

University of Groningen

Adult attachment predicts the seven-year course of recurrent depression in primary care

Conradi, Henk Jan; Kamphuis, Jan H; de Jonge, Peter

Published in:
Journal of Affective Disorders

DOI:
[10.1016/j.jad.2017.08.009](https://doi.org/10.1016/j.jad.2017.08.009)

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Publisher's PDF, also known as Version of record

Publication date:
2018

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Conradi, H. J., Kamphuis, J. H., & de Jonge, P. (2018). Adult attachment predicts the seven-year course of recurrent depression in primary care. *Journal of Affective Disorders*, 225, 160-166.
<https://doi.org/10.1016/j.jad.2017.08.009>

Copyright

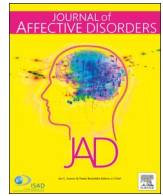
Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

The publication may also be distributed here under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license. More information can be found on the University of Groningen website: <https://www.rug.nl/library/open-access/self-archiving-pure/taverne-amendment>.

Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.



Research paper

Adult attachment predicts the seven-year course of recurrent depression in primary care



Henk Jan Conradi^{a,*}, Jan H. Kamphuis^a, Peter de Jonge^b

^a Department of Clinical Psychology, University of Amsterdam, Postbus 15933, 1001 NK Amsterdam, The Netherlands

^b Department of Developmental Psychology, University of Groningen, Interdisciplinary Center Psychopathology and Emotion regulation, The Netherlands

A B S T R A C T

Background: Attachment theory posits that attachment has a persistent, long-term impact on depression. Empirical data on associations between adult attachment and the long-term course of depression is, however, scarce. The present study addresses this omission.

Method: Primary care patients with a history of depression ($n = 103$) completed the Experiences in Close Relationships questionnaire measuring adult attachment *dimensions* (avoidance and anxiety) and *styles* (secure, preoccupied, dismissing and fearful). The subsequent seven-year course of depression was assessed with the face-to-face administered Composite International Diagnostic Interview (CIDI) and a life-chart interview based on the Longitudinal Interval Follow-up Evaluation (LIFE). At the end of the seven-year follow-up severity of depression was additionally measured with the Beck Depression Inventory (BDI).

Results: The attachment *dimensions* avoidance and anxiety both showed significant associations during the seven-year course with lower proportions of depressive symptom-free time and higher severity of depression (LIFE and BDI). The secure *style* predicted compared to preoccupied attachment a significantly higher proportion of symptom-free time (4.97 vs. 1.10 years), compared to dismissing attachment a higher proportion of symptom-free time (4.97 vs. 2.20 years) and lower severity of depression (LIFE: 1.65 vs. 2.14; BDI 6.04 vs. 9.52), and compared to fearful attachment a lower relapse/recurrence rate (45.7% vs. 76.9%), higher proportions of depression diagnosis-free time (7.31 vs. 6.65 years) and symptom-free time (4.97 vs. 0.29 years), and lower severity of depression (LIFE: 1.65 vs. 2.19; BDI 6.04 vs. 15.54).

Limitations: Sample size was restricted.

Conclusion: Insecure attachment predicts an unfavorable course of depression over a seven-year period.

1. Introduction

Depression is a chronic disorder characterized by relapses, substantial residual symptomatology (Solomon, 2000; Simon, 2000; ESEMED/MHEDEA 2000 Investigators, 2004), and persistence in a subcategory of patients (Eaton et al., 2008). The unfavorable long-term course of depression suggests a stable underlying vulnerability driving the waxing and waning of depression-related symptoms. Attachment is a moderately stable personality characteristic that has been assumed to have an enduring influence on people's functioning (Fraley and Brumbaugh, 2004). Insecure attachment may contribute to the development of psychopathology by its corollaries with dysfunctional emotion-regulation and support-seeking (Hammen, 2006). Impact of attachment on the long-term course of depression has, however, rarely been studied. Therefore, we examined whether attachment predicted depression outcomes over a seven-year period.

1.1. Attachment

According to attachment theory, interactional experiences with caregivers, and subsequently with partners (Bowlby, 1973, 1980), mold attachment strategies related to emotion-regulation and support-seeking, which in turn may influence the development of psychopathology.

The primary attachment strategy to fulfill attachment needs of support and validation, is *proximity seeking* to the attachment figure. When proximity bids are consistently reinforced, secure attachment will develop. Secure attachment is characterized by low anxiety about rejection (self-worth) and low avoidance of intimacy (trust in others). Both strengthen functional emotion-regulation and support-seeking, which makes secure attachment an inner source of resilience (Mikulincer and Shaver, 2016).

When proximity seeking is intermittently reinforced by the

* Corresponding author.

E-mail address: h.j.conradi@uva.nl (H.J. Conradi).

attachment figure, preoccupied attachment may develop. This style is characterized by high anxiety about rejection by significant others (low self-worth). To deal with this attachment anxiety, the preoccupied attached person *hyperactivates* emotions in order to gain attention from others and to coerce them into providing support. This hyperactivation strategy may itself culminate in psychopathology, and the coercive way of mobilizing support may discourage others from offering help (Mikulincer and Shaver, 2016).

When proximity seeking remains consistently non-reinforced by attachment figures dismissing-avoidant attachment may develop. This style is characterized by high avoidance of intimacy (absence of trust in others). The distrust is dealt with by *deactivation* of the attachment system, which is associated with avoidance of support seeking, and the suppression of emotions. This strategy may leave distress unresolved and may accordingly contribute to the development of psychopathology. Especially with prolonged distress, that urges for support of others, this is problematic (Mikulincer and Shaver, 2016).

Alternation of both hyper- and deactivation is characteristic of fearful-avoidant attachment (Bartholomew and Horowitz, 1991). Fearful-avoidant individuals are high on anxiety about rejection (low self-worth), as well as high on avoidance of intimacy (lack of trust in others), resulting in an ‘approach-avoidance’ conflict. This means they have difficulties in functioning autonomously but also in generating support from others. Therefore, fearful-avoidant attachment is associated with the most severe psychopathology (Brennan et al., 1998).

1.2. Attachment and depression

A review of cross-sectional studies (Mikulincer and Shaver, 2016) consistently showed that insecure attachment, in particular attachment anxiety, was associated with higher severity of depression than secure attachment. A minority of the reviewed studies prospectively assessed associations between attachment and depression. Unfortunately, follow-up periods were generally quite short, ranging from several weeks to months. Moreover, only three studies focused on depressed patients (Grunebaum et al., 2010; Conradi and de Jonge, 2009; Bifulco et al., 2002) but the length of the prospective follow-up periods was limited to one year.

In sum, there is an empirical gap with respect to the presumed impact of insecure attachment on the long-term course of depression. We therefore examined a sample of primary care patients with a diagnosis of (recurrent) depression and tested whether attachment predicted the seven-year course of multiple depression-related outcomes. Based on the literature, we hypothesized that insecure attachment, i.e. preoccupied, dismissing-avoidant and in particular fearful-avoidant attachment, would show less favorable long-term depression outcomes than secure attachment.

2. Methods

2.1. Patients and procedure

The sample of the current long-term study ($n = 103$) was part of the sample ($n = 145$) of our mentioned study on associations between attachment and the short-term course of depression (Conradi and de Jonge, 2009). The sample participated in a randomized controlled trial (INSTEL) which aimed at the enhancement of treatment of depression in primary care (for details see Conradi et al., 2007). Included were primary care patients meeting criteria for a current or recent Major Depressive Episode (MDE) treated by the General Practitioner (GP). Patients were randomized to one of four treatments: (1) Care as Usual (CAU) by the GP; (2) the low intensity Psycho-education Prevention program (PEP); (3) one Psychiatric Consultation session followed by PEP (PC + PEP); or (4) 10 sessions Cognitive Behavioral Therapy followed by PEP (CBT + PEP). Patients were followed-up for three years.

The present study reports data on the subsequent seven-year follow-

up after INSTEL, i.e. the Long-Term INSTEL (LTI) follow-up. Assessments took place between October 2010 and June 2012 (for details see Conradi et al., 2017). After consent from their GP was obtained, patients were contacted by mail and telephone. Upon reading the information brochure they signed the informed consent. Of these, $n = 103$ had completed at the closure of INSTEL the attachment measure which was used to predict the depression course during the subsequent LTI follow-up of 7.31 years ($SD = 0.43$). The LTI study was approved by the Medical Ethics Committee of the University Medical Center Groningen (METc2009.319). A 15 euro coupon was offered to patients in return for participation.

2.2. Study measures

2.2.1. Baseline measures

Adult attachment in romantic relationships in past and present was measured with the *Experiences in Close Relationships* questionnaire (ECR; Conradi et al., 2006) at the start of the seven-year follow-up. The ECR comprises 36 items and measures the two fundamental attachment dimensions. *Anxiety about rejection and abandonment* (Cronbach's $\alpha = 0.86$), i.e. expectancies of being perceived by partners as unacceptable or unlovable, taps into hyperactivation strategies. A sample item is ‘I worry about being abandoned’. *Avoidance of intimacy* ($\alpha = 0.88$), i.e. expectancies of inaccessibility and unresponsiveness of partners to one's attachment needs, taps into deactivation strategies. One sample item is ‘I try to avoid getting too close to my partner’. Items are rated on a 7-point Likert response scale ranging from 1 (disagree strongly) to 7 (agree strongly), with a middle position 4 (neutral/mixed). We also analyzed attachment styles, i.e. Secure, Preoccupied, Dismissing-avoidant and Fearful-avoidant, for two reasons. First, in clinical practice, use of styles prevails over dimensions, and we aimed for clinical utility. Second, we aimed to maximize comparability of the current long-term results with our earlier reported short-term follow-up (Conradi and de Jonge, 2009) by using the categorization of patients made in the 2009 study. This categorization was based on a two-step cluster analyses described by Brennan et al. (1998) using the Avoidance and Anxiety scores. Clustering in a general population sample (Conradi et al., 2006) resulted in Fisher linear discriminant functions that yielded population-based norms with which we categorized patients from the current sample into one of four styles, i.e. Secure (low Anxiety and Avoidance), Preoccupied (high Anxiety and low Avoidance), Dismissing-avoidant (low Anxiety and high Avoidance), and Fearful-avoidant (high Anxiety and Avoidance). Favorable psychometric properties in multiple samples have been observed in support of validity and reliability of the Dutch ECR (Conradi et al., 2006). All patients reported having had one or more present or past romantic relationship(s), and were therefore deemed able to meaningfully complete the questionnaire.

To obtain more insight in the extent of the (interpersonal) problems of the attachment groups, we concurrently administered several additional questionnaires. *Loneliness* was measured with the 11 items of the *Loneliness scale* (De Jong Gierveld and Kamphuis, 1985). Cronbach's α was 0.89 in the current study. *Relational dysfunctioning* was assessed with the *Marital Functioning* subscale of the *Maudsley Marital Questionnaire* (MMQ; Arrindell et al., 1983) consisting of 10 items ($\alpha = 0.92$). Finally, *locus of control* was measured with the *Mastery scale* (Pearlin and Schooler, 1978) consisting of 7 items ($\alpha = 0.82$).

2.2.2. Outcome instruments

The same outcome measures were elected as in our previous short-term course study (Conradi and de Jonge, 2009), as the current study was developed as its long-term follow-up. Outcomes regarding the seven-year follow-up were retrospectively assessed, seven years after administration of the ECR, by means of two face-to-face interviews at the patient's home. First, the depression section of the lifetime *Composite International Diagnostic Interview* (CIDI Auto 2.1; WHO, 1997; Ter Smitten et al., 1998), a widely used structured interview for the

assessment of MDEs with strong psychometric support (Wittchen, 1994), was administered. Additional questions were added that assessed month and year of onset, as well as remission of the CIDI identified MDEs.

Second, the *Longitudinal Interval Follow-up Evaluation* (LIFE), a life-chart based interview, was administered in a version comparable to the one used by Yiend and colleagues (Yiend et al., 2009). With the LIFE month-by-month severity of depression was assessed. Good to excellent ICCs were found with the LIFE (Keller et al., 1987). Moreover, research has shown that validity of retrospective long-term recall is enhanced when supported by adequate anchoring of major events (Wells and Horwood, 2004). In the current study patients were provided with three types of anchor points. First, approximately one hour was spent by interviewers and patients to identify personal and historical events that were used as aids to retrieve severity of depressive complaints. Anchoring events used were: relationships (start, crises and breakup), education and work (exams and change of jobs of self and others), moves, birth, diseases and death (self and others), finance, birthdays and anniversaries, holidays and journeys, other life events (e.g. trauma), and historical events. Second, onset and remission (year and month) of the CIDI identified MDEs were added as anchor points to the LIFE chart. Third, scores on the *Beck Depression Inventory* (BDI) seven years earlier (the time point from where the LIFE interview started) and the BDI score at the moment the LIFE interview was administered, were used as two additional anchor points to support memory. To this end both BDI scores were converted to the 5-point response scale that was used in the LIFE interview to estimate the severity of depressive complaints, namely: 1 'not at all' (BDI 0 - <5), 2 'little' (BDI 5 - <10), 3 'pretty much' (BDI 10 - <19), 4 'much' (BDI 19 - <30), and 5 'very much' (BDI \geq 30). The monthly LIFE severity scores were averaged into three-monthly scores to improve reliability. The percentage of missing LIFE chart data was 0.5%. The CIDI and the LIFE were administered by experienced research assistants who were trained extensively and supervised each 3 months by the project leader (HJC).

2.2.3. Outcome measures

Relapse/recurrence rate, i.e. the percentage of patients who experienced, according to DSM-IV criteria, one or more MDE(s) during the seven-year follow-up (CIDI).

Number of MDEs during the seven-year follow-up period (CIDI).

Proportion depression diagnosis-free time, defined as the time that patients did not meet DSM-IV criteria for MDE during the seven-year follow-up (CIDI).

Proportion symptom-free time, defined as the time during the seven-year follow-up that patients did not suffer from depressive symptoms (LIFE).

Course of severity of depression on a three-monthly basis during the seven-year follow-up (LIFE).

At the end of follow-up, *severity of depression* was also measured with the BDI (Beck et al., 1961) consisting of 21 items ($\alpha = 0.89$ in the present sample).

Finally, *duration of antidepressant medication usage* was assessed for the seven-year follow-up with the same questions as used during INSTEL (see Conradi et al., 2007).

2.3. Power analyses for pairwise comparisons

We calculated the post-hoc power for the pairwise comparisons between the attachment groups for the seven-year course of severity of depression as measured with the LIFE with G*Power 3.1.9.2. G*Power requires the total sample size of the two comparison groups and as the attachment group sizes were of unequal size, we calculated the harmonic mean of the two pairwise compared groups and multiplied this by 2 to compute the total sample size. Based on a Repeated Measurement ANOVA with 30 measurements (90 months aggregated per 3 months) with an inter-correlation of 0.8, G*Power showed that

the power to detect an effect size of Cohen's $d = 0.30$ in the comparison between the Secure and Preoccupied/Dismissing-avoidant groups was 0.68 and 0.73, respectively. The power to detect an effect size of Cohen's $d = 0.50$ between the Secure and the Fearful-avoidant attachment groups (which was assumed to be more vulnerable than the Preoccupied and Dismissing-avoidant groups) was 0.94. This means that the Secure vs. Preoccupied/Dismissing-avoidant comparisons were slightly underpowered. Comparisons regarding the outcomes based on the categorical variables (e.g. proportion depression diagnosis-free time) and categorical outcomes (e.g. relapse/recurrence rates) were supposedly not adequately powered.

2.4. Statistical analyses

We first tested whether attachment style was confounded with treatment condition. We therefore examined if the attachment categories (i.e., Secure, Preoccupied, Dismissing-avoidant and Fearful-avoidant) were randomly distributed over the treatment groups (CAU, PEP, PC + PEP and CBT + PEP). Next, we compared the four attachment categories on socio-demographic and clinical variables at the start of the seven-year follow-up. Chi-square tests were applied to categorical measures, and one-way ANOVAs to the continuous measures.

Outcomes were described by computing percentages for categorical variables, medians and IQRs for continuous variables that were not normally distributed, and estimated marginal means and SEs for severity of depression (LIFE). Associations between attachment, antidepressant use and depression outcomes during the seven-year follow-up were analyzed in two ways. First, we computed bivariate Spearman's rho correlations between both attachment *dimensions* Avoidance and Anxiety and antidepressants use and depression outcomes. Second, we used Chi-square tests to compare the four attachment styles in case of categorical outcomes, and Mann-Whitney non-parametric tests in case of continuous, not normally distributed outcomes.

To test for differences between attachment groups during follow-up on severity of depression (LIFE), we applied linear mixed models on the repeated measurements. This analysis makes optimal use of the available data taking into account the clustering of assessments within subjects (Bryk and Raudenbush, 1987). Attachment group was applied as fixed factor, AR1 as covariance structure, and a random intercept was added to the model.

Guided by our hypotheses, we were interested in the post-hoc pairwise comparisons between the secure group on the one hand, and the insecure groups on the other. Significance levels were set at $p < 0.05$ (two-tailed) for all analyses. Finally, effect sizes (Cohen's d) were computed, using estimated marginal means, and SDs of the raw scores.

3. Results

3.1. Patient characteristics at the start of the seven-year follow-up

First, we tested for baseline equivalence in terms of the distribution of attachment categories over treatment conditions. The distribution of the four attachment styles over the four treatment groups did not systematically differ from chance ($X^2 = 7.83$; $df = 9$; $p = 0.55$).

Socio-demographic and clinical characteristics at baseline are displayed in Table 1. The patients were on average 44.9 years ($SD = 10.9$) old (i.e. about 52 years old at the end of the seven-year follow-up), and 72.8% were female. Fearful-avoidantly attached reported significantly less often being involved a relationship than the other groups (53.8% vs. 77.8–92.7%). Almost all patients (86.3%) met DSM-IV criteria for lifetime recurrent major depression. The Fearful-avoidant group reported significantly higher on Loneliness than the other attachment groups, and together with the Dismissing-avoidant and Preoccupied groups more Marital dysfunction and less Mastery than the Securely attached.

Table 1
Demographic and clinical characteristics at the start of the seven-year follow-up.

	Total n = 103	Secure n = 46	Preoccupied n = 20	Dismissing-avoidant n = 23	Fearful- avoidant n = 14	Intergroup differences
Age in years (SD)	44.91 (10.93)	43.93 (10.33)	45.65 (11.79)	45.81 (9.80)	45.50 (13.13)	$F = 0.200; p = 0.90$
Female	72.8%	65.2%	90.0%	73.9%	71.4%	$X^2 = 4.353; p = 0.23$
Educational attainment ¹						$X^2 = 7.333; p = 0.29$
Low	31.0%	27.3%	20.0%	36.4%	50.0%	
Medium	35.0%	40.9%	45.0%	18.2%	28.6%	
High	34.0%	31.8%	35.0%	45.5%	21.4%	
Current relationship	83.9%	92.7%	77.8%	90.5%	53.8%	$X^2 = 12.188; p = 0.007$
Duration current relationship in years (SD)	18.71 (12.45)	16.81 (10.54)	18.52 (12.94)	22.69 (14.53)	17.96 (15.39)	$F = 0.933; p = 0.43$
Primary occupation						$X^2 = 18.765; p = 0.09$
Employed	61.8%	80.0%	45.0%	47.8%	50.0%	
Homemaker	15.7%	11.1%	15.0%	26.1%	14.3%	
Retired	2.0%	2.2%	–	–	7.1%	
unemployed/incapacitated	16.7%	6.7%	30.0%	21.7%	21.4%	
Other	3.9%	7.1%	10.0%	4.3%	7.1%	
Lifetime Recurrent depressed (DSM-IV)	86.3%	82.6%	95.0%	82.6%	92.3%	$X^2 = 2.469; p = 0.48$
Last month comorbidity (CID)						
Panic disorder	2.0%	0.0%	5.3%	4.5%	0.0%	$X^2 = 2.914; p = 0.41$
Agoraphobia	0.0%	0.0%	0.0%	0.0%	0.0%	–
Social phobia	7.1%	9.1%	10.5%	4.5%	0.0%	$X^2 = 1.897; p = 0.59$
Loneliness	13.10 (7.29)	10.81 (6.86)a	13.15 (6.18)a	14.00 (6.44)a	19.07 (8.30)b	$F = 5.385; p = 0.002$
Marital dysfunctioning (MMQ)	14.81 (12.54)	8.21 (8.86)a	19.75 (14.33)b	20.07 (11.23)b	26.63 (10.81)b	$F = 11.419; p < 0.001$
Mastery	24.17 (4.89)	26.39 (4.48)a	23.00 (5.54)b	22.61 (4.24)b	21.14 (3.03)b	$F = 7.224; p < 0.001$

a,b,c,d Different subscripts within rows indicate significant mean differences at $p \leq 0.05$.
1 At the end of LTI.

3.2. Depression outcomes during seven-year follow-up

The attachment dimensions showed significant and highly similar correlations with multiple depression outcomes (Table 2). Both attachment avoidance and anxiety were significant and negatively related to proportion of symptom-free time, and positively to mean severity during the seven-year follow-up (LIFE) and the single measurement (BDI) seven years after the attachment assessment. No significant associations were found with number of MDEs developed during the seven-year follow-up, nor with the proportion of time patients were depression-diagnosis free or the duration of antidepressants usage.

Relapse/recurrence rate (Table 3) in general was 54.9%, with the Fearful-avoidant group showing a significantly higher rate (76.9%) than the Secure group (45.7%). Median number of relapses/recurrences for all patients was 1.00, and did not significantly differ between styles. Median proportion of depression diagnosis-free time was 0.98 (7.16 years), with the Fearful-avoidant group reporting a significantly smaller proportion (0.91, or 6.65 years) than the Secure group (1.00, or 7.31 years). Median proportion of symptom-free time was 0.45 (3.29 years), with the Fearful-avoidant 0.04 (0.29 years), Preoccupied 0.15 (1.10 years) and Dismissing-avoidant 0.30 (2.19 years) groups reporting significantly lower symptom-free time than the Secure group 0.68 (4.97 years).

Mean severity of depression during the seven-year follow-up (LIFE) was 2.00 on the 5-point scale used (Table 3 and Fig. 1), with the Fearful-avoidant (2.19) and Dismissing-avoidant (2.14) groups

reporting significantly higher severity than the Secure group (1.65) did, corresponding with effect sizes of $d = 0.53$ and $d = 0.48$, respectively. When adjusted for mean severity in the month preceding the attachment assessment, the difference between the Fearful-avoidant (2.16) and Secure (1.77) groups remained significant, equivalent to an effect size of $d = 0.38$.

Severity of depression measured by the single BDI measurement seven years after the attachment assessment supported findings obtained by the LIFE. Overall, a mean of 8.26 was found, with the Fearful-avoidant (15.54), and Dismissing-avoidant (9.52) groups showing significantly higher BDI total scores than the Secure group (6.04), equivalent to effect sizes of $d = 1.29$ and $d = 0.54$, respectively. After adjustment for mean severity in the month preceding the attachment assessment, the difference between the Secure (6.73) and Fearful-avoidant groups (15.29) remained significant, with a large effect-size ($d = 1.16$). Finally, almost 50% of all patients used antidepressants during the seven-year follow-up, which did not significantly diverge across attachment groups.

4. Discussion

The present study is one of few prospective studies to examine the predictive potency of both attachment dimensions and styles in patients suffering from recurrent depression, and, to our knowledge, the only study with a seven-year follow-up. Findings largely confirmed our expectation that attachment would predict the long-term course of

Table 2
Spearman's Rho correlations of attachment avoidance and anxiety with depression outcomes during the seven-year follow-up.

	Number of relapses/ recurrences n = 103	Proportion of depression diagnosis- free time n = 103	Proportion of symptom-free time n = 103	Mean severity of depression (LIFE) during seven year n = 103	Mean severity of depression (BDI) seven year after attachment assessment n = 103	Proportion of time antidepressants use n = 103
Avoidance	0.11	–0.12	–0.30**	0.25**	0.35**	0.05
Anxiety	0.15	–0.14	–0.30**	0.23*	0.35**	–0.02

* $p < .05$.
** $p < .001$.

Table 3
Depression outcomes during the seven-year follow-up.

	Total n = 103	Secure n = 46	Preoccupied n = 20	Dismissing-avoidant n = 23	Fearful-avoidant n = 14	Secure vs. Preoccupied	Secure vs. Dismissing- avoidant	Secure vs. Fearful-avoidant
Relapse/recurrence rate	54.9%	45.7%	65.0%	52.2%	76.9%	$\chi^2; p$	0.26; 0.61	3.98; 0.046
Median (IQR) number relapses/ recurrences	1.00 (0.00–2.00)	0.00 (0.00–2.00)	1.00 (0.00–2.00)	1.00 (0.00–1.00)	1.00 (0.75–3.00)	$\chi^2; p$	–0.69; 0.49	<u>–1.78; 0.08</u>
Median (IQR) proportion depression diagnosis-free time	0.98 (0.84–1.00)	1.00 (0.86–1.00)	0.94 (0.63–1.00)	0.98 (0.82–1.00)	0.91 (0.69–0.99)	Z; p	–0.83; 0.41	–2.00; 0.045
Median (IQR) proportion of symptom-free time	0.45 (0.00–0.83)	0.68 (0.33–0.94)	0.15 (0.01–0.52)	0.30 (0.00–0.77)	0.04 (0.00–0.57)	Z; p	–2.44; 0.015	–2.78; 0.006
Mean (SE) severity of depression (LIFE)	2.00 (0.08)	1.65 (0.11)	2.01 (0.16)	2.14 (0.15)	2.19 (0.20)	Mean $\Delta; p^1$	–0.49; 0.01	–0.54; 0.017
Adjusted mean (SE) severity of depression (LIFE)	1.96 (0.07)	1.77 (0.10)	1.97 (0.15)	1.95 (0.14)	2.16 (0.17)	Mean $\Delta; p^1$	–0.18; 0.30	–0.39; 0.05
Mean (SD) severity of depression (BDI)	8.25 (7.42)	6.04 (6.24)	7.00 (5.19)	9.52 (6.71)	15.54 (10.33)	Mean $\Delta; p^2$	–3.48; 0.05	–9.49; <0.001
Adjusted mean (SE) severity of depression (BDI)	9.53 (0.77)	6.73 (1.07)	7.38 (1.62)	8.71 (1.47)	15.29 (1.89)	Mean $\Delta; p^2$	–1.98; 0.28	–8.56; <0.001
AD % users	49.5%	50.0%	30.0%	52.2%	71.4%	$\chi^2; p$	0.03; 0.87	1.99; 0.16
Median (IQR) proportion of time AD use	0.00 (0.00–0.83)	0.01 (0.00–0.59)	0.00 (0.00–0.33)	0.01 (0.00–1.00)	0.84 (0.00–0.97)	Z; p	–0.23; 0.83	<u>–1.67; 0.09</u>

¹Tests of the estimated mean differences of severity of depression are based on post-hoc pairwise comparisons from the linear mixed model.

²Tests of the mean differences of severity of depression are based on post-hoc pairwise comparisons.

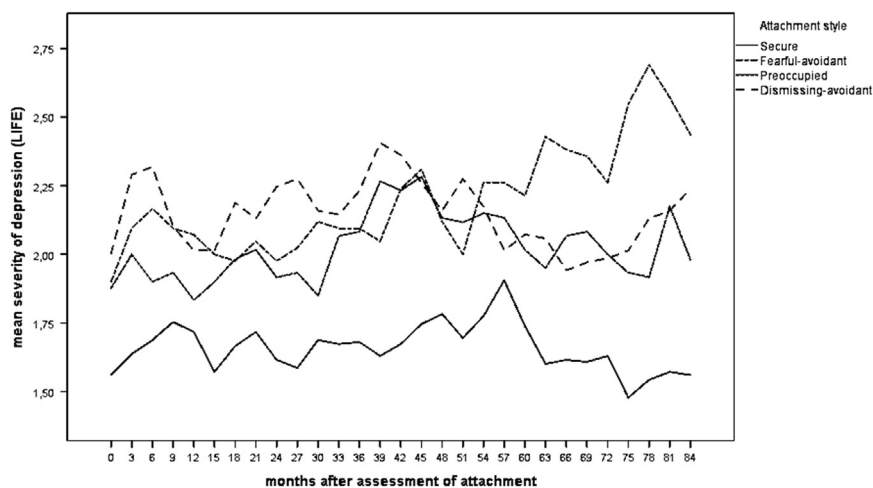


Fig. 1. Severity of depression (LIFE) during the seven-year follow-up.

depression. More specifically, the attachment *dimensions* avoidance and anxiety showed significant and comparable associations with unfavorable depression outcomes. Compared to the secure attachment style, the preoccupied and dismissing-avoidant styles showed an unfavorable depression course, and, as expected, the fearful-avoidant group had the worst long-term course of depression.

4.1. Depression outcomes

The findings of the present study provide empirical support for the assumption of the long-term impact of attachment and confirm our earlier short-term findings (Conradi and de Jonge, 2009). The influence of insecure attachment was even seven years after its assessment still detectable. Contrary to the overview offered by Mikulincer and Shaver (2016), the impact of the attachment *dimension* anxiety was not greater than that of avoidance, but of similar magnitude. A possible explanation is that almost all patients in our sample were recurrently depressed, i.e. supposedly more severely affected by the disorder than respondents in many of the previously reviewed studies. Avoidant attachment has been related to suppression of emotions, which leaves distress unresolved, and accordingly may be especially troublesome in the long-term.

Comparison with the secure attachment style revealed that the preoccupied group reported a lower proportion of symptom-free time (1.10 vs. 4.97 years), while the dismissing-avoidant group reported a lower proportion of symptom-free time (2.20 vs. 4.97 years) and higher severity of depression (LIFE $d = 0.48$; BDI $d = 0.54$). However, as predicted, comparison of the fearful-avoidant group with the secure group revealed an even more marked pattern of worse depression outcomes, i.e. a higher relapse/recurrence rate (76.9% vs. 45.7%), lower proportions of depression diagnosis-free time (6.65 years vs. 7.31 years) and symptom-free time (0.29 vs. 4.97 years), and a higher mean severity of depression (LIFE $d = 0.53$; BDI $d = 1.29$).

These findings suggest that secure attachment buffers depression-related complaints to a certain degree. The functional emotion regulation of the securely attached, better problem solving capacities (c.f. the higher mastery score), enhanced by functional support seeking when needed, may help them to prevent depression-related complaints to occur or worsen. Insecure attachment and associated dysfunctional emotion regulation styles, i.e. hyperactivation as in preoccupied attachment or deactivation as in dismissing-avoidant attachment, are associated with less favorable depression outcomes. Hyperactivation of emotions directly magnifies depressive complaints, while associated clinging behavior might deter potential support givers resulting in less (adequate) support. Deactivation or suppression of emotions may end in a rebound of depressive complaints, especially in the long run, while avoidance behavior of potential caregivers results in less support

(Fraley and Shaver, 1998; Collins and Feeney, 2000).

Further, in line with earlier findings (Mikulincer and Shaver, 2016), it became clear that the fearful-avoidant group had the worst outcomes of all attachment groups. Consistent use of one insecure attachment strategy, i.e. hyperactivation (proximity seeking and clinging to others) or deactivation (proximity avoidance and repelling of others), is less worse than their alternation. Simpson and Rholes (2002) describe the fearful-avoidantly attached as enacting 'both strategies in a haphazard, confused and chaotic manner', resulting in 'an incoherent blend of contradictory abortive approach-avoidance behaviors'. This makes fearful-avoidantly attached less predictable for others (c.f. borderline personality disorder), which might further enhance relational problems. The latter was reflected by the finding that their baseline score on loneliness was the highest among the attachment groups, and their relational dysfunction was more severe than reported by the securely attached group. Presumably, fearful-avoidantly attached mobilize the lowest degree of support from others. In combination with their less favorable baseline score on mastery compared with the secure group, this suggests they experience severe coping difficulties that contribute to depression-related complaints.

The more severe depression outcomes of the fearful-avoidant group compared to, in particular, the secure group, were not reflected in a significant higher duration of antidepressants usage. One might speculate that fearful-avoidant individuals experience particular discomfort asking for medical attention due to their approach-avoidance tendencies.

4.2. Limitations

Several limitations should be taken into consideration when interpreting the findings of this study. First, the sample size was limited, resulting in some underpowered comparisons, especially concerning categorical variables. This makes it difficult to draw clear conclusions about the absence of differences (type II errors). Second, although we used the previously successfully applied CIDI and LIFE chart interviews, these interviews were administered at one time point from which patients retrospectively looked back more than seven years in time. It also warrants mentioning that over such a long follow-up period, it is possible that a person's attachment will change as a result of salient life events like different experiences with new relationships (Fraley and Brumbaugh, 2004). This may in turn affect the course of depression. Vice versa, it may be that depression impacts relationship functioning, and subsequently attachment quality. Third, one may question whether the attachment measurement was not confounded by depressive complaints. Therefore, we adjusted our analyses concerning depression severity (LIFE and BDI) by inclusion of severity of depression the month before completion of the attachment measurement as covariate.

Although this adjustment yielded attenuated differences, differences between the secure and fearful-avoidant groups remained significant. This finding is in line with previous research showing that attachment ratings are not affected by experimentally induced depressive mood (Haaga et al., 2002; Roisman et al., 2006).

4.3. Conclusion and clinical implications

We found that insecure attachment status predicted the course of depression outcomes even at a seven-year follow-up. This observation supports the importance of attachment as a conceptual framework for understanding the unfavorable long-term course of depression. Although treatment with antidepressants (Cipriani et al., 2009; Geddes et al., 2003) and individual psychotherapy like CBT (Cuijpers et al., 2013) positively affect the course of depression, results remain sub-optimal. For example, residual symptoms are often evident after individual treatment, and such residual symptoms have been shown to be an important risk factor for relapse (Conradi et al., 2012). A systemic perspective may add to the understanding why people relapse after individual therapy. Although our data do not speak to this directly, one may conjecture that once patients return to their systemic context of primary relationship, family, friends and colleagues, they may slip into old, enduring dysfunctional interaction patterns (Lebow et al., 2012) that are molded by their insecure attachment. Psychotherapy that (additionally) pays attention to the systemic problems people experience may help them not only to function better on their own, but also to relate better with others. Together, this may further reduce unfavorable long-term depression outcomes.

Conflict of interest

None.

Contributors

All authors contributed to and have approved the final manuscript.

H.J. Conradi designed the study, wrote the protocol, undertook the statistical analyses and wrote the first draft.

Jan. H. Kamphuis co-wrote the first draft.

P. de Jonge co-designed the study and co-wrote the first draft.

Financial support

The LTI study was financially supported by the Netherlands Foundation for Mental Health (NFMH) (2009 6396), and the original INSTEL trial by grants from the Dutch Organization for Scientific Research (NWO), the Medical Sciences Program and Chronic Diseases Program, Research Foundations of the Health Insurance Company 'Het Groene Land', the Regional Health Insurance Company (RZG), the Netherlands Foundation for Mental Health (NFMH), and the University Hospital Groningen to J. Ormel and H.J. Conradi.

Acknowledgements

None.

References

Arrindell, W.A., Boelens, W., Lambert, H., 1983. On the psychometric properties of the Maudsley Marital Questionnaire (MMQ): evaluation of self-ratings in distressed and 'normal' volunteer couples based on the Dutch version. *Pers. Individ. Differ.* 4, 293–306.

Bartholomew, K., Horowitz, L.M., 1991. Attachment styles among young adults: a test of a four-category model. *J. Pers. Soc. Psychol.* 61, 226–244.

Beck, A.T., Ward, C.H., Mendelson, M., Mock, J., Erbaugh, J., 1961. An inventory for measuring depression. *Arch. Gen. Psychiatry* 4, 561–571.

Bifulco, A., Moran, P.M., Ball, C., Bernazzani, O., 2002. Adult attachment style. I: its

relationship to clinical depression. *Soc. Psychiatry Psychiatr. Epidemiol.* 37 (2), 50–59.

Bowlby, J., 1973. *Attachment and Loss, Vol. 2: Separation*. Basic Books, New York.

Bowlby, J., 1980. *Attachment and Loss, Vol. 3: Loss, Sadness and Depression*. Basic Books, New York.

Brennan, K.A., Clark, C.L., Shaver, Ph.R., 1998. Self-report measurement of adult attachment: an integrative overview. In: Simpson, J.A., Rholes, W.S. (Eds.), *Attachment Theory and Close Relationships*. The Guilford Press, NY, pp. 46–76.

Bryk, A.S., Raudenbush, S.W., 1987. Application of hierarchical linear models to assessing change. *Psychol. Bull.* 101, 147–158.

Cipriani, A., Furukawa, T.A., Salanti, G., Geddes, J.R., Higgins, J.P.T., Churchill, R., Watanabe, N., Nakagawa, A., Omori, I.M., McGuire, H., Tansella, M., Barbui, C., 2009. Comparative efficacy and acceptability of 12 new-generation antidepressants: a multiple-treatments meta-analysis. *Lancet* 373, 746–758.

Collins, N.L., Feeney, B.C., 2000. A safe haven: an attachment theory perspective on support seeking and caregiving in intimate relationships. *J. Pers. Soc. Psychol.* 78, 1053–1073.

Conradi, H.J., Gerlmsa, C., Van Duijn, M., De Jonge, P., 2006. Internal and external validity of the experiences in close relationships questionnaire in an American and two Dutch samples. *Eur. J. Psychiatry* 20, 258–269.

Conradi, H.J., de Jonge, P., Kluiters, H., Smit, A., van der Meer, K., Jenner, J.A., van Os, T.W.D.P., Emmelkamp, P.M.G., Ormel, J., 2007. Enhanced treatment for depression in primary care: long-term outcomes of a psychoeducational program alone and enriched with psychiatric consultation or cognitive behavioral therapy. *Psychol. Med.* 37 (6), 849–862.

Conradi, H.J., de Jonge, P., 2009. Recurrent depression and the role of adult attachment: a prospective and a retrospective study. *J. Affect. Disord.* 116, 93–99.

Conradi, H.J., Ormel, J., De Jonge, P., 2012. Symptom profiles of DSM-IV defined remission, recovery, relapse and recurrence of depression: the role of the core symptoms. *Depress. Anxiety* 29, 638–645.

Conradi, H.J., Bos, E.H., Kamphuis, J.H., de Jonge, P., 2017. The ten-year course of depression in primary care and long-term effects of psychoeducation, psychiatric consultation and cognitive behavioral therapy. *J. Affect. Disord.* 174–182.

Cuijpers, P., Berking, M., Andersson, G., Quigley, L., Kleiboer, A., Dobson, K.S., 2013. A meta-analysis of cognitive-behavioural therapy for adult depression, alone and in comparison with other treatments. *Can. J. Psychiatry* 58, 376–385.

De Jong Gierveld, J., Kamphuis, F.H., 1985. The development of a Rasch-type loneliness scale. *Appl. Psychol. Meas.* 9, 289–299.

Eaton, W.W., Shao, H., Nestadt, G., Lee, H.B., Bienvenu, O.J., Zandi, P., 2008. Population-based study of first onset and chronicity in major depressive disorder. *Arch. Gen. Psychiatry* 65, 513–520.

ESEMEd/MHEDEA 2000 Investigators, 2004. Prevalence of mental disorders in Europe: results from the European Study of the Epidemiology of Mental Disorders (ESEMEd) project. *Acta Psychiatr. Scand. Suppl.* 109, 21–27.

Fraley, R.C., Shaver, P.R., 1998. Airport separations: a naturalistic study of adult attachment dynamics in separating couples. *J. Pers. Soc. Psychol.* 75, 1198–1212.

Fraley, R.C., Brumbaugh, C.C., 2004. A dynamical systems approach to understanding stability and change in attachment security. In: Rholes, W.S., Simpson, J.A. (Eds.), *Adult Attachment: Theory, Research, and Clinical Implications*. Guilford Press, New York, pp. 86–132.

Grunebaum, M.F., Galfalvy, H.C., Mortenson, L.Y., Burke, A.K., Oquendo, M.A., Mann, J.J., 2010. Attachment and social adjustment: relationships to suicide attempt and major depressive episode in a prospective study. *J. Affect. Disord.* 123, 123–130.

Haaga, D.A.F., Yarmus, M., Hubbard, S., Brody, C., Solomon, A., Kirk, L., Chamberlain, J., 2002. Mood dependency of self-rated attachment style. *Cogn. Ther. Res.* 26, 57–71.

Hammen, C.L., 2006. Interpersonal vulnerability and depression in young women. In: Joiner, T.E., Brown, J.S., Kistner, J.S. (Eds.), *The Interpersonal, Cognitive and Social Nature of Depression*. Erlbaum, Mahwah, NJ, pp. 69–82.

Keller, M.B., Lavori, P.W., Friedman, B., Nielsen, E., Endicott, J., McDonald-Scott, P., Andreasen, N.C., 1987. The Longitudinal Interval Follow-up Evaluation. A comprehensive method for assessing outcome in prospective longitudinal studies. *Arch. Gen. Psychiatry* 44, 540–548.

Lebow, J.L., Chambers, A.L., Christensen, A., Johnson, S.M., 2012. Research on the treatment of couple distress. *J. Marital. Fam. Ther.* 38, 145–168.

Mikulincer, M., Shaver, Ph.R., 2016. *Attachment in Adulthood: Structure, Dynamics and Change, 2nd Edition*. The Guilford Press, New York, NY.

Pearlin, L.I., Schooler, C., 1978. The structure of coping. *J. Health Soc. Behav.* 19, 2–21.

Roisman, G.I., Fortuna, K., Holland, A., 2006. An experimental manipulation of retrospectively defined earned and continuous attachment security. *Child Dev.* 77 (1), 59–71.

Simon, G.E., 2000. Long-term prognosis of depression in primary care. *Bull. World Health Organ.* 78, 439–445.

Simpson, J.A., Rholes, W.S., 2002. Fearful-avoidance, disorganization, and multiple working models: some directions for future theory and research. *Attach. Hum. Dev.* 4, 223–229.

Solomon, D.A., Keller, M.B., Leon, A.C., Mueller, T.I., Lavori, P.W., Shea, M.T., Coryell, W., Warshaw, M., Turvey, C., Maser, J.D., Endicott, J., 2000. Multiple recurrences of major depressive disorder. *Am. J. Psychiatry* 157, 229–233.

Ter Smitten, M.H., Smeets, R.M.W., van Den Brink, W., 1998. *Composite International Diagnostic Interview (CIDI). Basis Version 2.1. Lifetime Manual*. WHO, Amsterdam.

Wells, J.E., Horwood, L.J., 2004. How accurate is recall of key symptoms of depression? A comparison of recall and longitudinal reports. *Psychol. Med.* 34, 1001–1011.

World Health Organization, 1997. *The Composite International Diagnostic Interview (CIDI)*. World Health Organization, Geneva.

Wittchen, H.U., 1994. Reliability and validity studies of the WHO-Composite International Diagnostic Interview: a critical review. *J. Psychiatr. Res.* 28, 57–84.

Yiend, J., Paykel, E., Merritt, R., Lester, K., Doll, H., Burns, T., 2009. Long term outcome of primary care depression. *J. Affect. Disord.* 118, 79–86.