The Effects of a Life Review Intervention on Depressive Symptoms and Mental Health in a Randomized Controlled Trial

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Abstract

Purpose: The purpose of this study is to assess the impact of a life review intervention on mental health, growth motivation, ego integrity and narrative foreclosure on depressive symptoms, as the primary outcome of this form of indicated prevention.

Design and Methods: A randomized controlled trial was conducted with one group following the experimental life-review intervention (n=58), one group following a minimal intervention (n=58) and a third group was put on a waiting list (n=58) and started the intervention three months later. Baseline- and effect measures were conducted.

Results: The experimental life-review intervention is effective in reducing depressive symptoms, but it's not more effective than the minimal intervention. Also, neither intervention group is effective in enhancing mental health. Reduction in depressive symptoms is mediated through feelings of regret, insight in the ego and being narratively foreclosed to the past. Improvement in mental health is mediated through insight in the ego and being narratively foreclosed to the future. The effects of the intervention were not moderated through growth motivation.

Implications: The findings from this study show that improvement of mental health can be achieved through raising ego-integrity in life review interventions. It also shows the adverse effects of narrative foreclosure and further supports the notion that mental health is more than merely the absence of psychosocial problems (such as depression).

Key Words: Life Review, Depression, Narrative Foreclosure, Ego-Integrity, Preventive intervention, Clinical trial methods.

The Effects of a Life Review Intervention on Depressive Symptoms and Mental Health in a Randomized Controlled Trial

Many studies have shown that depression is a common disorder that has a poor prognosis when left untreated (Kennedy, Kelman & Thomas., 1991; Beekman, Copeland & Prince, 1999; Beekman et al., 2002a; Beekman et al., 2002b). In the Netherlands alone, two percent of the adult population suffer from a severe depression, while fifteen percent show depressive symptoms that are clinically relevant (Beekman et al., 1995). Depression is associated with declines in wellbeing and levels of daily functioning (Wells, Stewart & Hays, 1989; Gurland, 1992) and a higher risk of functional impairment, mortality and use of health services (Beekman et al., 2002b; Beekman et al., 1995).

Current treatment options, such as pharmacotherapy and psychotherapy generally show favorable results in treating late life depression (Schulberg, Katon, Simon & Rush, 1998). However, diagnosis and treatment in primary care remain poor (Beekman et al., 2002a; Kirmayer, Robbins, Dowrkind & Yaffe, 1993). Late life depression is increasingly recognized as a disorder in which significant public health gains may be possible (Beekman et al., 2002b).

Elevated symptoms of depression are a significant risk factor for developing a depressive disorder (Young, Mufson & Davies, 2006; Pine, Cohen, Cohen & Brook, 1999). These symptoms have shown to be persistent over time and are associated with considerable psychosocial impairment (Young et al., 2006; Lewinsohn, Solomon, Seeley & Zeiss, 2000).

In recognition of the risk and impairment associated with depressive symptoms, there has been a call for an increase in indicated preventive intervention research (GGD, 2009; Young et al., 2006): There is a need for accessible preventive interventions for adults in the second half of their lives that reduce depressive symptoms in order to reduce the risk of developing a depressive disorder (GGD, 2009).

One kind of preventive intervention focuses on reminiscence (Cappeliez & O'Rourke, 2002). Reminiscence may have a positive effect by helping people come to terms with unresolved conflicts of their past in the face of approaching vulnerability (Butler, 1963). Reminiscence could be defined as the

act of recollecting memories of one's self in the past (Bluck & Levine, 1998). In reminiscence interventions, storying later life, and sometimes re-storying later life, is the central activity (Bohlmeijer & Westerhof, 2010a).

While Life review as a mode of therapy has been popular since its introduction in the early 1960's, it is gaining popularity as an intervention for reducing depressive symptoms (Steunenberg & Bohlmeijer, 2011). This trend is supported by meta-analyses showing it to be potentially effective reducing depressive symptoms in older adults (Bohlmeijer, Smit & Cuijpers, 2003; Bohlmeijer, Roemer, Cuijpers & Smit, 2007). International studies have shown that reminiscence interventions improve overall satisfaction with life (Willemse, Depla & Bohlmeijer, 2009) and are effective in reducing depressive symptoms, similar to results yielded from traditional cognitive therapy (Bohlmeijer et al., 2003).

At present, reminiscence interventions are used for many different target groups and in many different forms: it can be applied as self-help or in groups, with or without the help from a therapist (Bohlmeijer & Westerhof, 2010a). In the Netherlands alone over 60% of mental health care institutes use some form of reminiscence intervention (Bohlmeijer & Westerhof, 2010a). Recently a new reminiscence intervention *"De Verhalen die we Leven" ["The Stories we Live"]* was developed, in cooperation with 14 mental health care institutes (Bohlmeijer, 2007). Results show that this intervention is effective in reducing both anxiety and depressive symptoms, while at the same time improving mental health (Korte, Bohlmeijer, Cappaliez, Smit & Westerhof, in press).

Based on this group intervention, the self-help intervention (supported by a coach via email contact) "Op Verhaal Komen" is being developed. The present study aims to assess the effectiveness of the self-help intervention and aims to identify factors that may mediate the effect of the intervention. Two mediating factors were included in the study: Narrative Foreclosure and Ego-Integrity, both will be described below. In order to study the influence of growth motivation on the effectiveness of the interventions, growth motivation is assessed. This factor will also be described below.

Narrative Foreclosure

Essential for the ability to reminiscence is the ability to "read one's life" (Randall & McKim, 2008). Reading our lives, i.e., examining our lives and rewriting our past are prerequisites for finding new meaning in life and the ability to adjust to change, loss and difficult developmental tasks that adults in the second halves of their lives face (Erikson, 1968). Yet, some people believe that one's life story has ended, that the end of their story is known and that no other (alternative) ending is realistic. Necessarily, this also shapes the story of one's past: *"there is little left to do but play out the pre-scripted ending"* (Erikson, 1968). Freeman (2000) described these beliefs as being "narratively foreclosed". Narrative foreclosure is characterized by an exclusive focus on existing commitments and identity structures and by a lack of openness towards change (Bohlmeijer & Westerhof, 2010a; Freeman, 2000). A study by Bohlmeijer and colleagues (in press) concluded that narrative foreclosure may have significant consequences for mental health in later life and outlined the need for further research on the subject. The present study aims the assess the mediating effects of narrative foreclosure on the effects of the life-review intervention.

Ego-Integrity

The concept of ego-integrity has been the subject of many studies, relating it to depression and mental health (Westerhof et al., in press). Ego-integrity can be defined as "a sense of wholeness, integration, and a deep sense of acceptance of the life as it has been lived" (Sneed et al., 2006).

Empirical studies found that reminiscing about the past is positively related to ego integrity (Boylin et al., 1976; Taft & Nehrke, 1990). However, it is not the frequency with which people think back about their past, but rather the acceptance of the past, that is related to ego-integrity (Santor & Zuroff, 1994). A recent study by Westerhof and colleagues (in press) showed that greater ego-integrity is related to greater mental health and higher levels of emotional and psychological well-being. While it is known that life review interventions promote mental health, so far only one study showed that life review can promote ego-integrity (Bennet & Maas, 1988). As such, further research on improvement of mental health by raising ego-integrity in life review interventions are needed (Westerhof, Bohlmeijer & McAdams, in press). The present study aims to assess the mediating effects of ego-integrity on the effectiveness of the life-review intervention.

Growth Motivation

The concept of growth motivation is defined as a motivation to foster personal growth (Bauer et al., in press), wherein personal growth is defined as "*the process in which the individual construes and tries to shape the development of his or her own life* (Bauer & McAdams, 2004a; Bauer & McAdams, 2004b; Bauer & McAdams, 2009)". A recent study by Bauer and colleagues (in press) identified two facets of growth motivation: experiental- and cognitive- growth motivation. The first deals with the feeling of having increasingly more meaningful content in life, whereas the second deals with organizational strucures of meaning in life, that become increasingly more complex and integrative (Bauer et al., in press). The first deals with the conceptual process of meaning-making (McLean, 1995), whereas the second deals with meaningfulness (Baumeister, 1991). Growth motivation influences the degree to which people claim to be motivated to foster eudaimonic well-being (Bauer et al., in press) and as such, may influence the effectiveness of therapy: Successful psychosocial rehabilitation depends on people's motivation for recovery, growth and development (Lloyd, 2007). While growth motivation does not receive much attention in recent studies, further research on the subject is needed (Bauer et al., in press). The present study aims to assess the moderating effects of growth motivation on the effects of the life-review intervention.

Relevance

The present study aims to assess the effectiveness of the self-help intervention in reducing depressive symptoms and improving mental health in patients suffering from mild to moderate depressive symptoms. Furthermore, it aims to assess whether narrative foreclosure or ego-integrity can explain or mediate the effects of the intervention on the primary outcome measures, that is, the alleviation of depressive symptoms and the improvement of mental health. Also, the moderating effects of growth motivation will be assessed.

Practice shows that older adults with depressive complaints are hard to reach . Often these people don't seek help for their complaints, in fear of the therapist or because of the stigma that surrounds mental health problems (Jorm & Griffiths, 2006). The self-help intervention "Op Verhaal Komen" focuses on improving mental health, rather than reducing psychological complaints (Bohlmeijer, 2007). This likely improves accessibility of the intervention. As such, "Op Verhaal Komen" could reach a greater audience and might be beneficial for improving mental health, for a larger group of people.

Lastly, findings from this study might contribute further knowledge on the subject of preventive self-help interventions by assessing its effectiveness in a randomized sample of people of 40 years and older. Moreover, results from the new intervention are compared to results of a minimal intervention and an attempt is made to identify two mediating factors and one moderating factor, or factors that may influence the effectiveness of either intervention. Results from the present study may contribute to a new form of preventive intervention in treating depressive symptoms and further understanding of the effectiveness of reminiscence for this specific group of people.

Research Questions

The present study aims to evaluate the effectiveness of the self-help intervention *"Op Verhaal Komen"* as a preventive intervention for the treatment depressive symptoms. More specifically, the following research questions will be addressed:

1. How effective is the intervention *"Op Verhaal Komen"* in reducing depressive symptoms?

2. How effective is the intervention *"Op Verhaal Komen"* in improving mental health?

3. How do narrative foreclosure and ego-integrity mediate the effects of the intervention on reducing depressive symptoms?

4. How do these factors mediate the effects of the intervention on improving mental health?

5. Is growth motivation a predictive value for determining the effect of the intervention?

Methods

Design

The study design is a randomized controlled three-group study with repeated measures. Using a randomization table, participants were assigned into one of the three conditions; (1) Experimental Condition, participants using the self-help intervention, (2) Minimal Intervention Condition, participants using the expressive writing intervention or (3) Control Condition, participants on a waiting-list. The intervention spans 10 weeks and up to four hours each week. Baseline (t0) and follow-up measures directly (t1) after the intervention are conducted.

Participants
Participants were recruited through local and national newspapers and magazines targeted at an older audience (age 40 or older). The study was described as a research project on a new self-help intervention that could help people in the second half of their lives deal with depressive complaints.

Inclusion criteria were: being able and willing to participate in the treatment program and experiencing mild to moderate depressive symptoms (CES-D score greater than 10) during, at least, the past two month. Participants were excluded when they: (1) meet criteria for an ongoing severe psychiatric disorder, such as depression or anxiety disorder, by either the Hospital Anxiety and Depression Scale (HADS) standards (Snaith & Zigmond, 1994) or the Mini International Neuropsychiatric Interview (M.I.N.I.) standards (Sheehan et al., 1998); (2) have a moderate or severe risk of committing suicide; (3) experience no depressive symptoms (CES-D score lower than 10); (4) have started a pharmacological treatment for an ongoing psychiatric disorder; (5) started any therapy for their depressive symptoms; (6) do not have enough time to complete the self-help intervention; (7) do not control the Dutch language properly or (8) when they did not have an email-address.

In total 400 people signed up for the study, while 274 people agreed to the informed consent. 100 of the 274 applicants were excluded because of the inclusion criteria. Leaving 174 participants to this study, all ranging from 40 to 82 years of age and all experiencing depressive symptoms.

The intervention group
The intervention group followed the self-help intervention *"Op Verhaal Komen"* under supervision of a counselor. The intervention consists of three parts, or eight modules total (Bohlmeijer & Westerhof, 2010). The first part of the intervention is an introduction to reminiscence. The second part of the intervention consists of five modules. These modules are aimed at writing about and reflecting on specific periods in the participant's life. Each of these modules can be completed within a week. The first module focuses on early life and family, the second on adolescence and early adulthood; the third on work, jobs and care; the fourth on love and friendships. The fifth module focuses on a theme of choice. (Bohlmeijer & Westerhof, 2010) The third part of the intervention, consisting of modules six to eight, focuses on life as a whole. Module six aims at personal goals set in life; seven on coping with losses and setting new goals and finally module eight focuses on life as a story, wherein the participant attempts to find the "thread" in their lives (Bohlmeijer & Westerhof, 2010). These last three modules can be completed in two weeks each.

The self-help intervention is supervised by a counselor through weekly email contact. Whenever a module is completed, the counselor seeks contact with the participant in order to review progress and give feedback when feasible.

The minimal intervention group
The minimal intervention group is based on the method "Expressive Writing" by Pennebaker (1997). This intervention asks participants to write about negative emotions they have experienced over the course of each day. The rationale behind this method is that it helps give meaning to stressful events (Boals & Klein, 2005; Pennebaker, 1997) and fosters acceptance of these events (Pennebaker, 1993). This intervention is supervised by a counselor through weekly email contact: The counselor reviews progress and gives feedback when feasible. A study by Pennebaker and Chung (2007) showed moderate positive effects of this intervention in improving psychological quality of life and reduction in depressive symptoms. The inclusion of this intervention in the present study allows the effects of *"Op Verhaal Komen"* to be compared to that of the minimal intervention group.

The control group
The subjects assigned to the control group cannot start the intervention at the start of the study. They are free to seek any help for their depressive complaints. After three months, they are invited to start the self-help intervention under supervision of a counselor.

The study
There is complete data for 48 subjects in the intervention group, 47 in the minimal intervention group and 54 in the control group at both T0 and T1. Thus 149 subjects filled out the questionnaires two times. Analyses were conducted on group, age, gender as well as education, subjective health and psychological complaints at baseline to check for significant differences in group compilation. This analysis showed no significant differences for the included variables amongst the three groups.

The basic demographic variables of the subjects included in the study (at T0) are represented in Table 1.

Table 1. Sample Characteristics at Baseline for Control- and Intervention Groups (N=174)

	Control group	Minimal Intervention	Experimental Intervention
Age[1]			
M(SD)	56.6(9.1)	56.9(7.9)	57.3(10.3)
Range	40-82	40-76	40-79
Gender (%)[2]			
Male	22.4	22.4	24.1
Female	77.6	77.6	75.9
Education[2]			
M(SD)	5.8(1.3)	5.6(1.6)	6.0(1.5)
Range	2-8	2-8	3-8
Career Status (%)			
Job	62.1	56.9	48.2
Jobless	3.4	12.1	8.6
Jobless by choice	3.4	5.2	5.2
Retired	20.7	13.8	22.4
Invalid	10.3	12.1	15.5

[1]No significant differences (ANOVA with p >.05)
[2] No significant differences (Kruskal Wallis Test with p>.05)

Instruments

The Mini International Neuropsychiatric Interview (M.I.N.I.) (Sheehan et al., 1998) was used at baseline measurements only, to check for depression and suicidal thoughts. The Hospital Anxiety and Depression Scale (HADS) (Snaith & Zigmond, 1994) was used to check for severe anxiety disorders. Data collected from these two instruments were used to include or exclude applicants into the study.

The Center for Epidemiologic Studies Depression Scale (CES-D) (Radloff, 1997; Bouma, Ranchor, Sanderman & Sonderen, 1995) is used at t0 and t1 to assess depressive symptoms and is used as the primary outcome scale. The CES-D is scored on a four-point Likert- scale and consists of 20 items in total. In the present study, Cronbach's alpha for the CES-D equals 0.78.

The Mental Health Continuum Short Form (MHC-SF) is used to measure mental health by self-report using 14 items. Items are scored on a six-point Likert-scale. The reliability of the total scale as well as the correlation between the three subscales (subjective, psychological and social well-being) make the MHC-SF a valid instrument (Lamers, Westerhof, Bohlmeijer, Klooster & Keyes, 2011). In the present study, reliability analysis suggest that the MHC-SF is a reliable instrument (Cronbach's alpha for the total scale equals 0.87)

The mediating factor "narrative foreclosure" will be measured at t0 and t1 using the Narrative Foreclosure Scale (Bohlmeijer & Westerhof, 2010a). The Narrative Foreclosure scale consists of two separate scales, reflecting narrative foreclosure to the future and to the past. The total scale consists of 10 items, rated on a four-point Likert-scale. Cronbach's alpha for the subscales equals 0.73 and 0.71, for the future and past subscales respectively. This suggests that the instrument used, is reliable.

The Ego-Integrity Scale (Janis, Canak, Machado, Green & McAdams, in press) is used to assess the mediating effects of ego-integrity. The Ego-Integrity scale consists of two scales: Regret and Insight and spans 15 items, rated on a six-point Likert-scale. In the following text "feelings of regret" reflect the score on the "Regret" scale and "insight" reflects the score on the "Insight" scale. Cronbach's alpha for the two scales equal 0.63 and 0.66, respectively.

The possible predictive value of growth motivation is measured at t0 and t1, using the "Growth Motivation Index (GMI)" (Bauer et al., in press). The GMI consists of three scales, measuring extrinsic, experiential and cognitive growth motivation. The total scale spans 20 items, which are rated on a seven-point Likert-scale. In the present study, Cronbach's alpha for the three subscales equal 0.80, 0.83 and 0.51, for the experiental, cognitive and extrinsic growth motivation scales respectively. This suggests the instrument is reliable.

Analyses

SPSS 18.0 is used to analyze the data. First, exploratory analyses were conducted using analyses of variance, t-tests and post-hoc tests using the Bonferroni test. These analyses grant further insight how the variables relate to one another and may give a first impression of the effects of the intervention. To answer the first research question, a regression analysis using dummies (referencing the experimental intervention group) is conducted, controlling for the effects of depressive symptoms at baseline. The second research question is answered in a similar manner.

Before starting analyses in an attempt to answer the last part of the research questions, regarding the mediating factors, a single regression analysis was conducted for the mediating factors on the group factor and controlling for the effects of its baseline value. This analysis was conducted to gain insight in which group improved what (mediating) factor the most. Next, a correlation analysis on the mediating factors was conducted, to analyze how the four mediating factors related to one another.

To answer the third and fourth research question, a three step hierarchical regression analysis was conducted with respectively depressive symptoms and mental health at post-treatment (T1) as the outcome variable. Baseline depression score or mental health (T0) and the group variables as dummies ("Waiting List" and "Minimal Intervention" vs. "Intervention") in the first step. In the second and third step, the mediating variables at T0 and the change in these mediating variables (T1-T0) were added.

Finally, to answer the fifth research question, several regression analyses were conducted on both depressive symptoms and mental health post-treatment to assess the moderating effects of growth motivation.

Results

Exploratory Analyses

Exploratory analyses suggest that at both T0 and T1, there are no differences amongst the three groups in the amount of depressive symptoms ($F(2,172)=0.402$, $p>0.1$ & $F(2,146=2.08$, $p>0.05$). However, when analyzing the reduction in depressive symptoms across the three groups, there are significant differences ($F(2,146)=2.92$, $p<0.05$) in the reduction in depressive symptoms. Post hoc-tests suggest that, when compared to the waiting list condition, both intervention conditions showed a greater reduction in depressive symptoms (mean difference between the waiting list condition and the minimal intervention =3.6 ($p<0.05$) and mean difference between the waiting list condition and the exp. intervention group =3.1 ($p<0.1$). When comparing the effectiveness of the two intervention groups in reducing depressive symptoms, no differences were found ($T(93) =-0.31$, $p>0.1$).

Analyses on mental health at both T0 and T1 suggest that there are no differences amongst the three groups ($F(2,172)=0.89$, $p>0.1$ & $F(2,146)= 0.775$, $p>0.1$). Another analysis of variance was conducted on the improvement of mental health (T1-T0) across the three groups. This analysis suggests that there is no difference in the effectiveness of the three groups in improving mental health ($F(2,146)=1.78$, $p>0.05$). However, all three groups showed a slight improvement in mental health: When analyzing the difference between mental health at T1 and T0, mean differences for the three groups are 0.23(SD=0.63), 0.19(SD=0.74) and 0.44(SD=0.70) for the waiting list, minimal intervention and experimental conditions respectively.

Reduction in depressive symptoms

Table 4 shows that controlling for the autoregressive effect of the depressive symptoms before the intervention, the intervention groups showed less depressive symptoms after the intervention than the waiting list condition (Beta=0.144, p=<0.05). This analysis suggests that the intervention condition is more effective in reducing depressive symptoms than the waiting list condition, but no more effective than the minimal intervention condition (Beta =-0.052, $p>0.1$). The amount of depressive symptoms at post-treatment is largely explained by the amount of depressive symptoms at baseline (T0) (Beta=0.557, $p<0.001$). This first model explains up to 34% of variance in depressive symptoms at post-treatment.

Improvement in mental health

Table 6 shows that, controlling for the autoregressive effect of experienced mental health before the intervention, the intervention groups show no greater (significant) improvement in mental health after the intervention than the waiting list condition (Beta= -0.092, $p>0.1$). Experienced mental health at post-treatment (T1) is largely explained by experienced mental health at baseline (T0) (Beta=0.670, $p<0.001$). This model explains up to 44% of variance in mental health at post-treatment.

Mediating Factors

Before analyzing the mediating effects of narrative foreclosure and ego-integrity on the effect of the intervention in either reducing depressive symptoms or improving mental health, a regression analysis for each mediating variable at T1 was conducted, with group and its baseline value as independent variables. The findings from this analysis are summarized in Table 2.

Table 2. Regression Analysis of Group and Mediating Factors at Baseline, on Mediating Factors at T1.

	Factor (T1)			
	Ego-Integrity (Insight)	Ego-Integrity (Regret)	Narrative Foreclosure (Past)	Narrative Foreclosure (Future)
Waiting List	-0.194 ***	0.031	0.067	0.103
Reference: Intervention				
Minimal Intervention	-0.137 *	-0.080	-0.016	0.051
Reference: Intervention				
Baseline [Factor] (T0)	0.787 ***	0.731 ***	0.807 ***	0.689 ***
Explained variance (adjusted R2)	0.600	0.537	0.643	0.467

*Significance: *p<0.05; ** p<0.01; ***p<0.001*

The regression analysis shows that there is no significant difference in narrative foreclosure between the different groups. Participants with a strong narrative foreclosure at baseline, still had a strong narrative foreclosure at post-treatment (T1), regardless of the group they were assigned to. The analysis further suggests that participants following either intervention condition showed significantly greater ego-integrity due to increased insight than the other two conditions. Furthermore, participants in the experimental condition showed a greater improvement in ego-integrity (due to increased insight) than participants in the minimal intervention. 60% of variance in ego-integrity (insight) is explained by its baseline value and the group participants were assigned to alone. The other factor of ego-integrity (regret) showed no significant relation to the group factor. Participants with increased, or more feelings of regret, showed no significant improvement, regardless of the group they were assigned to.

Next, a correlation analysis was conducted to analyze how the mediating factors at T1 related to one another. The results from this analysis are summarized in Table 3.

Table 3. Correlation Analysis of Mediating Variables

	Pearson Correlation (two-tailed)		
	2.	3.	4.
1. Ego-Integrity (Insight)	-0.223 **	-0.314 ***	-0.340 ***
2. Ego-Integrity (Regret)	-	0.759 ***	0.069
3. Narrative Foreclosure (Past)	-	-	0.180 *
4. Narrative Foreclosure (Future)	-	-	-

*Significance: *p<0.05; ** p<0.01; ***p<0.001*

Ego-Integrity (insight) is significantly and negatively related to the other mediating factors. Participants with greater insight in the self, were less narratively foreclosed to both future and past and experienced less feelings of regret, impairing ego-integrity. Participants with more feelings of regret, were significantly more narratively foreclosed about the past. This correlation is greater than .75, which may imply that both variables measure roughly the same phenomena (p<0.001). In further analyses, narrative foreclosure (past) and ego-integrity (regret) will be analyzed separately. In regression analyses the two variables will not be included as a dependent variables together.

Mediating effects of narrative foreclosure and ego-integrity on depressive symptoms

Table 4 shows that, controlling for the autoregressive effect of the depressive symptoms before the intervention, both intervention groups showed less depressive symptoms after the intervention than the waiting list condition. Also, the experimental intervention group is not more effective than the minimal intervention group in reducing depressive symptoms (Model 1).

Table 4. Regression Analysis of Depressive Symptoms after the Intervention, on Conditions and Baseline Depressive Symptoms.

	Depressive Symptoms (T1)
	Model 1 Beta
Waiting List	0.144 *
Reference: Intervention	
Minimal Intervention	-0.052
Reference: Intervention	
Baseline depressive symptoms	0.557 ***
Explained variance (adjusted R2)	0.338

*Significance: *p<0.05; ** p<0.01; ***p<0.001*

Furthermore, Table 5 shows that both the increased insight in the ego (fostering ego-integrity) and decreased feelings of regret show significant relations to the reduction in depressive symptoms. Those who experienced reduction in ego-integrity due to increased feelings of regret showed a weaker decrease in depressive symptoms (Model 3). Those who experienced more improvement in ego-integrity due to increased insight, showed a stronger decrease in depressive symptoms (Model 3).

Table 5. Regression Analysis of Depressive Symptoms after the Intervention, on Conditions, Mediating Factors and Baseline Depressive Symptoms.

	Depressive Symptoms (T1)		
	Model2a Beta	Model 2b Beta	Model 3 Beta
Waiting List Reference: Intervention	0.075	0.130	0.071
Minimal Intervention Reference: Intervention	-0.077	-0.049	-0.077
Baseline depressive symptoms	0.499 ***	0.502 ***	0.503 ***
Baseline ego-integrity (insight): T0	-0.089	-	-0.050
Baseline ego-integrity (regret): T0	0.187 **	-	0.190 **
Improvement in ego-integrity (insight): T1-T0	-0.206 **	-	-0.176 *
Improvement in ego-integrity (regret): T1-T0	0.187 **	-	0.183 **
Baseline narrative foreclosure (past): T0	-	0.193 **	-
Baseline narrative foreclosure (future): T0	-	0.098	0.096
Improvement in narrative foreclosure (past): T1-T0	-	0.130 *	-
Improvement in narrative foreclosure (future): T1-T0	-	0.144 *	0.113
Explained variance (adjusted R2)	0.414	0.382	0.425

*Significance: *p<0.05; ** p<0.01; ***p<0.001*

Moreover, the effect of the groups (control vs. intervention) is reduced by 50% and is no longer significant. The effect of the minimal intervention group (minimal intervention vs. intervention) is increased by 48%, when controlling for the effects of the mediating factors.

Mediating effects of narrative foreclosure and ego-integrity on mental health.

Table 6 shows that, controlling for the autoregressive effect of experienced mental health before the intervention, the intervention groups show no greater (significant) improvement in mental health after the intervention than the waiting list condition. Table 7 however, shows that both increased insight in the ego (fostering ego-integrity) and increased narrative foreclosure about the future show significant relations to the grouping variable. Participants in the experimental intervention group showed a greater improvement in ego integrity and were less narratively foreclosed to the future, mediating the effect of the intervention in improving mental health.

Table 6. Regression Analysis of Mental Health after the Intervention, on Conditions and Baseline Mental Health.

	Mental Health (T1)
	Model 4 Beta
Waiting List Reference: Intervention	-0.092
Minimal Intervention Reference: Intervention	-0.096
Baseline mental health	0.670 ***
Explained variance (adjusted R2)	0.443

*Significance: *p<0.05; ** p<0.01; ***p<0.001*

Table 7 shows the mediating effects of narrative foreclosure and ego-integrity on the effect of the intervention on improving mental health.

Table 7. Regression Analysis of Mental Health after the Intervention, on Conditions, Mediating Factors and Baseline Mental Health.

	Mental Health (T1)		
	Model 5a Beta	Model 5b Beta	Model 6 Beta
Waiting List Reference: Intervention	-0.016	-0.055	-0.005
Minimal Intervention Reference: Intervention	-0.062	-0.087	-0.057
Baseline mental health: T0	0.596 ***	0.608 ***	0.586 ***
Baseline ego-integrity (insight): T0	0.184 **	-	0.109
Baseline ego-integrity (regret): T0	-0.014	-	-0.027
Improvement in ego-integrity (insight): T1-T0	0.284 ***	-	0.221 ***
Improvement in ego-integrity (regret): T1-T0	-0.141 *	-	-0.134 *
Baseline narrative foreclosure (past): T0	-	-0.067	-
Baseline narrative foreclosure (future): T0	-	-0.225 ***	-0.194 **
Improvement in narrative foreclosure (past): T1-T0	-	-0.131 *	-
Improvement in narrative foreclosure (future): T1-T0	-	-0.290 ***	-0.252 ***
Explained variance (adjusted R2)	0.534	0.543	0.584

*Significance: *p<0.05; ** p<0.01; ***p<0.001*

Those who experienced improvement in ego-integrity due to increased insight showed a stronger increase in mental health. Those who experienced a higher level of narrative foreclosure about the future before the intervention (T0) and those who experienced an increase in this narrative foreclosure showed a stronger decrease in mental health. Also, those who were more foreclosed about the past at baseline, experienced significantly lower mental health, both at baseline and follow-up.

Growth motivation as a predictor for the effectiveness of the experimental intervention

Table 8 shows the effect of growth motivation on the effectiveness of the intervention group in reducing depressive symptoms and enhancing mental health.

Table 8. Regression Analysis of Growth Motivation before the Intervention, on Conditions and Baseline Depressive Symptoms or Mental Health.

	Depressive Symp. (T1)	Mental Health (T1)
	Model 7 Beta	Model 8 Beta
Waiting List	0.147 **	-0.089
Reference: Intervention		
Minimal Intervention	-0.059	-0.089
Reference: Intervention		
Baseline [factor]	0.566 ***	0.623 ***
Cognitive growth motivation	0.188	0.049
Extrinsic growth motivation	0.003	0.057
Experiential growth motivation	-0.189	0.012
Explained variance (adjusted R2)	0.384	0.451

*Significance: *p<0.05; ** p<0.01; ***p<0.001*

This regression analysis shows that baseline growth motivation holds no predictive value for the effectiveness of the intervention groups or the control group in reducing depressive symptoms (model 7) or improving mental health (model 8). Further regression analysis showed that, per group, neither cognitive, extrinsic or experiential growth motivation have a predictive value for the reduction in depressive symptoms or improvement in mental health.

Conclusion

The first research question states: " *How effective is the intervention "Op Verhaal Komen" in reducing depressive symptoms?"*. Findings suggest that both the experimental and minimal intervention were effective in reducing depressive symptoms, when compared to a waiting list condition. However, the experimental intervention is no more effective than the minimal intervention group. When comparing the three groups in the improvement of mental health, findings suggest that there is no difference in the three groups. This answers the second research question: How effective is the intervention *"Op Verhaal Komen"* in improving mental health?

The third research question states: *"How do narrative foreclosure and ego-integrity mediate the effects of the intervention on reducing depressive symptoms?".* Findings suggest that both (increased) feelings of regret and being narratively foreclosed to the future are positively related to depression: Participants who were more narratively foreclosed to the future and participants who experienced more feelings of regret showed significantly more depressive symptoms at both baseline and post-treatment. Also, participants who experienced improvement in insight in the self showed a significantly greater reduction in depressive symptoms. These findings answer the third research question.

Findings from the present study suggest that factors that mediate the effectiveness of the intervention condition in reducing depressive symptoms, differ from factors that mediate its effectiveness in improving mental health: participants who were more narratively foreclosed to the future or showed a weaker decrease in narrative foreclosure to the future, showed significantly lower mental health. Also, participants who experienced improvement in insight in the self, experienced greater mental health and participants who experienced more feelings of regret, showed significantly lower mental health. These findings answer the fourth research question, which states: *"How do these factors [narrative foreclosure and ego-integrity] mediate the effects of the intervention on improving mental health?"*.

The fifth research question states: *"Is growth motivation a predictive value for determining the effect of the intervention?".* Findings suggest that neither cognitive, extrinsic or experiential growth motivation hold a predictive value for reduction in depressive symptoms or improvement in mental health. In the present study, growth motivation is no factor that moderates the effectiveness of the intervention.

Discussion

Despite interest in the relations of ego-integrity in life review therapy and mental health, the available evidence is still scarce. A study by Westerhof and colleagues (2009) stated that further research on the improvement of mental health through raising ego-integrity in life-review therapy is needed. Also, empirical evidence of the (negative) effects of narrative foreclosure on mental health are scarce (Bohlmeijer et al., in press). The present study adds to this knowledge by examining the effects of a new life-review intervention in reducing depressive symptoms and improving mental health. In the following text, the research findings will be discussed. Also, implications and limitations of the study will be addressed.

Findings from the present study suggest that the life-review intervention *"Op Verhaal Komen"* is effective in reducing depressive symptoms (when compared to a waiting list), but not more effective than the minimal intervention included in the study.

It could be argued that merely the act of reflecting on past events is beneficial in reducing depressive symptoms. Another possibility is that, while *"Op Verhaal Komen"* differs from the minimal intervention in its setup, it's also quite similar: When following either intervention, the participant is supported by a coach via email contact. It could be hypothized that merely the weekly contact with this coach and the belief that someone is "helping and supporting" is beneficial in reducing depressive symptoms. These two hypotheses might explain the fact that *"Op Verhaal Komen"* is no more effective than the minimal intervention. Further studies will have to confirm these hypotheses. Findings also suggest that neither intervention condition is effective in enhancing mental health, when compared to a waiting list condition. It remains unclear how there is no difference in improvement in mental health: It's possible that the waiting list condition sought help (as they were free to) or that their sense of mental health improved as the seasons changed (the experiment started in the winter and concluded in the summer).

The present study found that feelings of regret (highly correlated to being foreclosed to one's past narrative) and improvement in insight in the ego (fostering ego-integrity) both mediate the effectiveness of the intervention in reducing depressive symptoms. It could be hypothized that being foreclosed to one's narrative is related to depression and that *"a reopening of one's story, is indeed a factor that mediates positive outcomes of life-review therapy* (Bohlmeijer et al., in press)".

Tornstam (1996) stated that life-review can lead to a re-opening of one's narrative. However, this finding still has to be substantiated. While findings from the present study support this hypothesis, further research on the subject is needed.

Factors that mediate the effects of the intervention in improving mental health, differ from factors that mediate its effectiveness in reducing depressive symptoms: Both being narratively foreclosed to the future and improvement in ego-integrity are mediating factors. Participants who showed a greater improvement in ego-integrity (through both increased insight in the self and reduction in feelings of regret) during the intervention showed a greater improvement in mental health. These findings suggest that ego-integrity is related to greater mental health and higher levels of emotional and psychological well-being. Thus confirming the findings of a recent study by Westerhof and colleagues (in press). Furthermore, the results from the present study suggest that improvement of mental health can be achieved through raising ego-integrity in life review interventions. It also shows that participants following the experimental intervention showed a greater improvement in ego-integrity. These findings support findings by Westerhof and colleagues (in press) and contributes to the knowledge about the effectiveness of life-review interventions.

"Op Verhaal Komen" was the only condition effective in improving insight in the ego (fostering ego-integrity). As such, it is surprising that the experimental intervention is not more effective than the waiting list condition in improving mental health, seeing the strong (positive) mediating effects this factor has. It could be hypothized that there are many more factors that influence the effectiveness of the intervention and that, while the experimental intervention is most effective in enhancing ego-integrity (through raising insight), it could be less effective in enhancing or reducing other factors. Further research will need to investigate this finding further. Personal meaning, for example, could mediate the effectiveness of the intervention (Westerhof et al., 2009), yet this factor was not included in the present study. It can be concluded that *"Op Verhaal Komen"* is most effective in improving ego-integrity, outlining an important difference between the experimental and the minimal intervention.

The present study found no moderating effect of growth motivation on the effectiveness of the intervention in either reducing depressive symptoms, or enhancing mental health. It could be hypothized that all participants were motivated for growth, as they all signed up for the study themselves: They were already motivated towards change, which might explain that it's not a moderating variable. Further studies will need to examine this finding further.

Findings from the present study outline an interesting difference between depression and mental health. The effectiveness of the life-review intervention in reducing depressive symptoms is mediated through feelings of regret and its effectiveness in enhancing mental health appears to be mediated through one's future narrative and insight in the ego. It could be hypothized that the act of *"looking forward"* or *"openness to the future"* is related to stronger mental health and that the belief that one's past can't be changed and *"can't be rewritten"* is related to depression. This finding supports the notion that mental health is more than

merely the absence of psychological complaints (such as depression).

Limitations

The present study has a number of limitations. First off, no follow-up measures were conducted, so no statements can be made about the effectiveness of the intervention on the long term. Also, because narrative foreclosure (past) and feelings of regret showed a high correlation in correlation analysis, these two factors were not analyzed together in further regression analyses. The present study hypothized that these two factors measure roughly the same statistic, but it's possible that this is not true. Further studies may need to investigate this finding further. Despite its limitations, the present study contributed to further knowledge on life-review interventions and how their effectiveness may be mediated through narrative foreclosure and ego-integrity.

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