Self-Esteem Instability in Current, Remitted, Recovered, and Comorbid Depression and Anxiety

van Tuijl, Lonneke A.; Glashouwer, Klaske A.; Bockting, Claudi L. H.; Penninx, Brenda W. J. H.; de Jong, Peter J.

Published in:
Cognitive Therapy and Research

DOI:
10.1007/s10608-018-9926-5

Publication date:
2018

Cognitive Therapy and Research (2018) 42:813–822
https://doi.org/10.1007/s10608-018-9926-5

ORIGINAL ARTICLE

Self-Esteem Instability in Current, Remitted, Recovered, and Comorbid Depression and Anxiety

Lonneke A. van Tuijl[1,5] · Klaske A. Glashouwer[1,2] · Claudi L. H. Bockting[1,3] · Brenda W. J. H. Penninx[4] · Peter J. de Jong[1]

Published online: 29 May 2018

Abstract
Self-esteem has not only been observed to be generally low in depression and anxiety, but also unstable. Few studies have looked at unstable self-esteem in clinical samples. The present study compared self-reported self-esteem instability across current depression (n = 60), anxiety (n = 111), and comorbid depression/anxiety (n = 71), remitted depression (n = 41), and anxiety (n = 29), recovered depression (n = 136) and anxiety (n = 98), and a never clinically depressed or anxious comparison group (n = 382). The comparison group had more stable self-esteem than all groups. Once controlling for overall levels of self-esteem, differences with current depression or anxiety, remitted depression, and recovered depression or anxiety remained, but disappeared for the comorbid group. The current findings are consistent with the view that not only enduring low self-esteem per se, but also high self-esteem reactivity may contribute to the aetiology of affective disorders.

Keywords Self-esteem · Instability · Anxiety · Depression · Comorbid

Introduction

Low global self-esteem (i.e., the degree that one values oneself irrespective of specific context) is a key variable in most explanatory and causal models of major depressive disorder (MDD) and anxiety disorders (AD; e.g., Beck 2002). Indeed, research has consistently found low levels of G-SE in clinical samples (van Tuijl et al. 2016). Low global self-esteem appears to precede increases in symptomatology suggesting a potential causal role (Sowislo and Orth 2013). Many studies show that global self-esteem is mostly consistent over the life span, with slight increases observed from adolescence to young adulthood, and middle age, before starting to decrease in old age (Orth and Robins 2014). However, the extent of change in levels of self-esteem from moment-to-moment appears to vary between persons. Self-esteem instability refers to the extent and frequency of short-term self-esteem fluctuations usually in response to mood states (Clasen et al. 2015) or positive and negative daily situations (Kernis et al. 1991). This is in keeping with diathesis-stress models that highlight individual differences in reactivity to external factors, or the intensity required to gain a reaction (Zuckerman 1999).

Regarding MDD and AD, some have argued that low levels of baseline self-esteem (i.e., low global self-esteem) are not a prominent aspect per se (e.g., Franck and De Raedt 2007), but rather the degree and frequency of fluctuations from this baseline level (i.e., high self-esteem instability). Global self-esteem and self-esteem instability is thought to reflect trait and state self-esteem, respectively. Prior studies looking at self-esteem instability have mainly been conducted using student samples, with a focus on depressive symptomatology. Some found that self-esteem instability was a better predictor of depressive symptoms than global self-esteem (Roberts and Monroe 1992), some found an

✉ Lonneke A. van Tuijl
L.A.van.tuijl@rug.nl

1 Department of Clinical Psychology and Experimental Psychopathology, University of Groningen, Groningen, The Netherlands

2 Accare, Child and Adolescent Psychiatry, Center for Eating Disorders, Smilde, The Netherlands

3 Department of Psychiatry, Academic Medical Center, University of Amsterdam, Amsterdam, The Netherlands

4 Department of Psychiatry, VU University Medical Center, Amsterdam, The Netherlands

5 Department of Psychology, Institute of Psychiatry, Psychology and Neuroscience, King's College London, London, UK

interaction between self-esteem instability and global self-esteem in predicting symptoms (de Man et al. 2001; Kernis et al. 1991; study 1; Roberts et al. 1995), while others failed to find the predictive validity of self-esteem instability over and above global self-esteem (study 2 and 3, Roberts et al. 1995). Given that the mean level of depressive symptoms in student samples are often very low, it is unclear whether these findings can be reliably translated to clinical samples of MDD or AD.

Two studies have been conducted to date with clinical samples of MDD and AD. Unstable self-esteem was observed in social anxiety disorder, but was no longer significant when controlling for global self-esteem (Farmer and Kashdan 2014). This suggests that global self-esteem is key to differentiating between those with and without a social anxiety disorder. In another study, those with a current MDD reported less stable self-esteem than a never-depressed comparison group. Furthermore, levels of self-esteem stability in those with a history of depression and a current depression did not differ. However, global self-esteem was not controlled for in this study. Further analysis revealed that self-esteem instability was related to symptoms 6 months later in the never-depressed comparison group and former MDD, while global self-esteem and an interaction between the two were not (Franck and De Raedt 2007). Research conducted till now, both clinical and analogue, seem to support the hypothesis that self-esteem instability plays a role in MDD (symptoms). Given the lack of relevant studies, the case for AD is weaker, and it is unclear as to whether MDD and AD may differ in level of self-esteem stability. As comorbid MDD and AD have previously shown to have lower levels of global self-esteem than those with either an MDD or AD (van Tuijl et al. 2016), it is feasible that self-esteem stability may also be lower in the comorbid group which may explain the poorer rate of remittance (Penninx et al. 2011). Therefore, the first aim of the present study was to compare levels of self-esteem stability between MDD, AD, co-morbid MDD and AD, and a never depressed or anxious comparison group.

Many studies report a significant positive relationship between global self-esteem and self-esteem stability (Okada 2010). This is in keeping with the sociometer theory which postulates that individuals with high (trait) self-esteem are less likely to lower their self-esteem in response to rejection (state self-esteem), due to high expectations of being accepted (Leary and Baumeister 2000). The second aim of the present study, therefore, was to compare self-esteem stability across clinical groups and a relatively healthy comparison group while correcting for global self-esteem. Furthermore, to test the possibility that self-esteem instability is relevant only when global self-esteem is low, the interaction between global self-esteem and self-esteem stability in explaining symptoms of depression and anxiety is explored.

High relapse and recurrence rates are fairly typical in MDD and AD. This has fuelled several scarring hypotheses that argue that following periods of symptomatology, residual cognitions like low self-esteem remain that increases vulnerability for relapse (Lewinsohn et al. 1981). Indeed, lower levels of global self-esteem were observed in remitted and recovered AD and MDD when compared to those who had never been diagnosed with a depressive or anxiety disorder (van Tuijl et al. 2016). The notion that remaining scars lie dormant and can be activated by mild sad moods (Gemar et al. 2001; Segal et al. 1999), should mean that recovered and remitted MDD and AD are likely to report less stable self-esteem than a relatively healthy comparison group, even when controlling for global self-esteem. Supporting this notion, former MDD showed lower self-esteem stability than a never-depressed comparison group, and similar levels as current MDD (Franck and De Raedt 2007). However, the former MDD group did not differentiate between those who were in remittance (i.e., recently experienced an episode) and those who were recovered. It is feasible that scars continue to heal after an episode of MDD. Further, no self-esteem instability studies have included clinical groups of remitted and recovered AD. Therefore, the third goal of this study was to differentiate within the clinical groups (MDD, AD and comorbid) between those who currently met the criteria for the disorder, those who were currently in remission, and those who had recovered.

Method

Participants

Participants were recruited from community, primary care and mental health organisations into the Netherlands Study of Depression and Anxiety (NESDA; http://www.nesda.nl/) if they currently had a depressive disorder or AD (n = 1701), or if they were at risk of developing a disorder (e.g., a parent with a depression or AD) or had a life-time diagnosis (n = 907). A further 373 participants with no history of a depressive or anxiety disorder were recruited as a relatively healthy comparison group. Baseline measures took place in 2004–2007 (N = 2981), and have been followed up biannually. At baseline, exclusion criteria were: (a) Primary diagnosis of other psychiatric disorders such as psychotic disorder, an obsessive–compulsive disorder, a bipolar disorder, or a severe addiction; (b) Non-fluent command of the Dutch language (Penninx et al. 2008). The present study makes use of data collected at the 6-year follow-up when self-esteem measures were first included. There was a 24% attrition rate at this wave since baseline (N = 2256 remaining), and 1799 received the self-esteem measures (age range 23–72, M = 48.05, SD = 13.18; 63.6% female). A number

Table 1 Means (and standard deviations; unless stated otherwise) of demographics and variables per group. Reproduced with permission from (van Tuijl et al. 2016)

	Major depressive disorder (MDD)			Anxiety disorder[s] (AD)			Comorbid MDD and AD		Comparison group
	Current (n = 60)	Remitted (n = 41)	Recovered (n = 136)	Current (n = 111)	Remitted (n = 29)	Recovered (n = 98)	Current (n = 71)	Remitted (n = 14)	Non-clinical (n = 382)
Age	49.05 (12.65)	49.02 (12.84)	46.95 (13.29)	48.85 (12.23)	45.45 (12.12)	47.56 (13.83)	46.90 (11.17)	44.93 (12.39)	48.23 (14.53)
Female (%)	68.3	70.7	61.8	70.3	75.9	57.1	69.0	71.4	57.1
BAI	12.85 (8.04)	9.38 (6.09)	5.47 (5.15)	14.03 (9.63)	11.17 (8.24)	6.16 (4.79)	20.32 (10.17)	9.08 (6.65)	2.74 (3.48)
IDS	28.05 (9.82)	19.83 (7.51)	12.26 (8.99)	20.74 (10.59)	16.14 (8.45)	11.42 (7.01)	33.86 (10.85)	18.17 (8.16)	5.46 (4.74)
GSE	26.13 (5.24)	27.71 (4.53)	32.45 (4.24)	28.44 (5.11)	30.31 (5.23)	31.65 (4.57)	23.07 (4.98)	27.50 (3.88)	35.18 (3.98)
SE-S	5.25 (1.60)	5.22 (1.57)	6.77 (1.94)	5.86 (1.70)	6.14 (1.60)	6.60 (1.67)	5.15 (1.65)	5.14 (1.23)	7.97 (1.78)
SE-S EMM	6.37 (0.20)	6.02 (0.23)	6.58 (0.13)	6.50 (0.14)	6.39 (0.28)	6.58 (0.15)	6.92 (0.20)	5.98 (0.40)	7.21 (0.09)

BAI beck anxiety inventory, *IDS* inventory of depressive symptomatology, *G-SE* global self-esteem as measured by the Rosenberg self-esteem scale, *SE-S* self-esteem stability, *SE-S EMM* SE-S estimated marginal means adjusted for group differences in G-SE, *Current* episode in the past month, *Remitted* episode ended 1–6 months ago, *Recovered* episode ended 6 months to 7 years ago

of participants did not complete the self-esteem measures for various technical and practical reasons (n = 457; e.g., participation via telephone). A further 83 participants were excluded from the main analyses as they met the criteria for a bipolar disorder during the study, or reported an alcohol dependence since the last interview (final n = 1716). All participants provided written consent, and ethical approval was granted by all participating universities.

Clinical groups were formed based on answers given on the Composite International Diagnostic Interview (v2.1; CIDI; Robins et al. 1988; Wittchen 1994). The CIDI is a semi-structured interview conducted by trained staff to determine MDD, dysthymia, panic disorder (with and without agoraphobia), generalized anxiety disorder, social anxiety and agoraphobia based on the criterion outlined in the DSM-IV. Information concerning disorder diagnosis and recency (when symptoms ceased) was used to form the different clinical groups (see van Tuijl et al. 2016). In brief, MDD and AD clinical groups were split by those currently in an episode (diagnosis in past month), those in remission (an episode that had ended in the last 6–1 month), and those recovered (an episode in the last 7 years to 6 months).[1] In order to establish relatively pure MDD, those who had also met the criteria for AD since the last interview were excluded (n = 162). Likewise, participants who had a current AD and also met the criteria for any depressive disorder (e.g., MDD, dysthymia) since the last interview were excluded (n = 123). Those in the recovered AD or MDD groups had no history of MDD (and dysthymia) or AD, respectively. Current AD and MDD groups were also formed based on the same criteria as the MDD and AD groups. It was not possible to create a recovered co-morbid group as it could not be determined whether previous MDD and AD occurred at the same time. Furthermore, the number of participants with remitted comorbid MDD and AD was very low (n = 14) and were therefore excluded. Participants with no history of AD, MDD or dysthymia formed the relatively healthy comparison group. The upper half of Table 1 provides an overview of the demographics and size of each group.

Measures

Beck Anxiety Inventory (BAI; Beck et al. 1988)

The BAI is a self-report questionnaire containing 21 anxiety symptoms. The degree of disturbance in the past week was answered on a 4-point Likert scale from 1 (*Not at all*) to 4 (*Severely [I could barely stand it]*). Higher total scores were indicative of more anxious symptoms. Missing answers were replaced with participant's mean response (n = 47). From the 1716 participants, 30 participants were excluded from any analysis involving the BAI (26 failed to return the questionnaire and four had more than nine missing answers). Previous studies report excellent internal consistency in the BAI (e.g., Cronbach's $\alpha = 0.92$; Beck et al. 1988).

[1] We used these cut-offs as these were more readily available within the study. It should be noted that what defines, for example, a depression in remission varies across studies. Frank et al. (1991) recommends that remission be considered as a depression-free period of 2–6 months, with longer than 6 months considered a recovery. Our cut-offs are not too far from this. Cut-offs for ADs are dependent on the type of AD; however we apply the same cut-offs as used for MDD for consistency when comparing the groups and creating comorbid groups.

Inventory of Depressive Symptomatology—Self-Report (IDS; Rush et al. 1986)

A self-report IDS was used to measure the severity of depressive symptoms in the last week, based on the DSM-IV criteria for MDD. Twenty-eight items (e.g., "Feeling sad") were answered with four options where "0" indicated no depression (e.g., "I do not feel sad") and "3" referred to a severe depressive symptom (e.g., "I feel sad nearly all the time"). Higher total scores were indicative of relatively severe depressive symptomatology. From the 1799 participants, 29 were excluded from any analysis involving the IDS [26 failed to return the questionnaire and three had too many missing answers (> 6 items)]. Previous studies report excellent internal consistency in the IDS (e.g., Cronbach's alpha = 0.94; Rush et al. 1996).

Rosenberg Self-Esteem Scale (Rosenberg 1989)

A self-report questionnaire containing 10 items was used to measure global self-esteem. Answers were given on a 4-point Likert scale from 1 (*strongly agree*) to 4 (*strongly disagree*). Higher scores were indicative of higher global self-esteem. Excellent internal reliability was observed in the present study (Cronbach's $\alpha = 0.92$).

Self-Esteem Stability

To measure self-esteem stability participants were asked to rate the following two questions: "How much I value myself is subject to changes" and "How much I value myself is stable across several situations at various times". Answers to both questions were answered on a 5-point Likert scale from 1 ("completely does not apply to me") to 5 ("completely applies to me"). These questions were selected from a five-item measure originally developed by Raes and Gucht (2009).[2] Higher scores were indicative of more stable self-esteem, based on total scores following the reversal of the answer to the first question. Spearman–Brown correlation between the two items was 0.55.

[2] In the interest of keeping NESDA measurements as concise as possible, two items were selected based on face validity that they related to the conceptual understanding of self-esteem stability, and were not completely overlapping. As such, a positively phrased item and a negatively phrased item were selected. Excluded items were "The extent to which I value myself may vary at different times", "A certain event can make me value myself more, or less than how much I valued myself before the event", and "I often switch between 'feeling extremely positive about myself' and 'seeing only the bad things about myself, and feeling like a failure".

Procedure

NESDA assessments take between 3 and 4 h, and are completed in one sitting (see Penninx et al. 2008). Assessments contain computer tasks, self-report questionnaires, interviews, and biological measures carried out by trained staff. Participants received travel expenses and a 15-euro gift certificate.

Statistical Analysis

Bivariate correlations between self-esteem stability and global self-esteem, IDS, and BAI were calculated. Other possible correlations have been reported previously (van Tuijl et al. 2016). In the first part of the analysis, an ANOVA was conducted to compare self-esteem stability across groups (i.e., current/remitted/recovered MDD, current/remitted/recovered AD, current comorbidity and the comparison group). This analysis was then repeated with global self-esteem as a covariate. In the second part of the analysis, two multiple regression analyses were conducted to predict variance in IDS scores (n = 1680) and variance in BAI scores (n = 1665). In both models, global self-esteem and self-esteem stability (both standardized) were entered at step 1. At step 2, the interaction between standardized global self-esteem and self-esteem stability scores was entered. Following a residual analysis, extreme residuals (± 3.3) were removed before re-running the analysis to improve the fit of the model. Two-way interactions were probed using a method outlined by Dawson (2014) and Aiken and West (1991), and slopes were tested at ± 1 SD of global self-esteem (http://www.jeremydawson.co.uk/slopes).

Results

Descriptives

Mean age, BAI, IDS, global self-esteem, and self-esteem stability scores, and the percentage females, per group, are presented in Table 1. Based on Spearman's Rho, self-esteem stability was significantly correlated with global self-esteem, $\rho(1714) = 0.67$, $p < .001$, IDS, $\rho(1685) = -0.51$, $p < .001$, and BAI, $\rho(1684) = -0.44$, $p < .001$. In other words, relatively unstable self-esteem was associated with lower global self-esteem, and more depression and anxiety symptoms. Previous missing data analysis highlighted that those who did not receive self-esteem measures (n = 457) did not differ in age, but did have higher BAI ($d = 0.28$) and IDS ($d = 0.25$) scores than completers (n = 1799; van Tuijl et al. 2016).

To explore differences in self-esteem stability between types of AD, a one-way ANOVA was conducted. Participants were excluded from this analysis if another AD was

present in the previous 6 months (i.e., comorbidity within AD). Groups were formed based on the current presence of a social anxiety disorder (n = 35), panic disorder (with or without agoraphobia; n = 21), agoraphobia (n = 26), and generalised anxiety disorder (n = 9). Results indicated that there was no difference between AD types in self-esteem stability, $F(3, 87) = 1.31$, $p = .28$, partial $\eta^2 = 0.04$, thus supporting one current AD group incorporating all AD types. Conclusions were the same both when BAI scores and global self-esteem scores were statistically controlled for.

Self-Esteem Stability Across Groups

Scores on the self-esteem stability were compared across groups with a one-way ANOVA. The one-way ANOVA was significant, $F(7,920) = 50.18$, $p < .001$. Levene's test was significant ($p = .04$), and group sizes were unequal, thus Games–Howell post-hoc ANOVA comparisons were conducted. The relatively healthy comparison group had more stable self-esteem than all other clinical groups (d's 1.04–1.60), including those who had recovered from MDD [$d = 0.66$, 95% CI (0.48, 0.99)] and AD [$d = 0.78$, 95% CI (0.60, 1.11)]. Those who had recovered from MDD, and those who had recovered from AD, had more stable self-esteem than all other clinical groups (d's 0.44–0.88) except for remitted AD ($p = .58$ and $p = .87$, respectively). Recovered MDD and recovered AD did not differ from one another in degree of self-esteem instability ($p = .999$). There were no further differences (p's > .11).

The one-way ANOVA was repeated with global self-esteem as a covariate, to see whether earlier differences between self-esteem stability remained when correcting for global self-esteem. The model was significant $F(8,918) = 106.33$, $p < .001$, partial $\eta^2 = 0.48$. With global self-esteem as a significant covariate, $F(1,919) = 361.72$, $p < .001$, partial $\eta^2 = 0.28$, there was a significant effect of group, $F(7,919) = 6.79$, $p < .001$, partial $\eta^2 = 0.05$. As Levene's test was significant, $F(7,920) = 2.46$, $p = .02$, and group sizes unequal, more conservative Bonferroni post-hoc ANCOVA comparisons were conducted (estimated marginal means reported in Table 1). In correcting for differences in global self-esteem, the relatively healthy comparison group still had more stable self-esteem than current MDD ($p = .01$), remitted MDD ($p < .001$), current AD ($p = .002$), recovered MDD ($p = .001$) and recovered AD ($p = .01$). There were no further differences (p's > .07).

Interaction Between Self-Esteem Stability and Global Self-Esteem

To test whether self-esteem stability was higher in those who also had high global self-esteem, we conducted an independent t-test on self-esteem stability score in those with high/low global self-esteem as quantified by a median split on the complete sample. With a median split of 31.00 on global self-esteem, 911 scored 31 or above, and 805 scored below. Those with higher global self-esteem (M = 7.58, SD = 1.70) reported more stable levels of self-esteem than those with lower global self-esteem (M = 5.33, SD = 1.45), $t(1712.23) = 29.62$, $d = 1.42$ (equal variances not assumed).

In predicting symptoms of depression, seven extreme residuals were removed before running the analysis. With the inclusion of global self-esteem and self-esteem stability scores at step one, the model was significant, $F(2,1677) = 755.96$, $p < .001$ and predicted 47% of variance in IDS scores (adjusted R = .47). At this step, both global self-esteem (B = − 6.93, SE = 0.25, $p < .001$, semi-partial r = − .49) and self-esteem stability (B = − 0.62, SE = 0.25, $p = .01$, semi-partial r = − .04) were significant coefficients in the model. With the inclusion of the interaction between self-esteem stability and global self-esteem, the model improved, F-change $(1,1676) = 17.08$, $p < .001$, and now explained 48% of variance in scores [adjusted R = .48; final model—$F(3,1676) = 514.50$, $p < .001$]. Both global self-esteem (B = − 6.79, SE = 0.25, $p < .001$, semi-partial r = − .48) and self-esteem stability scores (B = − 0.78, SE = 0.25, $p = .002$, semi-partial r = − .06) remained significant coefficients. Also, the interaction between global self-esteem and self-esteem stability was a significant factor in the model, B = 0.77, SE = 0.19, $p < .001$, semi-partial r = .07. The interaction is plotted in Fig. 1, and simple slopes analysis revealed that when global self-esteem was high (+ 1 SD), there was no difference in IDS score across low/high self-esteem stability, gradient of slope = − 0.01, t = − 0.04, $p = .97$. However, when global self-esteem was low (− 1 SD), the slope was significant, gradient of slope = − 1.55, t = − 4.63, $p < .001$, suggesting that those with more unstable self-esteem reported higher IDS scores than those with relatively stable self-esteem.

In predicting symptoms of anxiety, 21 extreme residuals were removed before rerunning the analysis. At step one, the model was significant, $F(2,1662) = 355.27$, $p < .001$, and predicted 30% of variance in BAI scores (adjusted R = .30). Both global self-esteem (B = − 3.42, SE = 0.19, $p < .001$, semi-partial r = − .37) and self-esteem stability scores (B = − 0.58, SE = 0.19, $p = .002$, semi-partial r = − .06) were significant coefficients in this model. With the inclusion of the interaction between self-esteem stability and global self-esteem, improved the model, F-change $(1,1661) = 4.59$, $p = .03$, and still explained for 30% of variance in BAI scores (adjusted R = .30; final model—$F(3,1661) = 238.89$, $p < .001$). Both global self-esteem, B = − 3.67, SE = 0.19, $p < .001$, semi-partial r = − .36, and self-esteem stability scores, B = − 0.64, SE = 0.19, $p = .001$, semi-partial r = − .07, remained significant coefficients in the model. The interaction between global self-esteem and self-esteem stability was

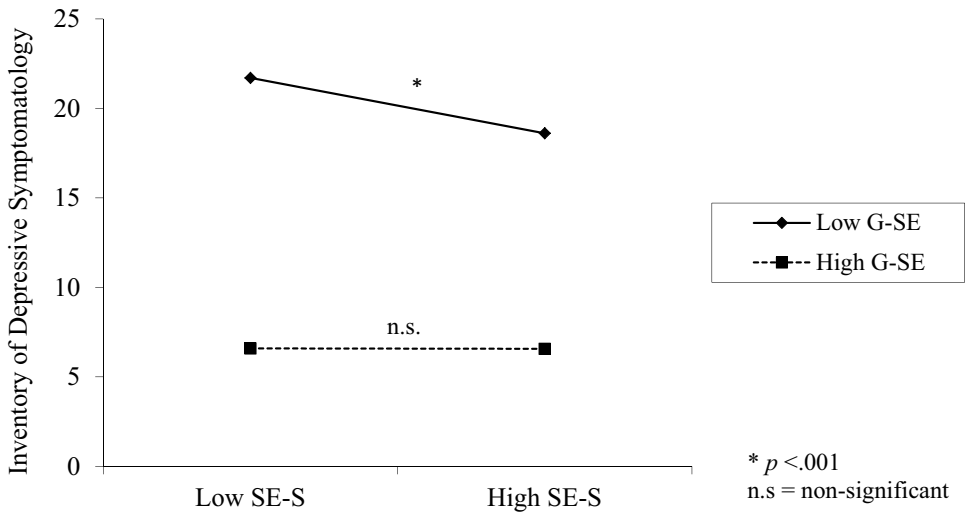

Fig. 1 The two-way interaction between high and low (± 1 SD) global self-esteem as measured by Rosenberg self-esteem scale (G-SE) and self-esteem stability (SE-S) scores in the prediction of depression symptoms (N = 1680)

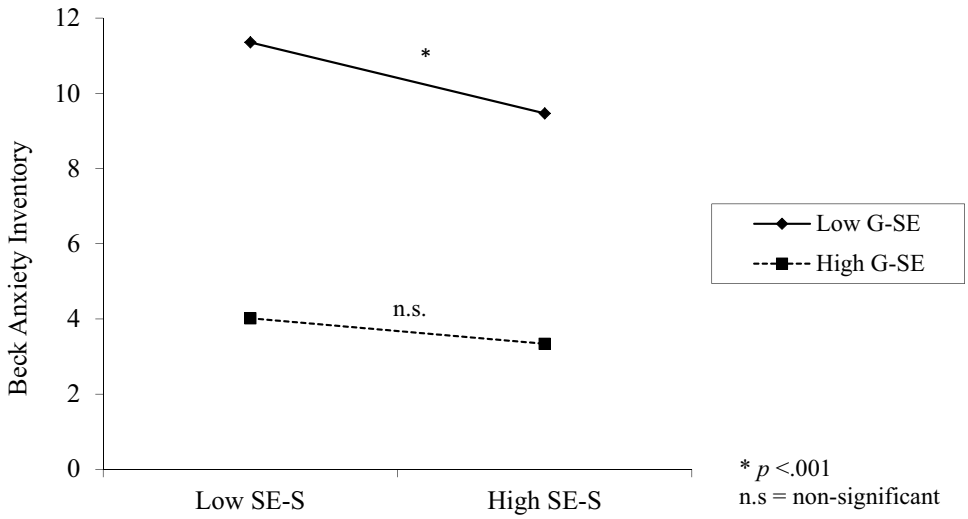

Fig. 2 The two-way interaction between high and low (± 1 SD) global self-esteem as measured by Rosenberg self-esteem scale (G-SE) and self-esteem stability (SE-S) scores in the prediction of anxiety symptoms (N = 1665)

also significant, B = 0.30, SE = 0.14, $p = .03$, semi-partial r = .04, and is plotted in Fig. 2. Simple slopes revealed that when global self-esteem was high (+ 1 SD), there was no difference in BAI score across low/high self-esteem stability (gradient of slope = − 0.34, t = − 1.53, $p = .13$). However, when global self-esteem was low (− 1 SD), the slope was significant (gradient of slope = − 0.95, t = − 3.71, $p < .001$), suggesting that those with less stable self-esteem reported higher BAI scores than those with more stable self-esteem.

Discussion

The main findings of the present study can be summed as follows: (i) The comparison group without a history of MDD or AD reported more stable self-esteem than all current, remitted, and recovered clinical groups, whereas recovered AD and MDD reported more stable self-esteem than all other clinical groups; (ii) For current MDD, current AD, remitted MDD, recovered MDD, and recovered AD, these differences in self-esteem stability with the comparison group remained when correcting for global self-esteem; (iii) Specifically when global self-esteem was low, symptoms of both depression and anxiety were related to self-esteem instability.

Self-esteem stability was lower in all clinical groups in contrast to the comparison group. This is in keeping with the previous studies who have observed unstable self-esteem in current MDD and AD (Farmer and Kashdan 2014; Franck and De Raedt 2007), and is consistent with previous studies using analogue student samples (e.g., de Man et al. 2001). The current findings extend those of Franck and De Raedt (2007) by highlighting that even when correcting for global self-esteem, unstable self-esteem was still reported in current MDD, remitted MDD and recovered MDD. Moreover, self-esteem instability was also observed in the current AD group in the present sample, even when correcting for global self-esteem. The latter is in contradiction with Farmer and

Kashdan (2014) who found that the relevance of self-esteem instability in social anxiety disorder disappeared when taking global self-esteem into account. It seems unlikely that the conflicting findings are explained by broader inclusion criteria for AD of the present study since individuals with social anxiety disorder did not differ in self-esteem stability from the other ADs. However, in Farmer and Kashdam's sample, 17.5% of the socially anxious individuals had a comorbid depression. Differences in self-esteem stability between those with and without a comorbid depression were not analysed. As such, the presence of a comorbid MDD may account for the difference in findings.

Differences in self-esteem stability between comorbid MDD/AD and the comparison group without a history of MDD or AD disappeared once controlling for global self-esteem, but remained for those with a relatively pure MDD or AD. It is not entirely clear why unstable self-esteem was observed in purer forms of MDD or AD, but not in comorbid MDD or AD. One explanation may lie in differences in global self-esteem. In a previous study, comorbid MDD and AD was found to have lower global self-esteem than both those with MDD and those with AD, potentially because of more persistent and severe symptomatology (van Tuijl et al. 2016). It is feasible that when global self-esteem is already extremely low, there is little room for fluctuations. In other words, self-esteem cannot drop any lower. Likewise, those with relatively high global self-esteem, like those in the comparison group, also have little room to fluctuate. Therefore, the extent of instability might be similar between those with very high global self-esteem (i.e., comparison group) and those with very low global self-esteem (i.e., comorbid group). The combination of very low and unstable self-esteem may partly explain the highly persistent nature of comorbidity which is often higher than relatively pure forms of MDD or AD (Penninx et al. 2011).

The combination of low and stable self-esteem may also explain the treatment-resistant nature of comorbidity (Penninx et al. 2011). Some self-esteem flexibility was argued to be vital for a psychoeducational group treatment to be effective in reducing depressive symptoms, as those with less stable self-esteem pre-treatment showed more improvement (Roberts et al. 1999). As such, the implication of the current findings suggest that a self-esteem intervention is especially necessary in comorbidity to not only increase global self-esteem that is especially low, but also to introduce some flexibility into self-evaluations which may make other treatments more effective. Such an intervention may not be necessary for those with purer forms of MDD or AD, as common treatments such as cognitive behavioural therapy already appear to increase global self-esteem (Richardson et al. 2010), although it is unclear whether self-esteem also becomes more stable. As such, it seems to be vital to differentiate between comorbid MDD/AD and relatively pure disorders as comorbidity may be more than simply the sum of MDD and AD symptoms.

In the present study, differences in self-esteem stability were observed between the comparison group and remitted MDD, remitted AD, recovered MDD and recovered AD. These findings are in keeping with the unstable self-esteem observed in the former MDD group by Franck and De Raedt (2007). However, as we did not exclude recovered and remitted MDD with residual symptoms, Franck and De Raedt's findings are extended to highlight that low self-esteem stability is present in both remitted and recovered MDD, more broadly. The presence of unstable self-esteem in remittance and recovery could be explained in terms of a remaining vulnerable self-esteem scar from an episode which is reactive to stress and negative moods. However, given the cross-sectional nature of the current study, it is just as feasible that this "scar" is a remaining prodromal factor that was present before the episode in question, or a preceding symptom of the next episode. Future longitudinal research should look at whether unstable self-esteem following MDD and AD predicts relapse. Furthermore, scars have been hypothesised to lie dormant until activated by life events or stressors (Segal et al. 1999). Such stressors need not necessarily be major in order to (re-)activate the scars as self-esteem may fluctuate in response to subtle changes in mood and daily (minor) life events (Clasen et al. 2015; Kernis et al. 1991; Roberts and Monroe 1994). As such, future longitudinal research should include a measure of (minor) stressors to see whether low self-esteem stability specifically in the presence of stressors predicts relapse.

Further support for the differential role of global self-esteem and self-esteem stability in MDD and AD comes from the regression analysis of symptoms across both the clinical groups and the comparison group. For depressive and anxiety symptomatology, self-esteem instability explained variance over and above global self-esteem, although global self-esteem did explain more variance than self-esteem stability (for a further discussion of global self-esteem in this sample see van Tuijl et al. 2016). Consistent with the findings by De Man, Gutiérrez and Sterk (2001), particularly when global self-esteem was low, unstable self-esteem was related to depressive and anxiety symptoms. Previously, this has been taken to suggest that stable self-esteem is to some extent a protective factor when global self-esteem is low. However, it is also feasible to argue that fluctuations when self-esteem is high are not problematic because this may all occur within a positive range. It is also possible that fluctuations occur a lot less when global self-esteem is relatively high. This notion is in keeping with sociometer theory of self-esteem which suggest that those possessing high self-esteem are less likely to react to instances of rejection given that acceptance is anticipated (Leary and Baumeister 2000). Indeed, several studies have

highlighted that self-esteem moderates responses to rejection (e.g., Ford and Collins 2010). In keeping with the findings in the current study, many have reported a positive correlation between global self-esteem and stable self-esteem, suggesting that those with higher self-esteem are less likely to report instability (Okada 2010). Indeed, in the present study, those scoring below the median split on global self-esteem reported more unstable self-esteem. Therefore, it may be most fruitful to target global self-esteem in depression and anxiety interventions not only because it appears to be more strongly related to self-esteem stability, but also, as the findings suggest, instability when global self-esteem is high may not be detrimental.

Symptom severity is often reported to be higher in comorbid depression and anxiety (Penninx et al. 2011). As such, there is some contradiction between the observed association between symptoms and self-esteem instability, and the lack of support that the comorbid group and the comparison group differ on the later. As separate analyses were conducted for depression and anxiety symptoms, it is plausible that in the presence of both symptoms, self-esteem instability explains no additional variance over and above global self-esteem. This is in keeping with theories that comorbid depression and anxiety is more than a sum of the parts (Kleiman and Riskind 2012). The present findings only further justify accounting for the presence of comorbidity within clinical groups. Future studies should adopt more complex models as there are several ways in which comorbidity may occur (e.g., depression occurring before anxiety or vice versa). Furthermore, it might be pivotal to acknowledge more complex associations between symptoms and self-esteem, which may not be entirely linear. It is feasible that unstable self-esteem is particularly relevant in distinguishing individuals at risk of developing depression or an anxiety disorder when global self-esteem levels are mid to low range, and not extremely low or high.

Limitations

Most previous studies looking at self-esteem instability have quantified this construct based on the standard deviation of multiple self-report measures of global self-esteem. This method may be less affected by self-report biases assuming that the influence would be similar for each measurement moment. The method employed in the current study is more likely be subject to self-report biases, which would also affect measures of global self-esteem to a similar degree (e.g., social desirability bias would presumably affect two measures concerning the self to an equal extent), and also assumes that perceived and actual self-esteem stability are adequately linked. However, even when controlling for differences in global self-esteem, differences in self-esteem stability were still observed, suggesting the measure of self-esteem stability tapped into something else. Furthermore, quantifying self-esteem stability as is done in the present study improves comparability across studies. Given that previous studies have varied in how often they provided multiple measures of global self-esteem (e.g., from weekly to daily), it is unclear what influence this may have had on the scores. Finally, it is not clear how standard deviations based on skewed scores should be dealt with (e.g., participants who often score high, or low), or extreme outliers (e.g., a rare good or bad day), both of which influence the self-esteem score derived (Baird et al. 2006).

It should be noted that the two items of the self-esteem stability scale did not show the high internal-reliability which is often observed in other self-report measures. This may be explained by the fact that one item is reversed, and previous studies suggest that reverse items reduce scale unidimensionality (e.g., Herche and Engelland 1996). While the measure of self-esteem stability did show additional explained variance over and above the measure of global self-esteem, the two were also highly correlated. Future studies may seek to include more items in the measure to capture the construct of self-esteem (in)stability, and increase the internal reliability.

Conclusions

The present study underlines the role of perceived self-esteem instability in clinical groups of MDD and AD. The current findings are consistent with the view that not only enduring low self-esteem per se, but also low self-esteem stability may contribute to the development or maintenance of affective disorders. This seems particularly true when global self-esteem is low as well. Furthermore, such instability appears to persist into remittance and recovery which may contribute to the increased risk of relapse. From a clinical perspective, these findings highlight that a more stable level of self-esteem is desirable. If this is not the case, then a minor perceived rejection may undo any intervention effects. However, given that global self-esteem appears to be more strongly related to symptoms of depression and anxiety than self-esteem instability, and fluctuations when self-esteem is high does not appear detrimental in comparison to when self-esteem is low, targeting global self-esteem may be a more efficient intervention.

Acknowledgements The funding was supported by Nederlandse Organisatie voor Wetenschappelijk Onderzoek (Grant No.: 451-15-026).

Funding The infrastructure for the NESDA study (http://www.nesda.nl) is funded through the Geestkracht program of the Netherlands Organisation for Health Research and Development (ZonMw, Grant Number 10-000-1002) and financial contributions by participating

universities and mental health care organizations (VU University Medical Center, GGZ inGeest, Leiden University Medical Center, Leiden University, GGZ Rivierduinen, University Medical Center Groningen, University of Groningen, Lentis, GGZ Friesland, GGZ Drenthe, Rob Giel Onderzoekscentrum).

Compliance with Ethical Standards

Conflict of Interest Lonneke A. van Tuijl, Klaske A. Glashouwer, Claudi L. H. Bockting, Brenda W. J. H. Penninx and Peter J. de Jong declare that they have no conflict of interest.

Ethical Approval All procedures followed were in accordance with the Helsinki Declaration of 1975, as revised in 2000.

Informed Consent Informed consent was obtained from all patients for being included in the study.

Animal Rights This article does not contain any studies with animal subjects performed by the any of the authors.

References

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Thousand Oaks, CA: SAGE. Retrieved from http://search.ebscohost.com/login.aspx?direct=true&db=psyh&AN=1991-97932-000&site=ehost-live&scope=site.

Baird, B. M., Le, K., & Lucas, R. E. (2006). On the nature of intraindividual personality variability: Reliability, validity, and associations with well-being. *Journal of Personality and Social Psychology, 90*(3), 512–527. https://doi.org/10.1037/0022-3514.90.3.512.

Beck, A. T. (2002). Cognitive models of depression. In R. L. Leahy & E. T. Dowd (Eds.), *Clinical advances in cognitive psychotherapy: Theory and application* (pp. 29–61). New York, NY: Springer Publishing Co.

Beck, A. T., Epstein, N., Brown, G., & Steer, R. A. (1988). An inventory for measuring clinical anxiety: Psychometric properties. *Journal of Consulting and Clinical Psychology, 56*(6), 893–897. https://doi.org/10.1037/0022-006X.56.6.893.

Clasen, P. C., Fisher, A. J., & Beevers, C. G. (2015). Mood-reactive self-esteem and depression vulnerability: Person-specific symptom dynamics via smart phone assessment. *PLoS ONE*. https://doi.org/10.1371/journal.pone.0129774.

Dawson, J. F. (2014). Moderation in management research: What, why, when, and how. *Journal of Business and Psychology, 29*(1), 1–19. https://doi.org/10.1007/s10869-013-9308-7.

de Man, A. F., Gutiérrez, B. I. B., & Sterk, N. (2001). Stability of self-esteem as moderator of the relationship between level of self-esteem and depression. *North American Journal of Psychology, 3*(2), 303–308.

Farmer, A. S., & Kashdan, T. B. (2014). Affective and self-esteem instability in the daily lives of people with generalized social anxiety disorder. *Clinical Psychological Science, 2*(2), 187–201. https://doi.org/10.1177/2167702613495200.

Ford, M. B., & Collins, N. L. (2010). Self-esteem moderates neuroendocrine and psychological responses to interpersonal rejection. *Journal of Personality and Social Psychology, 98*(3), 405–419. https://doi.org/10.1037/a0017345.

Franck, E., & De Raedt, R. (2007). Self-esteem reconsidered: Unstable self-esteem outperforms level of self-esteem as vulnerability marker for depression. *Behaviour Research and Therapy, 45*(7), 1531–1541. https://doi.org/10.1016/j.brat.2007.01.003.

Frank, E., Prien, R. F., Jarrett, R. B., Keller, M. B., Kupfer, D. J., Lavori, P. W., … Weissman, M. M. (1991). Conceptualization and rationale for consensus definitions of terms in major depressive disorder: Remission, recovery, relapse, and recurrence. *Archives of General Psychiatry, 48*(9), 851–855. https://doi.org/10.1001/archpsyc.1991.01810330075011.

Gemar, M. C., Segal, Z. V., Sagrati, S., & Kennedy, S. J. (2001). Mood-induced changes on the implicit association test in recovered depressed patients. *Journal of Abnormal Psychology, 110*(2), 282–289. https://doi.org/10.1037/0021-843X.110.2.282.

Herche, J., & Engelland, B. (1996). Reversed-polarity items and scale unidimensionality. *Journal of the Academy of Marketing Science, 24*(4), 366–374. https://doi.org/10.1177/0092070396244007.

Kernis, M. H., Grannemann, B. D., & Mathis, L. C. (1991). Stability of self-esteem as a moderator of the relation between level of self-esteem and depression. *Journal of Personality and Social Psychology, 61*(1), 80–84. https://doi.org/10.1037/0022-3514.61.1.80.

Kleiman, E. M., & Riskind, J. H. (2012). Cognitive vulnerability to comorbidity: Looming cognitive style and depressive cognitive style as synergistic predictors of anxiety and depression symptoms. *Journal of Behavior Therapy and Experimental Psychiatry, 43*(4), 1109–1114. https://doi.org/10.1016/j.jbtep.2012.05.008.

Leary, M. R., & Baumeister, R. F. (2000). The nature and function of self-esteem: Sociometer theory. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 32, pp. 1–62). San Diego, CA: Academic Press. https://doi.org/10.1016/S0065-2601(00)80003-9.

Lewinsohn, P. M., Steinmetz, J. L., Larson, D. W., & Franklin, J. (1981). Depression-related cognitions: Antecedent or consequence? *Journal of Abnormal Psychology, 90*(3), 213–219. https://doi.org/10.1037/0021-843X.90.3.213.

Okada, R. (2010). A meta-analytic review of the relation between self-esteem level and self-esteem instability. *Personality and Individual Differences, 48*(2), 243–246. https://doi.org/10.1016/j.paid.2009.10.012.

Orth, U., & Robins, R. W. (2014). The development of self-esteem. *Current Directions in Psychological Science, 23*(5), 381–387. https://doi.org/10.1177/0963721414547414.

Penninx, B. W. J. H., Beekman, A. T. F., Johannes, H. S., Zitman, F. G., Nolen, W. A., et al. (2008). The Netherlands Study of Depression and Anxiety (NESDA): Rationale, objectives and methods. *International Journal of Methods in Psychiatric Research, 17*(3), 121–140. https://doi.org/10.1002/mpr.256.

Penninx, B. W. J. H., Nolen, W. A., Lamers, F., Zitman, F. G., Smit, J. H., et al. (2011). Two-year course of depressive and anxiety disorders: Results from the Netherlands Study of Depression and Anxiety (NESDA). *Journal of Affective Disorders, 133*(1–2), 76–85. https://doi.org/10.1016/j.jad.2011.03.027.

Raes, F., & Gucht, D. V. (2009). Paranoia and instability of self-esteem in adolescents. *Personality and Individual Differences, 47*(8), 928–932.

Richardson, T., Stallard, P., & Velleman, S. (2010). Computerised cognitive behavioural therapy for the prevention and treatment of depression and anxiety in children and adolescents: A systematic review. *Clinical Child and Family Psychology Review, 13*(3), 275–290.

Roberts, J. E., Kassel, J. D., & Gotlib, I. H. (1995). Level and stability of self-esteem as predictors of depressive symptoms. *Personality and Individual Differences, 19*(2), 217–224. https://doi.org/10.1016/0191-8869(95)00049-C.

Roberts, J. E., & Monroe, S. M. (1992). Vulnerable self-esteem and depressive symptoms: Prospective findings comparing three alternative conceptualizations. *Journal of*

Personality and Social Psychology, 62(5), 804–812. https://doi.org/10.1037/0022-3514.62.5.804.

Roberts, J. E., & Monroe, S. M. (1994). A multidimensional model of self-esteem in depression. *Clinical Psychology Review, 14*(3), 161–181. https://doi.org/10.1016/0272-7358(94)90006-X.

Roberts, J. E., Shapiro, A. M., & Gamble, S. A. (1999). Level and perceived stability of self-esteem prospectively predict depressive symptoms during psychoeducational group treatment. *British Journal of Clinical Psychology, 38*(4), 425–429. https://doi.org/10.1348/014466599162917.

Robins, L. N., Wing, J., Wittchen, H. U., Helzer, J. E., Babor, T. F., Burke, J., … Regier, D. A. (1988). The composite international diagnostic interview: An epidemiologic instrument suitable for use in conjunction with different diagnostic systems and in different cultures. *Archives of General Psychiatry, 45*(12), 1069–1077.

Rosenberg, M. (1989). *Society and the adolescent self-image (revised edition)*. Middletown: Wesleyan University Press.

Rush, A. J., Giles, D. E., Schlesser, M. A., Fulton, C. L., Weissenburger, J., & Burns, C. (1986). The inventory for depressive symptomatology (IDS): Preliminary findings. *Psychiatry Research, 18*(1), 65–87. https://doi.org/10.1016/0165-1781(86)90060-0.

Rush, A. J., Gullion, C. M., Basco, M. R., Jarrett, R. B., & Trivedi, M. H. (1996). The inventory of depressive symptomatology (IDS): Psychometric properties. *Psychological Medicine, 26*(3), 477–486. https://doi.org/10.1017/S0033291700035558.

Segal, Z. V., Gemar, M., & Williams, S. (1999). Differential cognitive response to a mood challenge following successful cognitive therapy or pharmacotherapy for unipolar depression. *Journal of Abnormal Psychology, 108*(1), 3–10.

Sowislo, J. F., & Orth, U. (2013). Does low self-esteem predict depression and anxiety? A meta-analysis of longitudinal studies. *Psychological Bulletin, 139*(1), 213–240. https://doi.org/10.1037/a0028931.

van Tuijl, L. A., Glashouwer, K. A., Bockting, C. L. H., Tendeiro, J. N., Penninx, B. W., et al. (2016). Implicit and explicit self-esteem in current, remitted, recovered, and comorbid depression and anxiety disorders: The NESDA study. *PLoS ONE, 11*(11), e0166116. https://doi.org/10.1371/journal.pone.0166116.

Wittchen, H.-U. (1994). Reliability and validity studies of the WHO-composite international diagnostic interview (CIDI): A critical review. *Journal of Psychiatric Research, 28*(1), 57–84.

Zuckerman, M. (1999). *Vulnerability to psychopathology: A biosocial model*. Washington, DC: American Psychological Association.