Self-Esteem Scale; SFLE, stressful life events.

Figure 2. Modified transdiagnostic model of LSE. The standardized estimates are shown in the figure, p-values are <.001 in all cases. Fit indicators of the model: $\chi^2$ (12, n=611)=76.471, $p$<.001; RMSEA=.080, CFI=.950, TLI=.913.
was significant in the latent variable (β = −.604, p < .001, λ = .162) and the latent variable also had significant impact on LSE (β = −.221, p < .001). However, the fit indices still were not good enough [χ² (17, n=611) = 105.825, p < .001; RMSEA = .092, CFI = .941, TLI = .902; adj R² = .623] even after removing poorly fitting variables above. By removing rumination from the model, the fit indicators improved and the explained variance of LSE increased, as well.

The modified transdiagnostic model produced moderate fit to the data [χ² (12, n=611) = 76.471, p < .001; RMSEA = .080, CFI = .950, TLI = .913]. The variables in the model accounted for 63.6% of the variance in self-esteem level (adj R² = .636). The standardized beta coefficients are shown in Fig. 2. All coefficients estimated for the measurement model and the estimates of error variances were significant (p < .001). Severity of stressful life events (SFLE_severity) has a relatively weak effect on self-esteem (β = −.141), while depression (BDI) showed a strong negative indirect effect on self-esteem (β = −.637). Overall, our results suggest that the severity of depression and stressful life events indirectly, while self-blame (β = −.18), hopelessness (β = −.28), and dysfunctional attitudes related to seeking love and perfectionism (β = −.55) directly contribute to the maintenance of LSE.

Discussion

In our cross-sectional clinical study, we were interested in what transdiagnostic cognitive processes may contribute to the maintenance of LSE. Several studies have been conducted to examine the relationship between LSE, depression and anxiety (Johnson et al., 2014; Johnson et al., 2016; Orth et al., 2016; Sowislo and Orth, 2013). Other research results show that this relationship on the one hand, is influenced by dysfunctional beliefs (Fuhr et al., 2017; Moroz and Dunkley, 2015; Smith et al., 2017; Zeigler-Hill and Terry, 2007) and on the other hand, by maladaptive emotion regulation strategies such as rumination (Ciesla et al., 2011; Kuster et al., 2012; Sova and Roberts, 2018) and self-blame (Grzegorek et al., 2004; Moroz and Dunkley, 2015).

Taking into account the studies above and the main cognitive theories about LSE into account, our hypothesis model (Fig. 1) was based on Melanie Fennell’s cognitive model of LSE (Fennell, 1997), the cognitive catalyst model (Ciesla et al., 2011; Ciesla and Roberts, 2007; Sova and Roberts, 2018) and the S-REF model (Wells and Matthews, 1996). One of the objectives of the research was to test the hypothesis model by SEM pathway analysis on a heterogeneous clinical sample. In case of improper fit, the second aim was to set up a properly fitting model.

The transdiagnostic approach of LSE

Our hypothesis model (Fig. 1) did not fit the sample well; therefore, modifications have been made based on fit indicators. The emerged explanatory model of LSE has good fitting indicators on a moderately large (n=611) heterogeneous clinical sample with the main diagnosis of various anxiety disorders (such as panic disorder, agoraphobia, social phobia, serious health anxiety, post-traumatic stress disorder and other phobias), depression, obsessive-compulsive disorder and psychosomatic disorders. The fact that we found a well-fitting model with strong explanatory power (R² = .65) seems to support the assumption that LSE can be interpreted as a transdiagnostic phenomenon maintained by transdiagnostic mechanisms in accordance with the literature (e.g. APA, 2013; Fennell, 1998; Sowislo and Orth, 2013; Zeigler-Hill, 2011).

We hypothesized that the number and the severity of stressful life events contribute to an elevated level of anxiety and depressive symptoms leading to the development and maintenance of LSE as reflected in Fennell’s model (Fennell, 1997). Our results supported the impact of the severity of stressful life events on the development and maintenance of symptoms contributing to LSE. However, the number of stressful life events did not fit the
model, which suggests that it may be the subjective evaluation of life events, and not the number of them, that can lead directly to symptom formation.

We expected that depressive and anxiety symptoms would lead to LSE directly, and also through cognitive processes such as different types of dysfunctional attitudes, hopelessness, self-blame and rumination. Although anxiety symptoms are related to self-esteem ($r = -0.381$, $p < .001$), the direct ($\beta = 0.355$, $p = 0.267$) and indirect ($\beta = -0.050$) effects of anxiety on LSE were not found to be significant within the emerged explanatory model where the impact of anxiety was manifested on its own, that is, without the effect of depressive symptoms and mediating cognitive processes. The scale used to assess anxiety in our study (STAI-S) measures state-anxiety, i.e. how a person feels during a perceived threat. Based on our results, we assume that this type of anxiety might not have a maintenance role in LSE.

The correlations between LSE and depressive symptoms – including cognitive, somatic, and emotional symptoms – seem to be strong ($r = -0.639$); however, in the final model the direct effect of depression on self-esteem became non-significant ($\beta = -0.078$, $p = .243$). Our results suggest that the factors which lead directly to the maintenance of LSE are the elevated level of seeking love and perfectionism, hopelessness, and self-blame as maladaptive cognitive processes associated with depression. Thus, the relationship between depression and self-esteem is influenced by these mediating factors.

Self-blame in the transdiagnostic model means how a person tries to handle emotionally difficult situations. In a stressful or challenging situation, he/she primarily criticizes himself/herself and believes that the primary cause of the difficulty is his/her inadequacy. Due to activated dysfunctional beliefs, individuals think that their acceptability and lovability depends on whether they handle situations perfectly and that everyone loves them. However, it is impossible to meet these unrealistic expectations, so they become hopeless. Which in this case may mean that: ‘my difficulty is not just about the situation, I am incompetent, I am not lovable and this will not change’. Our findings are in accordance with earlier transdiagnostic studies (Grzegorek et al., 2004; Moroz and Dunkley, 2015; Smith et al., 2017; Taylor et al., 2016) which demonstrate that perfectionism combined with self-blame can turn into harmful self-critical perfectionism.

We expected rumination to be an important mediating factor in the transdiagnostic model of LSE, as well. Although rumination proved to play a significant role in the latent variable of maladaptive emotion regulation ($\beta = -0.604$, $p < .001$, $\lambda = 0.162$), and this latent variable proved to be significant in the maintenance of LSE ($\beta = -0.221$, $p < .001$) (Table 3), surprisingly, rumination worsened the fit of the model and the explained variance of LSE. A possible explanation of this finding is that rumination is a type of worry. According to our results, anxiety in general appears to be less important in the maintenance LSE than the processes that belong to the depressive symptoms. Rumination as a maladaptive cognitive emotion regulation strategy reflects being stuck in the flow of thoughts where the person is constantly analysing him/herself, and his/her thoughts and feelings over and over again. It is possible that rumination does not fit into the model because it does not clearly contribute to LSE in individuals for whom rumination is not associated with self-judgement.

In sum, it seems from the described transdiagnostic model that perceived severity of stressful life events and depression can damage self-esteem in various mental disorders via the activation of dysfunctional beliefs about perfectionism and seeking love, hopelessness and self-blame.

**Limitations**

The results of this model must be interpreted with caution due to potential limitations. First, as mentioned earlier, this transdiagnostic model of LSE shows only a cross-sectional picture of the relationship between depressive symptoms, self-esteem and mediator variables. A reciprocal model would describe this transdiagnostic process more precisely as suggested by Orth et al.
(2016), Sowislo and Orth (2013) or Johnson et al. (2014). Direct testing of models which explore the development of psychological phenomena such as LSE is primarily possible by longitudinal studies by follow-up design, as relationships invariably unfold over time. However, a cross-sectional design can still provide useful information for establishing therapies and new interventions. Furthermore, the publication of these types of studies helps to develop common knowledge, while the results from longitudinal studies usually require decades of work.

Clinical implications
Therapies based on Fennell’s model proved to be effective in the improvement of self-esteem. However, the clinical sample size in intervention studies seems to be very limited even in the case of a meta-analysis (Kolubinski et al., 2018), due to the fact that the everyday practice of therapeutic care often does not meet the scientific methodological requirements. In terms of clinical implications, the transdiagnostic model seems to support that the vicious circle of Fennell’s model is also valid in a moderately large, heterogeneous clinical sample. Only the role of anxiety was not substantiated, but the role of hopelessness (related to negative predictions), self-blame and dysfunctional beliefs appear to have a maintaining role in LSE in accordance with Fennell’s cognitive model.

On the other hand, the transdiagnostic model highlights several factors that contribute to the maintenance of LSE. Interventions targeting these factors can expand the therapeutic toolkit to address low self-esteem. For instance, perfectionism-focused CBT has been shown to be effective in improving self-esteem while reducing symptoms of eating disorders, obsessive-compulsive disorder, and anxiety (Egan et al., 2014; Handley et al., 2015; Kothari et al., 2019). Hopelessness and self-blame can also be decreased by problem-solving therapy (Shanbehzadeh et al., 2021) or by the improvement of non-judgemental attitude via MBCT (Ebrahiminejad et al., 2016) thereby leading to the improvement of self-esteem.

Future studies are needed in order to investigate the validity of this transdiagnostic model in other psychiatric conditions such as addictions and eating disorders. A longitudinal study would be appropriate to understand the factors involved in the development of LSE and the role of rumination and anxiety.

Acknowledgements. The authors would like to thank the co-operation of all the colleagues of the Department of Clinical Psychology, Semmelweis University, for the assistance in data collection. We would like to thank the anonymous reviewers for their observations, which encouraged us to rethink some essential methodological questions. Special thanks is due to Melanie Fennell who carefully read through the whole manuscript and corrected it with her invaluable constructive advices and comments. It was a really rewarding experience to exchange ideas with her about such an important topic in psychotherapy as LSE. Finally, we are grateful to all the patients who participated in the study.

Financial support. The research was financed by the Higher Education Institutional Excellence Programme of the Ministry for Innovation and Technology in Hungary, within the framework of the Neurology thematic programme of the Semmelweis University, FIKP/2018.

Conflicts of interest. The authors declare none.

Ethics statements. The authors have abided by the Ethical Principles of Psychologists and Code of Conduct as set out by the BABCP and BPS. Ethical permission was obtained from the scientific ethical commission of the university. All participants provided an informed consent.

Data availability. Raw data were generated at the out-patient unit of the Clinical Psychological Department of Semmelweis University. Derived data supporting the findings of this study are available from the corresponding author (D.P.-F.) on request.

Author contributions. Szilvia Kresznerits: Conceptualization (equal), Data curation (equal), Formal analysis (lead), Funding acquisition (equal), Investigation (lead), Methodology (lead), Project administration (equal), Validation (equal), Visualization (equal), Writing-original draft (equal), Writing-review & editing (equal); Sándor Rózsa: Conceptualization (supporting), Methodology (supporting), Supervision (supporting), Validation (equal); Dóra Perczel-Forintos: Conceptualization
References

APA (2013). *Diagnostic and Statistical Manual of Mental Disorders: DSM-5*. Arlington, VA, USA: American Psychiatric Publishing. https://doi.org/10.1176/appi.books.9780890425596

Arsandaux, J., Montagni, I., Macalli, M., Bouteloup, V., Tzourio, C., & Galéra, C. (2020). Health risk behaviors and self-esteem among college students: systematic review of quantitative studies. *International Journal of Behavioral Medicine*, 27, 142–159. https://doi.org/10.1007/s12529-020-09857-w

Barlow, D. H., Allen, L. B., & Choate, M. L. (2016). Toward a unified treatment for emotional disorders – republished article. *Behavior Therapy*, 47, 838–853. https://doi.org/10.1016/j.beth.2016.11.005

Beck, A. T. (1967). *Depression: Clinical, Experimental, and Theoretical Aspects*. Hoeber Medical Division, Harper & Row.

Beck, A. T. (1979). *Cognitive Therapy of Depression*. Guilford Press.

Beck, A. T., Ward, C. H., Mendelson, M., Mock, J., & Erbaugh, J. (1961). An inventory for measuring depression. *Archives of General Psychiatry*, 4, 561–571.

Beck, A. T., Weissman, A., Lester, D., & Trexler, L. (1974). The measurement of pessimism: the Hopelessness Scale. *Journal of Consulting and Clinical Psychology*, 42, 861–865. https://doi.org/10.1037/h0037562

Bhar, S., Ghahramanlou-Holloway, M., Brown, G., & Beck, A. T. (2008). Self-esteem and suicide ideation in psychiatric outpatients. *Suicide and Life-Threatening Behavior*, 38, 511–516. https://doi.org/10.1521/suli.2008.38.5.511

Borton, J. L. S., Crimmins, A. E., Ashby, R. S., & Ruddiman, J. F. (2012). How do individuals with fragile high self-esteem cope with intrusive thoughts following ego threat? *Self and Identity*, 11, 16–35. https://doi.org/10.1080/15298868.2010.500935

Bosson, J. K., Swann, W. B. J., & Pennebaker, J. W. (2000). Stalking the perfect measure of implicit self-esteem: the blind men and the elephant revisited? *Journal of Personality and Social Psychology*, 79, 631–643.

Brown, J. D., & Marshall, M. A. (2006). The three faces of self-esteem. In *Self-Esteem Issues and Answers: A Sourcebook of Current Perspectives* (pp. 4–9). New York, USA: Psychology Press.

Ciesla, J. A., Felton, J. W., & Roberts, J. E. (2011). Testing the cognitive catalyst model of depression: does rumination amplify the impact of cognitive diatheses in response to stress? *Cognition & Emotion*, 25, 1349–1357. https://doi.org/10.1080/02699931.2010.543330

Ciesla, J. A., & Roberts, J. E. (2007). Rumination, negative cognition, and their interactive effects on depressed mood. *Emotion*, 7, 555–565. https://doi.org/10.1525/jbem.2007.7.3.555

Clark, D. A., Beck, A. T., Alford, B. A., Bieling, P. J., & Segal, Z. V. (2000). Scientific foundations of cognitive theory and therapy of depression. In *Journal of Cognitive Psychotherapy* (vol. 14). New York, USA: Wiley. https://doi.org/10.1891/0889-8391.14.1.100

Clark, D. A., & Taylor, S. (2009). The transdiagnostic perspective on cognitive-behavioral therapy for anxiety and depression: new wine for old wineskins? *Journal of Cognitive Psychotherapy*, 23, 60–2009. https://doi.org/10.1891/0889-8391.23.1.60

Coughtry, A., Shafran, R., Bennett, S., Kothari, R., & Wade, T. (2018). Mental contamination: relationship with psychopathology and transdiagnostic processes. *Journal of Obsessive-Compulsive and Related Disorders*, 17, 39–45. https://doi.org/10.1016/j.jocmr.2017.08.009

Ebrahiminejad, S., Poursharifi, H., Bakhsiour Roodsari, A., Zeinodini, Z., & Noorbakhsh, S. (2016). The effectiveness of mindfulness-based cognitive therapy on Iranian female adolescents suffering from social anxiety. *Iranian Red Crescent Medical Journal*, 18, e25116–e25116. https://doi.org/10.5812/ircmj.25116

Egan, S. J., van Noort, E., Chee, A., Kane, R. T., Hoiles, K. J., Shafran, R., & Wade, T. D. (2014). A randomised controlled trial of face to face versus pure online self-help cognitive behavioural treatment for perfectionism. *Behaviour Research and Therapy*, 63, 107–113. https://doi.org/10.1016/j.brat.2014.09.009

Fairburn, C. G., Cooper, Z., & Shafran, R. (2003). Cognitive behaviour therapy for eating disorders: a ‘transdiagnostic’ theory and treatment. *Behaviour Research and Therapy*, 41, 509–528. https://doi.org/10.1016/S0005-7967(02)00088-8

Fehlinger, T., Stumpenhorst, M., Stenzel, N., & Rief, W. (2013). Emotion regulation is the essential skill for improving depressive symptoms. *Journal of Affective Disorders*, 144, 116–122. https://doi.org/10.1016/j.jad.2012.06.015

Fennell, M. J. V. (1997). Low self esteem: a cognitive perspective. *Behavioural and Cognitive Psychotherapy*, 25, 1–25. https://doi.org/10.1017/S1352465800015368

Fennell, M. J. V. (1998). Cognitive therapy in the treatment of low self-esteem. *Advances in Psychiatric Treatment*, 4, 296–304. https://doi.org/DOI:10.1192/apt.4.5.296

Fennell, M. J. V. (2006). *Overcoming Low Self-Esteem: Self-Help Program*. London, UK: Constable & Robinson.
Fuhr, K., Reitenbach, I., Kraemer, J., Hautzinger, M., & Meyer, T. D. (2017). Attachment, dysfunctional attitudes, self-esteem, and association to depressive symptoms in patients with mood disorders. *Journal of Affective Disorders*, 212, 110–116. https://doi.org/10.1016/j.jad.2017.01.021

Garnefski, N., & Kraaij, V. (2007). The cognitive emotion regulation questionnaire: Psychometric features and prospective relationships with depression and anxiety in adults. *European Journal of Psychological Assessment*, 23, 141–149. https://doi.org/10.1027/1015-5759.23.3.141

Garnefski, N., Kraaij, V., & Spinhoven, P. (2001). Negative life events, cognitive emotion regulation and emotional problems. *Personality and Individual Differences*, 30, 1311–1327. https://doi.org/10.1016/S0191-8869(00)00113-6

Geisler, F. C. M., Vennewald, N., Kubiak, T., & Weber, H. (2010). The impact of heart rate variability on subjective well-being is mediated by emotion regulation. *Personality and Individual Differences*, 49, 723–728. https://doi.org/10.1016/j.paid.2010.06.015

Griffioen, B. T., van der Vegt, A. A., de Groot, I. W., & de Jongh, A. (2017). The effect of EMDR and CBT on low self-esteem in a general psychiatric population: a randomized controlled trial. *Frontiers in Psychology*, 8, 1910. https://doi.org/10.3389/fpsyg.2017.01910

Grzegorek, J. L., Slaney, R. B., Franze, S., & Rice, K. G. (2004). Self-criticism, dependency, self-esteem, and grade point average satisfaction among clusters of perfectionists and nonperfectionists. *Journal of Counseling Psychology*, 51, 192–200. https://doi.org/10.1037/0022-0167.51.2.192

Handley, A. K., Egan, S. J., Kane, R. T., & Rees, C. S. (2015). A randomised controlled trial of group cognitive behavioural therapy for perfectionism. *Behaviour Research and Therapy*, 68, 37–47. https://doi.org/10.1016/j.brat.2015.02.006

Harvey, A., Watkins, E., Mansell, W., & Shafran, R. (2015). Cognitive Behavioural Processes Across Psychological Disorders. A Transdiagnostic Approach to Research and Treatment. New York, USA: Oxford University Press. https://doi.org/10.1093/med:psych/9780198528883.001.0001

Hayes, S. C., & Hofmann, S. G. (2017). The third wave of cognitive behavioral therapy and the rise of process-based care. *World Psychiatry: Official Journal of the World Psychiatric Association (WPA)*, 16, 245–246. https://doi.org/10.1002/wps.20442

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Structural Equation Modeling*, 6, 1–55. https://doi.org/10.1080/10705519909540118

Jarrett, R. B., Minhajuddin, A., Borman, P. D., Dunlap, L., Segal, Z. V, Kidner, C. L., . . . & Thase, M. E. (2012). Cognitive reactivity, dysfunctional attitudes, and depressive relapse and recurrence in cognitive therapy responders. *Behaviour Research and Therapy*, 50, 280–286. https://doi.org/10.1016/j.brat.2012.01.008

Johnson, M. D., Galambos, N. L., & Krahn, H. J. (2014). Depression and anger across 25 years: changing vulnerabilities in the VSA model. *Journal of Family Psychology*, 28, 225–235. https://doi.org/10.1037/jfp0000687

Johnson, M. D., Galambos, N. L., & Krahn, H. J. (2016). Vulnerability, scar, or reciprocal risk? Temporal ordering of self-esteem and depressive symptoms over 25 years. *Longitudinal and Life Course Studies*, 7, 304–319. https://doi.org/10.1002/wps.20442

Kernis, M. H. (2003). Toward a conceptualization of optimal self-esteem. *Psychological Inquiry*, 14, 1–26. https://doi.org/10.1207/S15327965PLI1401_01

Kim, H., Choi, I. Y., & Kim, D.-J. (2020). Excessive smartphone use and self-esteem among adults with internet gaming disorder: quantitative survey study. *Journal of Family Psychology*, 28, 225–235. https://doi.org/10.1037/jfp0000687

Kolubinski, D. C., Frings, D., Nikčević, A. V, Lawrence, J. A., & Spada, M. 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

Kolubinski, D. C., Marino, C., Nikčević, A. V, & Spada, M. M. (2019). A metacognitive model of self-esteem. *Journal of Affective Disorders*, 256, 42–53. https://doi.org/10.1016/j.jad.2019.05.050

Kolubinski, D. C., Nikčević, A. V, Lawrence, J. A., & Spada, M. M. (2016). The role of metacognition in self-critical rumination: an investigation in individuals presenting with low self-esteem. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, 34, 73–85. https://doi.org/10.1007/s10942-015-0230-y

Kopp, M. (1985). Klinikai pszichofiziológia. Pszichoszomatikus füzetek 2. MAOTE és MPT, Budapest, Hungary.

Kopp, M., & Föris, N. (1993). A szorongás kognitívivízsgáldokterápiája. Budapest, Hungary: Végeken sorozat.

Kothari, R., Barker, C., Pistrang, N., Rozental, A., Egan, S., Wade, T., . . . & Shafran, R. (2019). A randomised controlled trial of guided internet-based cognitive behavioural therapy for perfectionism: effects on psychopathology and transdiagnostic processes. *Journal of Behavior Therapy and Experimental Psychiatry*, 64, 113–122. https://doi.org/10.1016/j.jbtep.2019.03.007

Kuster, F., Orth, U., & Meier, L. L. (2012). Rumination mediates the prospective effect of low self-esteem on depression: a five-wave longitudinal study. *Personality and Social Psychology Bulletin*, 38, 747–759. https://doi.org/10.1177/0146167212437250
Lewinsohn, P. M., Joiner Jr, T. E., & Rohde, P. (2001). Evaluation of cognitive diathesis-stress models in predicting major depressive disorder in adolescents. *Journal of Abnormal Psychology, 110*, 203–215. https://doi.org/10.1037/0021-843X.110.2.203

MacCallum, R. C., & Austin, J. T. (2000). Applications of structural equation modeling in psychological research. *Annual Review of Psychology, 51*, 201–226. https://doi.org/10.1146/annurev.psych.51.1.201

Mann, M., Hosman, C. M. H., Schaalma, H. P., & de Vries, N. K. (2004). Self-esteem in a broad-spectrum approach for mental health promotion. *Health Education Research, 19*, 357–372. https://doi.org/10.1093/her/cyg041

Miklósí, M., Martos, T., Kocsis-Bogár, K., & Perczel-Forintos, D. (2011). A Kognitív Érzelem-Reguláciú Kérdőív magyar változatának pszichometriai jellemzöi. *Pszichiatría Hungarica, 26*, 102–111.

Moroz, M., & Dunkley, D. M. (2015). Self-critical perfectionism and depressive symptoms: low self-esteem and experiential avoidance as mediators. *Personality and Individual Differences, 87*, 174–179. https://doi.org/10.1016/j.paid.2015.07.044

Neff, K. D., & Vonk, R. (2009). Self-compassion versus global self-esteem: two different ways of relating to oneself. *Journal of Personality, 77*, 23–50. https://doi.org/10.1111/j.1467-6494.2008.00537.x

Newby, J. M., McKinnon, A., Kuyken, W., Gilbody, S., & Dalgleish, T. (2015a). Systematic review and meta-analysis of transdiagnostic psychological treatments for anxiety and depressive disorders in adulthood. *Clinical Psychology Review, 40*, 91–110. https://doi.org/10.1016/j.cpr.2015.06.002

Newby, J. M., McKinnon, A., Kuyken, W., Gilbody, S., & Dalgleish, T. (2015b). Systematic review and meta-analysis of transdiagnostic psychological treatments for anxiety and depressive disorders in adulthood. *Clinical Psychology Review, 40*, 91–110. https://doi.org/10.1016/j.cpr.2015.06.002

Orth, U., Robins, R. W., Meier, L. L., & Conger, R. D. (2016). Refining the vulnerability model of low self-esteem and depression: disentangling the effects of genuine self-esteem and narcissism. *Journal of Personality and Social Psychology, 110*, 133–149. https://doi.org/10.1037/pspp0000038

Owens, T. J., & Rosenberg, M. (2006). Low self-esteem people: a collective portrait. In Owens, T. J., Stryker, S., & Goodman, N. (eds), *Extending Self-Esteem Theory and Research: Sociological and Psychological Currents* (pp. 400–436). New York, USA: Cambridge University Press.

Palmer, C. J. J. (2004). Suicide attempt history, self-esteem, and suicide risk in a sample of 116 depressed voluntary inpatients. *Psychological Reports, 95*, 1092–1094. https://doi.org/10.2466/pr.95.3f.1092-1094

Paykel, E. S., Prusoff, B. A., & Uhlenhuth, E. H. (1971). Scaling of life events. *Archives of General Psychiatry, 25*, 340–347. https://doi.org/10.1001/archpsyc.1971.01750160052010

Pedrelli, F., Feldman, G. C., Vorono, S., Fava, M., & Petersen, T. (2008). Dysfunctional attitudes and perceived stress predict depressive symptoms severity following antidepressant treatment in patients with chronic depression. *Psychiatry Research, 161*, 302–308. https://doi.org/10.1016/j.psychres.2007.08.004

Perczel-Forintos, D., Sallai, J., & Rózsa, S. (2010). Adaptation of the Beck Hopelessness Scale in Hungary. *Pszichologijske Teme, 19*, 307–321.

Rosenberg, M. (1965). *Society and the Adolescent Self-Image*. Princeton University Press, Princeton, NJ, USA. https://doi.org/10.1126/science.148.3671.804

Sakiris, N., & Berle, D. (2019). A systematic review and meta-analysis of the Unified Protocol as a transdiagnostic emotion regulation based intervention. *Clinical Psychology Review, 72*, 101751. https://doi.org/10.1016/j.cpr.2019.101751

Sallay, V., Martos, T., Földvári, M., Szabó, T., & Ittés, A. (2014). A Rosenberg Önértékelés Skála (RSES-H): alternatív fordítás, strukturális invariancia és validitás [Hungarian version of the Rosenberg Self-esteem Scale (RSES-H): An alternative translation, structural invariance, and validity]. *Mentálhigiéné Es Pszichoszomatika, 15*, 259–275. https://doi.org/10.1556/Mental.15.2014.3.7

Shanbehzadeh, S., Tavahomi, M., Zanjari, N., Ebrahimi-Takamjani, I., & Amiri-Arimi, S. (2021). Physical and mental health complications post-COVID-19: scoping review. *Journal of Psychosomatic Research, 147*, 110525. https://doi.org/10.1016/j.jpsychores.2021.110525

Sipos, K., & Sipos, M. (1978). The development and validation of the Hungarian form of the STAI. In Spielberger, C. D. (ed), *Cross-Cultural Anxiety* (pp. 51–61). Washington, USA and London, UK: Hemisphere Publishing Corporation.

Smith, M. M., Sherry, S. B., Mushquash, A. R., Saklofske, D. H., Gautreau, C. M., & Nealis, L. J. (2017). Perfectionism erodes social self-esteem and generates depressive symptoms: studying mother–daughter dyads using a daily diary design with longitudinal follow-up. *Journal of Research in Personality, 71*, 72–79. https://doi.org/10.1016/j.jrp.2017.10.001

Sotsky, S. M., Glass, D. R., Shea, M. T., Pilkonis, P. A., Collins, J. F., Elkin, I., . . . & Moyer, J. (1991). Patient predictors of response to psychotherapy and pharmacotherapy: findings in the NIMH Treatment of Depression Collaborative Research Program. *American Journal of Psychiatry, 148*, 997–1008. https://doi.org/10.1176/ajp.148.8.997

Sova, C. C., & Roberts, J. E. (2018). Testing the cognitive catalyst model of rumination with explicit and implicit cognitive content. *Journal of Behavior Therapy and Experimental Psychiatry, 59*, 115–120. https://doi.org/10.1016/j.jbtep.2018.01.002

Sowislo, J. F., & Orth, U. (2013). Does low self-esteem predict depression and anxiety? A meta-analysis of longitudinal studies. *Psychological Bulletin, 139*, 213–240. https://doi.org/10.1037/a0028931
Spielberger, C. D., Gorsuch, R. L., & Lushene, R. E. (1970). *Manual for the State-Trait Anxiety Inventory*. Palo Alto, CA, USA: Consulting Psychologist Press.

Szabó, M., Mészáros, V., Sallay, J., Ajtay, G., Boross, V., Udvardy-Mészáros, Å., . . . & Perczel-Forintos, D. (2016). The Beck Hopelessness Scale. *European Journal of Psychological Assessment*, 32, 111–118. https://doi.org/10.1027/1015-5759/a000240

Tarrier, N., Barrowclough, C., Andrews, B., & Gregg, L. (2004). Risk of non-fatal suicide ideation and behaviour in recent onset schizophrenia – the influence of clinical, social, self-esteem and demographic factors. *Social Psychiatry and Psychiatric Epidemiology*, 39, 927–937. https://doi.org/10.1007/s00127-004-0828-3

Taylor, J. J., Papay, K. A., Webb, J. B., & Reeve, C. L. (2016). The good, the bad, and the interactive: evaluative concerns perfectionism moderates the effect of personal strivings perfectionism on self-esteem. *Personality and Individual Differences*, 95, 1–5. https://doi.org/10.1016/j.paid.2016.02.006

Tringer, L., & Veér, Á. (1977). Egyes élethelyzetek stressz-hatásának elemzése. [Stress-effect analysis of life events]. *Ideggyógyválasz Szemle*, 30, 23–33.

van Tuijl, L. A., de Jong, P. J., Sportel, B. E., de Hullu, E., & Nauta, M. H. (2014). Implicit and explicit self-esteem and their reciprocal relationship with symptoms of depression and social anxiety: a longitudinal study in adolescents. *Journal of Behavior Therapy and Experimental Psychiatry*, 45, 113–121. https://doi.org/10.1016/j.jbtep.2013.09.007

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, 1049–1057. https://doi.org/10.1016/j.jbtep.2012.04.006

Weismann, A., & Beck, A. T. (1979). *The Dysfunctional Attitude Scale*. University of Pennsylvania, USA.

Wells, A., & Matthews, G. (1996). Modelling cognition in emotional disorder: the S-REF model. *Behaviour Research and Therapy*, 34, 881–888.

WHO (2016). International classification of diseases. Retrieved from: http://apps.who.int/classifications/icd10/browse/2016/en

Wisman, A., Heflick, N., & Goldenberg, J. L. (2015). The great escape: the role of self-esteem and self-related cognition in terror management. *Journal of Experimental Social Psychology*, 60, 121–132. https://doi.org/10.1016/j.jesp.2015.05.006

Xu, Z.-Y., Zu, S., Xiang, Y.-T., Wang, N., Guo, Z.-H., Kilbourne, A. M., . . . & Li, Z.-J. (2013). Associations of self-esteem, dysfunctional beliefs and coping style with depression in patients with schizophrenia: a preliminary survey. *Psychiatry Research*, 209, 340–345. https://doi.org/10.1016/j.psychres.2013.02.012

Zeigler-Hill, V. (2011). The connections between self-esteem and psychopathology. *Journal of Contemporary Psychotherapy: On the Cutting Edge of Modern Developments in Psychotherapy*, 41, 157–164. https://doi.org/10.1007/s10879-010-9167-8

Zeigler-Hill, V., & Terry, C. (2007). Perfectionism and explicit self-esteem: the moderating role of implicit self-esteem. *Self and Identity*, 6, 137–153. https://doi.org/10.1080/15298860601118850

Cite this article: Kresznerits S, Rózsa S, and Perczel-Forintos D. A transdiagnostic model of low self-esteem: pathway analysis in a heterogeneous clinical sample. *Behavioural and Cognitive Psychotherapy*. https://doi.org/10.1017/S1352465821000485