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Low Self-Esteem is a Risk Factor for Depressive Symptoms from Young Adulthood to Old Age

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Abstract

Data from two large longitudinal studies were used to analyze reciprocal relations between self-esteem and depressive symptoms across the adult life span. Study 1 included 1,685 participants aged 18 to 96 assessed 4 times over a 9-year period. Study 2 included 2,479 participants aged 18 to 88 assessed 3 times over a 4-year period. In both studies, cross-lagged regression analyses indicated that low self-esteem predicted subsequent depressive symptoms, but depressive symptoms did not predict subsequent levels of self-esteem. This pattern of results replicated across all age groups, for both affective/cognitive and somatic symptoms of depression, and after controlling for content overlap between the self-esteem and depression scales. The results suggest that low self-esteem operates as a risk factor for depressive symptoms at all phases of the adult life span.

Keywords: self-esteem, depression, age differences, life span

In recent years, a growing body of research suggests that low self-esteem predicts depression. Overall, the findings support the "vulnerability model" which states that low self-esteem operates as a risk factor for depression, especially in the face of major life stressors (e.g., Beck, 1967; Metalsky, Joiner, Hardin, & Abramson, 1993; Roberts & Monroe, 1992). Importantly, many of the studies used prospective designs and controlled for prior levels of both variables (e.g., Kernis et al., 1998; Lewinsohn, Hoberman, & Rosenbaum, 1988; Orth, Robins, & Roberts, 2008; Roberts & Monroe, 1992; Trzesniewski et al., 2006). However, it should also be noted that several studies have failed to find evidence that self-esteem predicts subsequent depression (Butler, Hokanson, & Flynn, 1994; Roberts & Gotlib, 1997; Shahar & Davidson, 2003). Moreover, a limitation of the extant research is that most previous studies were conducted within a single developmental period, typically adolescence or young adulthood (for a review see Orth et al., 2008). Although a few studies have examined the longitudinal relation between self-esteem and depression in a wider range of adult samples (Abela, Webb, Wagner, Ho, & Adams, 2006; Fernandez, Mutran, & Reitzes, 1998; Lewinsohn et al., 1988; Ormel, Oldehinkel, & Vollebergh, 2004), none of these studies directly tested for age differences in the effects of self-esteem in different life stages. In addition, we know of no studies that have examined the relation between self-esteem and depression in old age. It is possible that low self-esteem is a risk factor for depression only at certain periods of the life span but not at others. The factors that contribute to self-esteem and depression might be different during midlife or old age than during young adulthood. As a result, the relation between self-esteem and depression might vary across the life span.

From a theoretical perspective, it is important to know whether the pattern of results holds across the life span. For example, some authors hypothesized that self-esteem might be an

outcome of depression rather than a cause, because episodes of depression may leave permanent "scars" in the self-concept of the individual (cf. Coyne, Gallo, Klinkman, & Calarco, 1998; Rohde, Lewinsohn, & Seeley, 1990). The extant literature speaks against this "scar model" of self-esteem and depression (Ormel et al., 2004; Orth et al., 2008, but see also Shahar & Davidson, 2003); however, as people age, depression might begin to reciprocally affect self-esteem. If this were the case, then we would expect to find reciprocal effects, or perhaps even a reversal of the self-esteem-depression effect, during old age. The development of theoretical accounts of how, why, and for whom low self-esteem operates as a risk factor for depression will benefit from knowledge about whether the effects are restricted to specific developmental stages or whether the effects play out regardless of the individual's age.

To address these issues, the present research uses data from two longitudinal studies to examine the relation between self-esteem and depressive symptoms across the adult life span, from young adulthood to old age. Both studies include reliable and valid measures of self-esteem and depressive symptoms, large sample sizes, broad age ranges, and multiple repeated assessments, and thus provide an ideal test of reciprocal relations between self-esteem and depressive symptoms across the adult life span. Specifically, we use these data to: (a) replicate the effect of low self-esteem on depressive symptoms in two countries (U.S. and Germany) using longitudinal analyses with appropriate statistical controls; (b) test whether low self-esteem is a risk factor for depressive symptoms at all phases of the adult life span (i.e., does the "vulnerability model" hold in all age groups?), and (c) test whether depressive symptoms serve as a risk factor for low self-esteem at all phases of the adult life span, including mid-life and old age, two periods for which the "scar model" has received minimal empirical attention.

Study 1

Method

Study 1 used data from the Longitudinal Study of Generations (LSG, Bengtson, 2005), which was conducted in Southern California. Measures of depressive symptoms and self-esteem were administered to participants in 1988, 1991, 1994, and 1997. We excluded participants whose age was under 18 or unknown, or who did not complete a measure of self-esteem or depressive symptoms at any of the four assessments.

Participants

The sample included 1,685 individuals (57% female). Mean age of participants at Time 1 was 48.7 years (*SD* = 16.9, Range = 18 to 96). Data for self-esteem and depressive symptoms were available for 1,447 individuals at Time 1, 1,335 individuals at Time 2, 1,312 individuals at Time 3, and 1,192 individuals at Time 4. To investigate the potential impact of attrition we reran all models without participants who dropped out of the study before Time 4. The results of the analyses were virtually unaltered, and all statistically significant effects remained significant.

Measures

Self-esteem. Self-esteem was assessed with the 10-item Rosenberg Self-Esteem Scale (RSE, Rosenberg, 1965), the most commonly used and well-validated measure of self-esteem (Robins, Hendin, & Trzesniewski, 2001). Responses were measured using a 4-point scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*), with *M* = 3.41 (*SD* = 0.45) averaged across the four waves. The alpha reliability was .86 at Time 1, .83 at Time 2, .86 at Time 3, and .86 at Time 4.

Depressive symptoms. Depressive symptoms were assessed with the 20-item Center for Epidemiological Studies Depression Scale (CES-D, Radloff, 1977). For each item, participants reported how frequently they experienced the symptom within the past week using a 4-point

scale (0 = *rarely or none of the time*; 1 = *a little of the time*; 2 = a *moderate amount of the time*; 3 = *most or all of the time*). The CES-D had a mean of 10.13 (*SD* = 8.72) averaged across the four waves, and an alpha reliability of .88 at Time 1, .90 at Time 2, .90 at Time 3, and .90 at Time 4. Based on the commonly used cut-off value of 16 (Radloff, 1977), 20%, 22%, 22%, and 20% of participants, respectively at Times 1-4, exhibited a clinical level of depression.

Statistical Analyses

The analyses were conducted using the Amos 7 structural equation modeling program (Arbuckle, 2006). To deal with missing values, we employed the full information maximum likelihood (FIML) procedure. Maximum likelihood procedures are recommended because they produce less biased and more reliable results compared to conventional methods of dealing with missing data, such as listwise or pairwise deletion (see, e.g., Schafer & Graham, 2002). We used item parcels as indicators because they produce more reliable latent variables than individual items (Little, Cunningham, Shahar, & Widaman, 2002). For both self-esteem and depressive symptoms, we randomly aggregated the items into three parcels. The uniquenesses of individual indicators were correlated across time to control for bias due to parcel-specific variance. The structural relations between factors were specified as cross-lagged effects (see Figure 1 for an illustration), which indicate the effect of one variable on the other, after controlling for their stabilities over time (Finkel, 1995).

Model fit was assessed by the Tucker-Lewis-Index (TLI), the Comparative Fit Index (CFI), and the Root Mean Square Error of Approximation (RMSEA). Hu and Bentler (1999) suggest that good fit is indicated by values greater than or equal to .95 for TLI and CFI, and less than or equal to .06 for RMSEA. To test for differences in model fit, we used the test of small

differences in fit recommended by MacCallum, Browne, and Cai (2006, Program C). For these tests, statistical power was high with values above .90 (MacCallum et al., 2006, Program D).

Results and Discussion

We computed age cohorts based on age at Time 1. Participants were grouped into 10-year cohorts, with the exception of the youngest (18-29 years) and oldest cohorts (70 years and older) because of restrictions in sample size. For all models tested, constraining structural coefficients to be equal across time did not significantly decrease model fit. Consequently, we used longitudinal constraints on structural coefficients.

Overall, the fit of the models tested was good (see Table 1). Two exceptions were the models for participants at age 40 to 49 years and 70 years and older, which had slightly worse fit values than the normative values specified by Hu and Bentler (1999). However, given that the pattern of results was stable across studies and age groups (see below), we do not believe the lower fit for these two cohorts threatens the validity of our conclusions.

The cross-sectional correlations of self-esteem and depressive symptoms were predominantly in the -.70s (see Table 2). Because the cross-lagged and stability effects were estimated using four waves of data (i.e., three separate time intervals), the resulting standardized coefficients were averaged across the time intervals using Fisher's Z_r transformations (within each age cohort).[1] The cross-lagged effects showed a consistent picture: self-esteem predicted subsequent depressive symptoms, controlling for prior level of depressive symptoms (full sample effect = -.25; range across age cohorts = -.22 to -.44). In contrast, depressive symptoms did not predict subsequent self-esteem, controlling for prior level of self-esteem (full sample effect = .03; range across age cohorts = -.05 to .18).[2]

To test whether reciprocal relations between self-esteem and depressive symptoms varied across the life span, we tested whether the structural parameters could be constrained across age groups, using a multiple group analysis.[3] Adding constraints on the cross-lagged and stability effects did not lead to a significant reduction in fit, providing additional evidence that the effect of low self-esteem on depressive symptoms did not vary across the life span. This finding suggests that the full sample results can be generalized across the age groups included in the present sample.

To control for content overlap between the measures, we repeated the analyses in the full sample after omitting two items from the CES-D that are conceptually related to self-esteem ("I felt that I was just as good as other people" and "I thought my life had been a failure."). The results for the 18-item CES-D were virtually the same as for the full 20-item scale. In the full sample, the cross-lagged effect of self-esteem on depressive symptoms was -.23 ($p < .05$), and the cross-lagged effect of depressive symptoms on self-esteem was .03 (*ns*).

We tested whether controlling for gender and education level would change the relations between self-esteem and depressive symptoms. The structural coefficients were virtually unchanged; in the full sample, the cross-lagged effect of self-esteem on depressive symptoms was -.25, and the cross-lagged effect of depressive symptoms on self-esteem was .02. We also tested for gender differences in the structural coefficients, using a multiple group analysis. However, a model allowing for different coefficients for male and female participants did not significantly improve model fit, relative to a model with constraints across gender.

Finally, we tested whether the relations between self-esteem and depressive symptoms were the same for the affective and somatic subscales of the CES-D (Radloff, 1977). In the full sample, self-esteem had a cross-lagged effect on both depressive affect (-.23, $p < .05$) and

somatic symptoms (-.11, $p < .05$), whereas neither depressive affect (.03, *ns*) nor somatic symptoms (.00, *ns*) had cross-lagged effects on self-esteem.

The results of Study 1 suggest that self-esteem predicts subsequent levels of depressive symptoms (consistent with the vulnerability model) but depressive symptoms do not predict subsequent levels of self-esteem (contrary to the scar model). This pattern held for all age groups from young adulthood to old age. To cross-validate the findings, we replicated the analyses using a second data set. Study 2 differed from Study 1 in terms of the nationality of the participants (Germany vs. U.S.), the measure of depression (Beck Depression Inventory vs. CES-D), the number of assessments (three vs. four), and the time interval between assessments (two vs. three years).

Study 2

Method

Study 2 used data from the study *Gerechtigkeit als innerdeutsches Problem* (GiP, see Schmitt & Maes, 1998), which included three biannual assessments between 1996 and 2000. Random samples of participants were recruited from several geographically and economically diverse regions of Germany. As in Study 1, we excluded participants whose age was unknown, who were under 18, or who did not complete a measure of self-esteem or depressive symptoms at any of the three assessments.

Participants

The sample consisted of 2,479 individuals (40% female). Mean age of participants at Time 1 was 48.0 years (*SD* = 15.5, Range = 18 to 88). Data for self-esteem and depressive symptoms were available for 2,478 individuals at Time 1, 1,143 individuals at Time 2, and 705 individuals at Time 3. To investigate the potential impact of attrition we reran all models without

participants who dropped out of the study before Time 3. The results of the analyses were virtually unaltered, and all significant effects remained significant.

Measures

Self-esteem. Self-esteem was assessed with a German translation of the 10-item RSE, using a 6-point scale ranging from 0 (*strongly disagree*) to 5 (*strongly agree*), with $M = 3.96$ ($SD = 0.72$) averaged across the three waves. The alpha reliability was .84 at Time 1, .85 at Time 2, and .85 at Time 3.

Depressive symptoms. Depressive symptoms were assessed with a German translation (Schmitt et al., 2003) of the Beck Depression Inventory (BDI, Beck, Steer, & Garbin, 1988). The German BDI replaced the original items, which included multiple response categories (i.e., four statements with increasing symptom severity), with 20 single statements rated from 0 (*never*) to 5 (*nearly always*). The possible range for the German BDI was 0 to 100, with $M = 22.88$ ($SD = 14.10$) across the three waves. For each item, participants were instructed to assess the frequency of their current reactions. The reliability and validity of the German BDI and its convergence with the original BDI have been confirmed (Schmitt et al., 2003). The alpha reliability was .90 at Time 1, .91 at Time 2, and .91 at Time 3. Based on the recommended cut-off value of 35 (Schmitt, Altstötter-Gleich, Hinz, Maes, & Brähler, 2006), 20%, 19%, and 19% of participants, respectively at Times 1-3, exhibited a clinical level of depression.

Results and Discussion

We constructed the same age cohorts as in Study 1, based on age at Time 1. The models tested, and the statistical procedures used to test those models, were identical to Study 1, except that the Study 2 models included only three instead of four waves of data. For all models tested, constraining structural coefficients to be equal across time did not significantly decrease model

fit. Consequently, we used longitudinal constraints on structural coefficients. For all cohorts, the fit of the models was good (see Table 3). The cross-sectional correlations of self-esteem and depressive symptoms were predominantly in the -.70s, as in Study 1 (see Table 4). Low self-esteem predicted subsequent depressive symptoms in four of six cohorts (full sample effect = -.15; range across cohorts = -.02 to -.23). Although the effect of self-esteem on depressive symptoms failed to reach significance in the youngest and oldest cohorts, these two effects were in the expected direction and clearly emerged in Study 1 in the same cohorts. For all age cohorts, depressive symptoms did not predict subsequent self-esteem (full sample effect = .00; range across cohorts = -.09 to .05).

As in Study 1, we tested whether reciprocal relations between self-esteem and depressive symptoms varied across the life span, using a multiple group analysis. However, constraining the structural parameters to be equal across age groups did not lead to a significant reduction in fit. This finding suggests that the full sample results can be generalized across the age groups included in the present sample, and that the two nonsignificant effects of low self-esteem on depressive symptoms (i.e., in the youngest and oldest cohort) might be due to chance and should not be interpreted as evidence for a different effect in these age groups. Moreover, other studies provide additional evidence for the effect of low self-esteem on depressive symptoms in adolescence and young adulthood (see results and references in Orth et al., 2008).

To control for content overlap, we repeated the analyses in the full sample after omitting two items from the BDI that are conceptually related to self-esteem ("I feel like a failure" and "I am disappointed in myself"). The results for the 18-item BDI were virtually unaltered; the cross-lagged effect of self-esteem on depressive symptoms was -.14 ($p < .05$) and the cross-lagged effect of depressive symptoms on self-esteem was .00 (*ns*). The cross-lagged effects were also

virtually the same when we controlled for gender and education level; the cross-lagged effect of self-esteem on depressive symptoms was -.15 ($p < .05$) and the cross-lagged effect of depressive symptoms on self-esteem was .00 (*ns*). As in Study 1, we also tested for gender differences in the structural coefficients, using a multiple group analysis. However, a model allowing for different coefficients for male and female participants did not significantly improve model fit, relative to a model with constraints across gender.

Finally, we tested whether the relations between self-esteem and depression were the same for the affective/cognitive and somatic symptoms subscales of the BDI (Whisman, Perez, & Ramel, 2000); in the full sample, self-esteem had a cross-lagged effect of -.14 ($p < .05$) on affective/cognitive symptoms and -.15 ($p < .05$) on somatic symptoms, whereas neither the affective/cognitive (.01, *ns*) nor somatic symptoms (-.03, *ns*) subscales had cross-lagged effects on self-esteem.

General Discussion

We investigated reciprocal relations between self-esteem and depressive symptoms from young adulthood to old age, using two large data sets that differed in nationality (American vs. German), measure of depressive symptoms (CES-D vs. BDI), and time interval between assessments (three vs. two years). In both data sets, low self-esteem predicted subsequent levels of depressive symptoms, controlling for prior depressive symptoms. In contrast, depressive symptoms did not predict subsequent levels of self-esteem, controlling for prior self-esteem. This pattern of results replicated across age groups and held for both affective/cognitive and somatic symptoms of depression and after controlling for content overlap between the self-esteem and depression measures. The size of the cross-lagged effects can be assessed by converting the regression coefficients into the *r* metric (see, e.g., Rosenthal, 1994). In Study 1, the effect of self-

esteem on depressive symptoms corresponded to r = -.27, indicating a medium effect. The effect of depressive symptoms on self-esteem, which was nonsignificant, corresponded to r = .03. In Study 2, the effect of self-esteem on depressive symptoms corresponded to r = -.10, indicating a small effect. The effect of depressive symptoms on self-esteem, which was nonsignificant, corresponded to r = .00.

Together, the findings suggest that self-esteem serves as a risk factor for depressive symptoms at all phases of the adult life span. Thus, although self-esteem and depression rise and fall at various stages of the lifespan (Kessler, Foster, Webster, & House, 1992; Robins, Trzesniewski, Tracy, Gosling, & Potter, 2002), the *relation* between the two constructs seems to be stable from young adulthood to old age. A stable effect of low self-esteem on depression is consistent with the vulnerability model of low self-esteem which assumes that low self-esteem is a general, age-independent risk factor for depression. One implication of this finding is that the key mediating mechanisms necessarily transcend the age-graded challenges, stressors, role expectations, and normative life events that are unique to each age period.

Although the present findings are based on non-clinical samples, there are reasons to believe that low self-esteem may also be a risk factor for the development of clinical categories of depression such as major depressive disorder. First, previous longitudinal studies (Ormel et al., 2004; Trzesniewski et al., 2006) have demonstrated a relation between low self-esteem and clinically-diagnosed depression. Second, the present studies were based on diverse samples that included participants who experienced a broad range of depressive symptoms; about 20% of the participants in each study scored above the clinical cut-off values of the depression measures. Follow-up analyses showed that individuals scoring below the cut-off value had significantly lower self-esteem than those above the cut-off value. Although these analyses suggest that our

findings might generalize to individuals with clinical levels of depression, we chose not to analyze the data using these cut-off values because taxometric analyses suggest that the latent construct underlying depressive symptoms is dimensional rather than categorical (Hankin, Fraley, Lahey, & Waldman, 2005; Lewinsohn, Solomon, Seeley, & Zeiss, 2000; Prisciandaro & Roberts, 2005; Ruscio & Ruscio, 2000). The dimensional nature of depression, combined with the broad range of depressive symptoms exhibited by the participants in our studies, suggest that our results are likely to generalize to both nonclinical and clinical levels of depressive symptoms. It is important to note, however, that depressive *disorders* are not only defined by depressive symptoms, but by additional diagnostic criteria including, e.g., a minimally required duration of depressive symptoms; that symptoms are not due to direct physiological effects of substances or general medical conditions; or that symptoms are not better accounted for by bereavement. For example, the diagnosis of major depressive disorder requires at least one episode with a severe level of depressive symptoms that persist for at least two weeks, and the diagnosis of dysthymic disorder requires a milder level of depressive symptoms during the majority of days for at least two years (American Psychiatric Association, 2000). Future research should, therefore, examine low self-esteem as a risk factor for the development of depressive disorders using the full and precise set of diagnostic criteria.

Future research attempting to explain the relation between low self-esteem and depression should seek to identify the factors that mediate the effect of self-esteem on depressive symptoms. Knowledge about mediating processes is of crucial importance because it provides for possible starting points for interventions aimed at preventing or reducing depression. Low self-esteem might contribute to depressive symptoms through several interpersonal and intrapersonal pathways. One interpersonal pathway is that some low self-esteem individuals

excessively seek reassurance about their personal worth from friends and relationship partners, increasing the risk of being rejected by their support partners and thereby increasing the risk of depression (Joiner, Alfano, & Metalsky, 1992). A second interpersonal pathway is that low self-esteem motivates social avoidance, thereby impeding social reinforcement and social support, which has been linked to depression (Ottenbreit & Dobson, 2004). Relatedly, low self-esteem individuals are more sensitive to rejection and tend to withdraw and reduce interpersonal closeness following conflicts, thereby undermining attachment, support, and satisfaction in close relationships (Murray, Holmes, & Griffin, 2000). An intrapersonal pathway explaining how low self-esteem contributes to depression might operate through rumination. The tendency to ruminate about negative aspects of the self is closely linked to depression, and low self-esteem individuals are prone to rumination (Nolen-Hoeksema, 2000). Although the present research suggests that low self-esteem predicts depressive symptoms at all life stages from young adulthood to old age, future studies on low self-esteem as a risk factor for depressive symptoms should continue to test for possible age differences. Ultimately, this knowledge might serve as the basis for designing effective interventions aimed at preventing or reducing depression.

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Author Note

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Footnotes

[1] Although the structural coefficients were constrained to be equal across time, the constraints were imposed on unstandardized coefficients (as typically recommended), which led to slight variation in the resulting standardized coefficients.

[2] We also re-ran the analyses using age categories based roughly on developmental stages (young adulthood, 18-29 years; young middle age, 30-44 years; middle age, 45-64 years, and old age, more than 65 years). The findings were essentially the same (i.e., cross-lagged effects of self-esteem on depression but not depression on self-esteem) and no age differences in the parameters emerged.

[3] The multiple group analysis was based on three waves, excluding data from Time 1, because the four-wave models were unidentified due to a large degree of missingness at Time 1 for participants aged 18 to 29.

Table 1

Fit Indices of the Models Tested (Study 1)

Age at Time 1	*N*	χ^2	*df*	TLI	CFI	RMSEA	90%-CI of RMSEA
18-29 years	95	161.3*	118[a]	.94	.96	.057	.025-.081
30-39 years	673	384.2*	220	.98	.98	.033	.028-.039
40-49 years	146	403.2*	220	.90	.92	.076	.064-.087
50-59 years	270	366.8*	220	.94	.96	.050	.041-.059
60-69 years	299	337.8*	220	.96	.97	.042	.033-.051
70 years and older	202	367.2*	220	.84	.88	.058	.047-.068
Full sample	1685	739.8*	220	.97	.98	.037	.035-.040

Note. TLI = Tucker-Lewis Index; CFI = comparative fit index; RMSEA = root-mean-square error of approximation; CI = confidence interval.

[a] Model based on only three waves, excluding data from Time 1 because most of the participants aged 18 to 29 were not assessed in 1988.

* $p < .05$.

Table 2

Estimates of the Structural Coefficients (Study 1)

Age at Time 1	$r_{SE,D}$	Cross-lagged effects		Stability effects	
		SE→D	D→SE	SE→SE	D→D
18-29 years	-.82*	-.44*	.18	.89*	.32*
30-39 years	-.70*	-.22*	.01	.80*	.45*
40-49 years	-.72*	-.23*	-.05	.84*	.62*
50-59 years	-.59*	-.25*	.02	.80*	.37*
60-69 years	-.71*	-.23*	.02	.90*	.55*
More than 70 years	-.44*	-.29*	.11	.89*	.29*
Full sample	-.66*	-.25*	.03	.82*	.45*

Note. $r_{SE,D}$ is the correlation between the latent constructs at Time 1. SE = self-esteem; D = depressive symptoms.

* $p < .05$.

Table 3

Fit Indices of the Models Tested (Study 2)

Age at Time 1	*N*	χ^2	*df*	TLI	CFI	RMSEA	90%-CI of RMSEA
18-29 years	371	146.9*	118	.98	.99	.026	.007-.038
30-39 years	437	169.8*	118	.98	.98	.032	.020-.042
40-49 years	476	225.8*	118	.96	.97	.044	.035-.052
50-59 years	545	214.9*	118	.97	.98	.039	.031-.047
60-69 years	434	156.2*	118	.98	.99	.027	.014-.038
70 years and older	216	178.7*	118	.94	.96	.049	.034-.063
Full sample	2479	336.8*	118	.98	.99	.027	.024-.031

Note. TLI = Tucker-Lewis Index; CFI = comparative fit index; RMSEA = root-mean-square error of approximation; CI = confidence interval.

* $p < .05$.

Table 4

Estimates of the Structural Coefficients (Study 2)

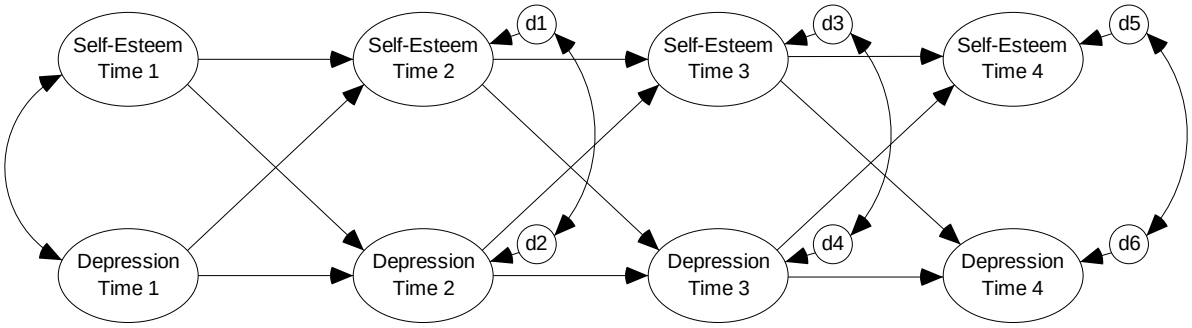
Age at Time 1	$r_{SE,D}$	Cross-lagged effects		Stability effects	
		SE→D	D→SE	SE→SE	D→D
18-29 years	-.77*	-.10	-.09	.64*	.64*
30-39 years	-.84*	-.23*	-.06	.81*	.62*
40-49 years	-.75*	-.17*	.05	.92*	.63*
50-59 years	-.78*	-.16*	-.01	.80*	.68*
60-69 years	-.62*	-.22*	-.04	.82*	.61*
More than 70 years	-.72*	-.02	.03	.96*	.83*
Full sample	-.76*	-.15*	.00	.82*	.66*

Note. $r_{SE,D}$ is the correlation between the latent constructs at Time 1. SE = self-esteem; D = depressive symptoms.

* $p < .05$.

Figure Captions

Figure 1. The figure illustrates the structural model of self-esteem and depressive symptoms used in the present research, for the case of four repeated assessments as in Study 1. The relations between factors are specified as cross-lagged effects, which indicate the prospective effect of one variable on the other (e.g., effect of self-esteem at Time 1 on depressive symptoms at Time 2), after controlling for their stabilities across time (e.g., effect of depressive symptoms at Time 1 on depressive symptoms at Time 2). Residual variances of factors (i.e., disturbances) are denoted as *d1*, *d2*, etc. The figure shows only latent constructs and omits observed variables.


Self-Esteem Time 1
Self-Esteem Time 2
Self-Esteem Time 3
Self-Esteem Time 4
Depression Time 1
Depression Time 2
Depression Time 3
Depression Time 4
d1
d2
d3
d4
d5
d6