

When Reminiscence is Harmful: The Relationship Between Self-Negative Reminiscence Functions, Need Satisfaction, and Depressive Symptoms Among Elderly People from Cameroon, the Czech Republic, and Germany

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Abstract Reminiscence has various functions, not all of which are beneficial for well-being. In particular, self-negative reminiscence functions—boredom reduction, bitterness revival, and intimacy maintenance—have been shown to be associated with reduced well-being. The present paper examines the link between self-negative reminiscence functions and depression in three cultural contexts. We hypothesize that both variables are indirectly linked via satisfaction of basic psychological needs: Self-negative reminiscing is associated with an impairment of need satisfaction which in turn relates to enhanced depressive symptoms. This hypothesis is tested in elderlies from Cameroon, the Czech Republic, and Germany. A total of 637 elderly participants reported on self-negative reminiscing, need satisfaction, and depressive symptoms. Analyses indicate that for boredom reduction and bitterness revival an indirect effect on depression via decreased need satisfaction can be established in all cultural contexts. For intimacy maintenance, a different picture emerges in that in the Czech and the German sample, there was a direct effect on depression but not an indirect one via need satisfaction. Yet, among Cameroonian participants an indirect effect was found, demonstrating that intimacy maintenance was related to decreased depression via enhanced need satisfaction. These results suggest that reminiscence functions may have partly universal, partly culture-specific effects on well-being.

Keywords Reminiscence · Self-negative functions · Depression · Need satisfaction · Old age · Culture

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1 Introduction

Adjustment to the changes and challenges of aging mirrors in individuals' physical and mental well-being. Research has recently started to examine processes involved in, rather than describing criteria for individuals' successful aging. One of the processes that have come into focus is reminiscence, i.e., the recall of personally experienced episodes from one's past (Webster et al. 2010). Albeit reminiscence is considered to be a significant process to regulate individuals' development throughout the life-span, it gains prominence in old age when people become increasingly aware of the finitude of their existence. In the present paper, the relationship between self-negative functions of reminiscence (Cappeliez and O'Rourke 2006) and depressive symptoms is examined. It is assumed that self-negative functions are detrimental for well-being as these functions are associated with a thwarting of basic psychological needs. Whereas plenty research has been done on the development and differences in use and fit of reminiscence functions and autobiographical remembering in diverse cultural contexts (see e.g., the 2015 special issue in *Memory*), to date, little evidence is available on functions of reminiscence and their psychological consequences among elderly in different cultural contexts. Thus, given repeated claims to put culture on the agenda of psychology (e.g., Arnett 2008), the present study examines the relationship between reminiscence, need satisfaction, and depressive symptoms among elderly people from Cameroon, the Czech Republic, and Germany. In doing so, the present study does not focus on cultural (mean) differences in reminiscence functions but rather examines relationships between psychological constructs across cultural samples.

1.1 Reminiscence (Functions) and Successful Aging

Life review was highlighted as a significant process for psychological adjustment from early on in theoretical approaches towards development in old age. Neugarten (1968) suggested that aging is associated with an increased sense of interiority and self-reflection and Erikson (1959) argued that during the last developmental stage life review is a decisive "natural" process to achieve ego-integrity and finally to accept the finite nature of the own existence. Also, Butler (1963) whose seminal paper marks the start of empirical research on reminiscence emphasized the affirmative function of reminiscence in old age as it provides a means to cope with both unresolved conflicts from the past and the inevitability of death.

Thus, life review was long perceived as a per se adaptive and beneficial process for the aging individual (although Erikson 1959, postulates that a life review can also result in despair and hopelessness). But studies on the effects of reminiscence or life review, respectively, on successful aging as reflected in physical and mental health produced inconsistent results. Coleman (1986) reasoned that early studies treated reminiscence as a unitary phenomenon and failed to acknowledge that reminiscence follows diverse purposes and thus, results in different outcomes. Consequently, scholars have developed categorizations of reminiscence on the basis of the different functions it may serve and have examined which of these functions were advantageous or disadvantageous for successful aging (Webster 2003; Wong and Watt 1991).

Probably, the most widely used and validated taxonomies of memory functions are the TALE (Thinking About Life Experiences; Bluck and Alea 2011) and the Reminiscence Function Scale (RFS; Webster 1993). Research suggests that there is conceptual overlap and coalescence between autobiographical memory and reminiscence functions (Alea and

Wang 2015; Harris et al. 2013). The TALE proposes three broad memory functions: self-continuity, i.e., to understand how one has remained the same or changed over time; social bonding, i.e., to create and maintain social relationships; and guidance/direction, i.e., to use the past to guide present and future thought and behavior (see Bluck et al. 2005).

The taxonomy developed by Webster (1993, 2003) proposes eight reminiscence functions: Identity (using the past to clarify our sense of who we are); Problem solving (using the past as a coping technique to apply to current problems); Teach/inform (sharing personal experiences and life lessons to others); Conversation (informal use of memories to connect or reconnect to others); Boredom reduction (using memories to escape a lack of stimulation); Bitterness revival (ruminating on memories about unjust treatments and lost opportunities, providing the justification to maintain negative thoughts and emotions); Death preparation (using memories to deal with one's mortality); Intimacy maintenance (holding onto memories of close social relationships who are no longer part of our lives).

Webster (2003) argues that the eight functions could be arranged in a circumplex model defined by two dimensions: self versus social and reactive/loss-oriented versus proactive/growth-oriented. Four quadrants include two reminiscence functions each: identity and problem solving (self-proactive/growth); teach/inform and conversation (social-proactive/growth); boredom reduction and bitterness revival (self-reactive/loss); death preparation and intimacy maintenance (social-reactive/loss). Referring to the last-mentioned quadrant, Webster (2003) acknowledged that the ordering was provisional, particularly for the position of death preparation.

Building upon Webster's taxonomy and the associations of reminiscence functions with indicators of successful aging, Cappeliez and colleagues (Cappeliez and O'Rourke 2006; Cappeliez et al. 2005) developed and validated a tripartite functional model of reminiscence: Self-positive functions include identity, problem solving, and death preparation; self-negative functions capture boredom reduction, bitterness revival, and intimacy maintenance; teach/inform and conversation are the pro-social functions. This model has since demonstrated that reminiscence functions clearly differ from each other in their associations with indicators of successful aging. It is typically found that self-positive functions are associated with enhanced levels of well-being, whereas self-negative functions have detrimental effects on physical and mental health (Cappeliez and O'Rourke 2006) and predict higher levels of psychiatric distress even when controlling for traits (Cappeliez et al. 2005). Most importantly for the present study, O'Rourke et al. (2011) reported that self-negative functions longitudinally predicted elderly people's depressive symptoms. It is argued that self-negative functions which reflect enduring preoccupations with problematic past life events impede current satisfaction of personal needs and thus, result in lower levels of well-being (O'Rourke et al. 2011).

The association between characteristics of memories and depressive symptoms is also fostered by research on cognitive markers of depression. Studies point to a link between depressive symptoms and difficulties in retrieving the details of specific (positive) memories as well as a more pronounced retrieval of categoric/overgeneral memories, a phenomenon termed overgeneralized autobiographical memories (Debeer et al. 2011; Williams et al. 2007). Thereby, overgeneral memories seem to be a trait marker of vulnerability to emotional disturbance longitudinally predicting symptoms of depression in clinical (Brittlebank et al. 1993) and non-clinical samples (Gibbs and Rude 2004). Interestingly, evidence suggests that the longitudinal link between overgeneralized autobiographical memories and depression is mediated by individuals' rumination (Raes et al. 2006), i.e., a dysfunctional thinking style that is also closely connected to self-negative reminiscence (e.g., Cappeliez and Robitaille 2010). In sum, cross-sectional and

longitudinal research produced consistent findings on the dysfunctional character of self-negative reminiscence. Above all, boredom reduction and bitterness revival (findings for intimacy maintenance are less consistent) are negatively associated with various facets of mental well-being in old age. O'Rourke et al. (2015) even conclude that "the deleterious effects of self-negative functions appear to be roughly double the beneficial effects of self-positive functions" (p. 336).

1.2 Reminiscence (Functions) and Need Satisfaction

Studies also tried to identify processes that are responsible for the link between reminiscence functions and mental health. Cappeliez and Robitaille (2010) highlight the significance of coping strategies: For example, self-negative functions impaired both, assimilative coping, i.e., coping with losses and pursuing goals when facing difficulties, and accommodative coping, i.e., flexibly adjusting goals to constraints and redirecting resources to alternative attainable goals (see Brandtstädter and Rothermund 2002). In turn, reduced coping resources were related to increased levels of depressive symptoms.

Furthermore, need satisfaction seems to be a candidate to explain the link between reminiscence functions and well-being as, for example, O'Rourke et al. (2011) argue that the satisfaction of basic human needs may be hampered by self-negative functions, which finally results in lower levels of well-being. According to Deci and Ryan (2000), individuals develop and function in a healthy and optimal way when their basic psychological needs are satisfied. Three needs are proposed in self-determination theory: Autonomy refers to feeling oneself to be the agent of one's action and experiencing identification with one's actions, competence is defined as the ability to master challenges in one's environment, and relatedness represents interpersonal acceptance and closeness (Deci and Ryan 2000, 2008). Research has consistently shown that satisfaction of these needs is associated with enhanced levels of well-being and mental health. The effect of need satisfaction on well-being could also be demonstrated longitudinally (Sheldon and Elliot 1999; Sheldon and Krieger 2007). Thus, need satisfaction yields clearly positive effects on well-being and even seems to contribute to changes in ill-being in clinical populations suffering from mood disorders (see Vansteenkiste and Ryan 2013, for an overview). In contrast, frustration of needs relates to less vitality and higher levels of depressive symptoms (Deci and Ryan 2008; Vansteenkiste and Ryan 2013).

A few studies examined whether self-reported need satisfaction in personal memories relates to measures of well-being. Philippe et al. (2012) found that experiences of need satisfaction in memories were significantly associated with well-being among students. The link between need satisfaction in memories and well-being seems to be particularly meaningful in intrinsic memories, i.e., episodes including themes of intimate relationships, helping others, and self-development (Lekes et al. 2014). Even if that study does not follow a functional approach of reminiscence, it seems that particularly memories capturing self-positive (e.g., identity, problem solving) and prosocial functions (e.g., teach/inform) are linked to need satisfaction.

Interestingly, Philippe et al. (2012) also showed that need satisfaction in memories was significantly related with actual need satisfaction which was an even stronger predictor of individuals' well-being. Thus, following a functional approach on reminiscence, need satisfaction in memories might predict well-being as these memories are frequently used for particular functions in daily life and thus, are a proxy for actual satisfaction of needs.

A study conducted by Korte et al. (2012) fosters the argument for the link between reminiscence functions and psychological need satisfaction in daily life. Whereas no

significant findings were found for self-positive functions, elderly people's self-negative reminiscence was associated with lower levels of psychological resources, i.e., meaning in life and mastery, which in turn predicted depressive symptoms. Above all, the concept of mastery defined as perceived control over one's life taps facets of the needs for autonomy and competence, respectively.

1.3 The Present Research in Three Cultural Contexts

Remembering the past is a universal phenomenon. However, culture-bound norms, socialization practices, and expectations may play a key role in determining how, what, and why individuals remember (Alea and Wang 2015). In line with these arguments, research across cultural samples has shown that memories develop and emerge as both an individual and a cultural product (e.g., Wang and Ross 2007). Yet, most studies compared memory functions of Asian and American individuals and only a few studies have examined the use of memory functions in adulthood and old age (Alea et al. 2015).

Furthermore, research on memory functions reflects the general trend in cross-cultural research towards detection of differences across cultures (Brouwers et al. 2004). Yet examining whether, despite cultural mean differences, relationships between psychological constructs are similar across cultural groups, is equally important and fruitful to enhance our understanding of memory/reminiscence functions.

In the present study, we follow this claim and look for such similar relationships among psychological constructs across cultural contexts. The model of reminiscence functions implemented in the present study has been replicated in a number of studies (see O'Rourke et al. 2015) but most samples were recruited in so-called Western industrialized cultural contexts. The design of the present study broadens our knowledge on the generalizability of findings on the relationship between reminiscence and psychological distress in diverse cultural samples. Thereby, it is hypothesized that psychological processes linking self-negative reminiscence, need satisfaction, and depressive symptoms hold true in each of the cultural samples.

Based on findings that self-negative functions are associated with both, psychological distress and an impairment of need satisfaction, the current study focuses on the functions of boredom reduction, bitterness revival, and intimacy maintenance. It is hypothesized that among elderly people recruited in three cultural contexts a higher frequency of self-negative functions is positively associated with depressive symptoms and negatively linked to need satisfaction. Given findings on the link of a lack of need satisfaction and reduced mental health, it is further hypothesized that a lower level of need satisfaction is associated with increased depressive symptoms.

Although our study had a cross-sectional design, we finally hypothesized that the link between dysfunctional self-negative reminiscence functions and depressive symptoms is, at least partly, explained by a lack of need satisfaction: Our model is based on recent evidence that self-negative functions (e.g., O'Rourke et al. 2011) as well as need frustration (e.g., Sheldon and Elliot 1999) longitudinally determined depressive symptoms. Furthermore, self-negative functions are characterized by a preoccupation with the past, by apathy, absence of purpose, and rumination on unresolved conflicts and losses (Cappeliez and Robitaille 2010). Thus, self-negative reminiscences may be associated with a negative evaluation of the current life circumstances and foster a renunciation of them. The needs of autonomy, competence, and relatedness (have to) remain unsatisfied which will finally lead to psychological distress.

Hypotheses were tested separately for each of the three components of self-negative reminiscence functions. A strictly structure-oriented approach with emphasis on the relationships among psychological constructs rather than differences in mean levels of test scores between cultural samples was realized in analyses. In cross-cultural studies methodological aspects require much attention because instruments that have shown good reliability and validity in Western cultures may lose these properties in a non-Western context (Van de Vijver et al. 2009). Thus, the extent to which measures are equally appropriate for each of the groups under investigation, and whether observations and test scores can be interpreted in the same way across cultural samples, are particularly relevant questions in cross-cultural psychology. Thus, we scrutinized the measures of psychological constructs employed in the present study for measurement invariance across cultural samples to guarantee the use of psychometrically sound variables in structural analyses.

The data at hand were part of a project on successful aging in Cameroon, China (Hong Kong), the Czech Republic, and Germany (see e.g., Hofer et al. 2014). The Hong Kong sample is not part of the present analyses as data on functions of reminiscence were not collected from Chinese participants. A central goal of the project was to identify universal psychological processes related to successful aging. According to Van de Vijver and Leung (1997), cultural samples, thus, had to be chosen that clearly differ in cultural marker variables. Cultural marker variables are those variables that systematically vary between cultural groups and can be used as a framework to predict the behavior of members of a given cultural context (Lonner 2011). One prominent example of such a framework is individualism-collectivism. For the present study, the selection of cultural samples was based on well-established differences in value orientations between individuals recruited in different cultural contexts (Schwartz 1992, 2011).

Data on value orientations assessed from the present study samples, recently published by Hofer et al. (2014), substantiate the assumptions guiding the selection of cultural groups for the present study: Cameroonian and Czech participants emphasize values accentuating self-restriction, preservation of the past, and resistance to change more than German participants. In contrast, German and to a lesser extent Czech participants place a higher commitment to values that emphasize readiness for change and independence of thought, action, and feelings than Cameroonian participants.

2 Methods

2.1 Sample Characteristics

To assure ethnic and cultural homogeneity within the samples, only native participants were recruited. Due to the multi-ethnic character of the population in Cameroon (Mbaku 2005), recruitment was restricted to ethnic Grassfield Bantus (Nso) from the Anglophone North-West province. In most Euro-American cultural contexts a chronological age of 65 years is widely accepted as a definition of the beginning of old age. Yet, this somewhat arbitrary conceptualization may not well reflect the situation in non-Western African cultural contexts (WHO 2014). Thus, 60 years of age was recommended as a marker for the onset of old age to account for varying cultural conceptions (United Nations 2013). Even if this definition does not take into account socially constructed meanings of old age (e.g., change in social roles; see also Alea et al. 2015, for use of differences in the average life expectancy to delineate the beginning of old age), it was used as a chronological

marker for the onset of old age in the present study as research indicates similar conceptions regarding the chronological onset of old age in Western and sub-Saharan African cultural contexts (Togunu-Bickersteth 1987, 1988).

Data of 637 participants from Cameroon, the Czech Republic, and Germany were available to test hypotheses. All participants were living independently in their own households. Whereas samples were balanced with respect to gender (see Table 1 for socio-demographic information), there were significant age differences between the samples with Cameroonian participants showing the lowest and Czech participants showing the highest mean age ($F_{2,634} = 71.78$; $p < .001$). Participants' age ranged from 60 to 93 years. In total, 325 participants indicated a low level of education (less than secondary education) and 312 a high level (secondary school or university education). Analyses revealed significant differences between cultural samples in the distribution of educational levels ($\chi^2 = 187.78$; $p < .001$): Low levels of education were more often assigned to German and, above all, to Cameroonian than to Czech participants. Fewer Cameroonian participants than Czech and German participants reported to have no partner ($\chi^2 = 18.72$; $p < .001$). In total, 425 participants reported to live with a steady partner and 298 participants reported to have no steady partner. Only 44 of the participants were childless and 593 reported to have at least one child. Cameroonian participants had more children than European participants ($F_{2,634} = 294.20$; $p < .001$).

2.2 Procedure

Whereas German participants were recruited in Lower Saxony (Osnabrück) via ads in local newspapers that have special supplements for elderly people, Czech participants were contacted via notes in senior centers in Prague and Olomouc. As elderly people in Cameroon typically return to their home village after retirement, only a few participants were recruited in urban areas but mostly in villages near major cities.

Data were assessed on either university premises (Germany) or at participants' homes (Cameroon and Czech Republic). Generally, local research assistants familiar with all instruments applied were present during data collection to help if any questions should arise. Participants voluntarily partook in the study and were guaranteed that any information given would be treated confidentially. Whereas Cameroonian and German participants received monetary compensation proportional to average differences in GDP per capita, Czech participants received coupons for local supermarkets.

Measures were administered in Czech, German, or English. English versions were given to participants in Cameroon. Though English is not the native language among the Nso, it represents the official language and is predominantly used in everyday life. Additionally, most people are not able to read or write in Lamnso, their native tongue. Yet, research assistants who were all ethnic Nso were well-trained to give (standardized) illustrations of instructions and questionnaire items in Lamnso or Pidgin-English in case of difficulties in understanding.

2.3 Measures

Instruments were administered to participants individually. Participants reported on depressive symptoms, need satisfaction, reminiscence functions, and finally provided information on socio-demographic characteristics. Given prior use in (cross-cultural) research, Czech, English, and German versions were available for most instruments. Only Czech versions of the scales for need satisfaction and reminiscence functions had to be

Table 1 Descriptive statistics of socio-demographic information in the three cultural samples

Socio-demographic indices	Cameroon (<i>n</i> = 230)	Czech Rep. (<i>n</i> = 166)	Germany (<i>n</i> = 241)
Age	64.58 _a (5.60)	71.55 _c (5.76)	67.48 _b (5.78)
Gender (% females)	48.7	55.4	55.6
Education (% low)	80.0 _c	10.2 _a	51.5 _b
Relationship status (% without partner)	23.0 _a	42.8 _b	36.5 _b
Number of children born	5.81 _b (2.67)	1.93 _a (.93)	1.98 _a (1.29)

Different subscripts indicate statistically significant differences between cultural samples. See text for details

translated from their original English versions into Czech by a professional translator in Prague. The quality of the translated scales was ensured by a back-translation procedure.

2.3.1 Depressive Symptoms

Prevalence of depressive symptoms were assessed with the Center for Epidemiological Studies – Depression Scale (CES-D; Radloff 1977) that has been widely used to measure depressive symptomatology in the general population from various cultural contexts. The CES-D has 20 items reflecting symptoms associated with depression (e.g., “My sleep was restless”). Participants are asked to indicate how frequently they have experienced each symptom (0 = rarely or none of the time/less than a day; 1 = some or a little of the time/1–2 days; 2 = occasionally or a moderate amount of time/3–4 days; 3 = most or all of the time/5–7 days). Higher scores on the CES-D indicate more depressive symptoms.

Preliminary findings derived from exploratory factor analyses (EFA) separately conducted in the cultural samples indicated that four items should be not considered for the final score of depressive symptoms because of insignificant factor loadings (<.30) in the German and/or Cameroonian sample, respectively. The items excluded are “I did not feel like eating; my appetite was poor”; “I felt that I was just as good as other people (reversed)”; “I felt that everything I did was an effort”; “I felt hopeful about the future (reversed)”. Cronbach’s Alpha for the reduced 16-item scale of the CES-D was .82 in the German, .86 in the Czech, and .87 in the Cameroonian sample.

2.3.2 Need Satisfaction

Satisfaction of the needs for relatedness, competence, and autonomy was assessed with the Basic Need Satisfaction in Life Scale (BNS; Gagné 2003). The instrument has already been successfully used in cross-cultural research (e.g., Hofer and Busch 2011). The scale has 21 items concerning the three needs for autonomy (e.g., “I generally feel free to express my ideas and opinions”), competence (e.g., “I often do not feel very capable”; reversed coded), and relatedness (e.g., “I really like the people I interact with”). Items are evaluated on a Likert-scale ranging from 0 (not true at all) to 6 (definitely true). Need satisfaction scales can be used separately, but are often averaged to form an index of general need

satisfaction (Gagné 2003; Vansteenkiste et al. 2007). The latter approach will be followed in the present paper.¹

Again, it was screened whether all items meaningfully load on a single need satisfaction factor in each of the cultural samples. EFAs indicated that six items should not be included in the general need satisfaction index due to low factor loading ($<.30$) in at least one of the cultural samples. For example, the item “In my daily life, I frequently have to do what I am told” (autonomy, reversed coded) showed insignificant factor loading in each of the three cultural samples, whereas factor loading of the item “I have been able to learn interesting new skills recently” (competence) were low in the Czech and Cameroonian sample. Subsequently, the remaining 15 items (seven items for relatedness and four items categorized for competence and autonomy, respectively) were averaged to create a general need satisfaction index. Cronbach’s Alpha for the reduced 15-item scale was .79 in the German, .77 in the Czech, and .84 in the Cameroonian sample.

2.3.3 Reminiscence Functions

To assess different uses of reminiscence the Reminiscence Functions Scale (RFS; Webster 1993) was administered. The RFS consists of 43 items pertaining to eight reminiscence functions, i.e., identity, death preparation, problem solving, teach/inform, conversation, boredom reduction, bitterness revival, and intimacy maintenance. Participants are asked to indicate on a six-point Likert-scale ranging from 0 (never) to 5 (very frequently) how often they reminisce with a particular function in mind. Given the focus of the study at hand, only 15 items assigned to the three self-negative functions, i.e., bitterness revival (five items; “...to keep painful memories alive”), boredom reduction (six items; “...to reduce boredom”), and intimacy maintenance (four items; “...out of loyalty to keep alive the memory of someone close to me who has died”), were presented.

Preliminary EFAs for each of the cultural samples indicated that all items significantly loaded on the appropriate factor in each of the samples (boredom reduction $>.46$; bitterness revival $>.59$; intimacy maintenance $>.80$). Cronbach’s Alphas for bitterness revival, boredom reduction, and intimacy maintenance were .80, .78, and .89 in the German, .85, .88, and .87 in the Czech, and .84, .78, and .90 in the Cameroonian sample, respectively.

2.4 Additional Analyses on Measurement Invariance

Although findings derived from EFA and reliabilities are sometimes taken as a criterion for the similarity of meaning of measurements in cross-cultural research, both analyses cannot confirm measurement invariance (Van de Vijver and Leung 1997). Thus, a further inspection of structural and measurement equivalence is indispensable to avoid incorrect conclusions if one wishes to compare relationships among measurements across cultural groups or to test for mean differences between cultural samples. To further scrutinize measurement equivalence, multigroup confirmatory factor analyses (CFA) were conducted for reminiscence functions and the two shortened scales of depressive symptoms and need satisfaction. CFAs were conducted separately for each of the scales: two increasingly restrictive measurement models, i.e., an unconstrained model with no equality constraints across cultural groups (i.e., screening equivalence of factor numbers and item patterns) and

¹ Correlations among the three subscales of need satisfaction were highly significant across and within each of the cultural samples (e.g., $r_s = .24-.38$; $p < .001$; for the total sample) and thus, justify the forming of an index of general need satisfaction.

a measurement weights model with measurement weights constrained to be equal across cultural groups whereas variances and covariance of the latent score were estimated separately for each group (i.e., screening equivalence of item content and psychometric properties).

The original number of items was used in analyses on boredom reduction, bitterness revival, and intimacy maintenance. However, item parcels were used in CFAs for depressive symptoms and general need satisfaction as the ratio of cases/observations to number of parameters to be estimated should be at least ten (Kline 1998). Even if not unchallenged, item parceling is an adequate procedure if unidimensionality of constructs at hand is established (e.g., Bandalos 2002). For depressive symptoms (16 items) four item parcels with four items each were built. Similarly, four item parcels with three (one parcel) and four items, respectively, were built for need satisfaction. Item parcels were built by random assignment resulting in homogenous samples that were similar in variance.

Analyses on depressive symptoms indicated that the unconstrained model (30 data points; 24 unknown parameters) adequately fit the data ($\chi^2 = 18.08$; *df*: 6; *CFI*: .990; *RMSEA*: .056) with all item parcels significantly loading on the specified factor (critical ratios (CR) ≥ 9.64 ; $p < .001$). Moreover, the implementation of constraints on factor loadings did not lead to a significant impairment of fit ($\chi^2 = 32.85$; *df*: 12; *CFI*: .982; *RMSEA*: .052; $\Delta CFI = -.008$; $\Delta RMSEA = -.004$; Chen 2007).

Analyses on need satisfaction also point to measurement equivalence: The unconstrained model adequately fit the data ($\chi^2 = 28.99$; *df*: 6; *CFI*: .969; *RMSEA*: .078) with all item parcels having significant loadings on the specified factor (CRs ≥ 5.97 ; $p < .001$). Again, the implementation of constraints on factor loadings did not lead to a significant impairment of fit ($\chi^2 = 37.99$; *df*: 12; *CFI*: .964; *RMSEA*: .058; $\Delta CFI = -.005$; $\Delta RMSEA = -.02$).

With respect to reminiscence functions, CFAs indicated measurement invariance for intimacy maintenance: The unconstrained ($\chi^2 = 27.67$; *df*: 6; *CFI*: .985; *RMSEA*: .075) and the constrained model ($\chi^2 = 35.86$; *df*: 12; *CFI*: .984; *RMSEA*: .056) fit the data on intimacy maintenance. An implementation of constraints did not result in an impairment of fit ($\Delta CFI = -.001$; $\Delta RMSEA = -.019$).

In contrast, only partial measurement invariance could be found for bitterness revival and boredom reduction. With respect to bitterness revival, the unconstrained model nicely fit the data ($\chi^2 = 37.78$; *df*: 15; *CFI*: .980; *RMSEA*: .049). However, fit was impaired after equality constraints were placed on factor loadings ($\chi^2 = 65.20$; *df*: 23; *CFI*: .964; *RMSEA*: .054; $\Delta CFI = -.016$; $\Delta RMSEA = .005$). By removing the equality constraint on one of the items (“...to remember an earlier time when I was treated unfairly by others”) the measurement model adequately fit the data ($\chi^2 = 47.94$; *df*: 21; *CFI*: .977; *RMSEA*: .045; $\Delta CFI = -.003$; $\Delta RMSEA = -.004$).

Finally, the unconstrained model on boredom reduction adequately fit the data ($\chi^2 = 77.61$; *df*: 27; *CFI*: .959; *RMSEA*: .054) but equality constraints on factor loading resulted in an impairment of fit ($\chi^2 = 125.60$; *df*: 37; *CFI*: .928; *RMSEA*: .061; $\Delta CFI = -.031$; $\Delta RMSEA = .007$). Only after equality constraints were removed from four items (e.g., “...for lack of any better mental stimulation”), the measurement weights model did not fit worse than the unconstrained model ($\chi^2 = 86.90$; *df*: 29; *CFI*: .953; *RMSEA*: .056; $\Delta CFI = -.006$; $\Delta RMSEA = .002$).

To summarize, analyses clearly point to construct equivalence, i.e., the same theoretical construct is measured in the cultural samples. Yet, only partial measurement invariance could be verified for two reminiscence functions (bitterness revival and boredom reduction). Thus, we decided to test our hypotheses separately within each of the cultural

samples to prevent that findings will be distorted by (item) bias (see Van de Vijver and Leung 1997).

3 Results

We will first present descriptive statistics of and correlations among measures separately for the cultural samples. Next, effects of socio-demographic characteristics on depressive symptoms, i.e., the dependent variable in the hypothesized model, will be examined. Finally, the model on the relationship between reminiscence functions, need satisfaction, and depressive symptoms will be tested.

3.1 Descriptive Statistics of and Correlations Among Psychological Measures

Descriptive data of psychological constructs are given in Table 2.

Correlations presented in Table 3 indicate significant positive relations among the self-negative functions of reminiscence in all cultural samples. Only the association between boredom reduction and intimacy maintenance is insignificant among Cameroonian participants. Furthermore, significant negative correlations among need satisfaction and both, boredom reduction and bitterness revival are generally found. In contrast, only within the Cameroonian sample a significant positive association between intimacy maintenance and need satisfaction is found. Significant negative correlations between need satisfaction and depressive symptoms emerged in all cultural samples. Finally, whereas significant positive correlations between depressive symptoms and the self-negative reminiscence functions are found in the Czech and the German sample, respective associations are non-significant in the Cameroonian sample.

3.2 Effects of Socio-Demographic Characteristics on Depressive Symptoms

Effects of gender, age, level of education, partnership status, and number of children on depressive symptoms, i.e., the final outcome in analyses, were examined by correlational analyses which were conducted separately for each cultural sample. Within each of the cultural samples a significant association between gender and depressive symptoms could be identified: Women reported a higher frequency of depressive symptoms than men (r s ranging from $-.19$ to $-.18$; p s $< .01$ and $.05$, respectively). Concerning age, a significant negative correlation was found in the Cameroonian sample ($r = -.13$; $p < .05$). The positive association between age and depressive symptoms did not reach level of

Table 2 Descriptive statistics of psychological constructs in the three cultural samples

Measurement	Cameroon M (SD)	Czech Rep. M (SD)	Germany M (SD)
Boredom reduction	1.98 (.90)	1.06 (1.01)	.38 (.51)
Bitterness revival	2.00 (1.03)	1.32 (1.12)	.82 (.77)
Intimacy maintenance	3.00 (1.15)	3.50 (1.09)	2.69 (1.18)
Need satisfaction ^a	4.23 (.76)	4.32 (.69)	4.59 (.65)
Depressive symptoms ^a	.52 (.41)	.70 (.47)	.44 (.33)

^a Descriptives are given for the reduced scales

Table 3 Correlations among measures in the three cultural samples

Measure ^a	1	2	3	4
1. Boredom reduction	–			
2. Bitterness revival	.54***/.67***/.45***	–		
3. Intimacy maintenance	–.05/.32***/.15*	.45***/.39***/.29***	–	
4. Need satisfaction	–.46***/–.26**/–.24***	–.32***/–.22**/–.32***	.20**/.09/.02	–
5. Depressive symptoms	.09/.52***/.24***	–.05/.36***/.39***	–.11/.24**/.16*	–.19**/–.47***/–.40***

* $p < .05$; ** $p < .01$; *** $p < .001$

^a Correlations are given in the following order: Cameroonian, Czech, and German sample

significance in the German and Czech sample ($r_s < .12$; $p_s > .06$). Whereas no significant effects of level of education were found in the German and Cameroonian sample ($r_s < -.04$; $p_s > .60$), a lower level of education was associated with more frequent depressive symptoms among Czech participants ($r = -.19$; $p < .05$). Participants without a steady partner tended to report more frequent depressive symptoms, but this association did not reach level of significance in any of the cultural samples ($r_s < -.14$; $p_s > .10$). Finally, number of children and depressive symptoms were not significantly linked in the cultural samples ($r_s < -.09$; $p_s > .16$). Thus, effects of gender, age, and level of education on depressive symptoms were partialled out by regression within each of the samples. The adjusted score for depressive symptoms was used in subsequent analyses.²

3.3 Testing the Assumed Relationship Between Self-Negative Reminiscence Functions, Need Satisfaction, and Depressive Symptoms

To examine the relationship between reminiscence functions, need satisfaction, and depressive symptoms, Preacher and Hayes' (2004) model of simple mediation was computed. The model allows estimating the size and significance of an indirect effect in a single analysis and employs a bootstrapping procedure to confirm results. Bootstrapping results support the significance of the indirect effect as long as zero is not included in the confidence interval reported. Here, 95 % confidence intervals (CI) for the meaningfulness of the indirect effect based on 1000 bootstrap resamples will be reported. As outlined above, analyses for each of the three self-negative reminiscence functions were separately performed in each of the cultural samples (see Table 4).

For boredom reduction, a significant indirect effect could be verified in each of the cultural samples. The indirect effect was .06 ($S.E. = .02$; $z = 3.24$; $p < .01$; CI .03 to .09) in the German, .04 ($S.E. = .02$; $z = 2.94$; $p < .01$; CI .02 to .08) in the Czech, and .05 ($S.E. = .02$; $z = 2.95$; $p < .01$; CI .01 to .09) in the Cameroonian sample. An indirect effect was also identified in analyses on bitterness revival. The indirect effect was .04 ($S.E. = .01$; $z = 3.72$; $p < .001$; CI .02 to .07) in the German, .04 ($S.E. = .01$; $z = 2.56$; $p < .05$; CI .01 to .07) in the Czech, and .03 ($S.E. = .01$; $z = 2.88$; $p < .01$; CI .01 to .05) in the Cameroonian sample. Finally, an indirect effect could be identified neither in the Czech nor in the German sample in analyses on intimacy maintenance which was, however, directly linked to frequency of depressive symptoms. Again, no direct link between intimacy maintenance and depressive symptoms could be found in the Cameroonian sample. However, there was a significant indirect effect of $-.02$ ($S.E. = .01$; $z = -2.25$; $p < .05$; CI $-.03$ to $-.01$) in the Cameroonian sample: Higher levels of intimacy maintenance predicted enhanced need satisfaction which in turn was associated with lower levels of depressive symptoms.

To summarize, in all cultural samples significant indirect effects were found for boredom reduction and bitterness revival. Although there was no direct link between these two self-negative reminiscence functions and depressive symptoms in the Cameroonian sample, boredom reduction and bitterness revival were linked to depressive symptoms via lower levels of need satisfaction in all cultural samples. A completely different pattern emerged in analyses on intimacy maintenance: Higher levels of intimacy maintenance

² Subsequent analyses were rerun with depressive symptoms controlled for all socio-demographic variables (that is, partnership status and number of children in addition to gender, age, and education) as well as depressive symptoms not controlled for any socio-demographic variable at all. In each case, findings were exactly in line with the ones reported in text.

Table 4 Indices for the assumed indirect effect of self-negative reminiscence functions on depressive symptoms via need satisfaction

...regressed on...	Cameroonian sample	Czech sample	German sample
<i>Boredom reduction</i>	<i>b (S.E.)</i>	<i>b (S.E.)</i>	<i>b (S.E.)</i>
Depressive symptoms—boredom	.04 (.03)	.21 (.03)***	.15 (.04)***
Need satisfaction—boredom	-.39 (.05)***	-.17 (.05)***	-.30 (.08)***
Depressive symptoms—need satisfaction ^a	-.12 (.04)**	-.25 (.04)***	-.19 (.03)***
Depressive symptoms—boredom ^b	.01 (.03)	.17 (.03)***	.10 (.04)*
<i>Bitterness revival</i>	<i>b (S.E.)</i>	<i>b (S.E.)</i>	<i>b (S.E.)</i>
Depressive symptoms—bitterness	.01 (.03)	.14 (.03)***	.17 (.02)***
Need satisfaction—bitterness	-.23 (.05)***	-.13 (.05)**	-.27 (.05)***
Depressive symptoms—need satisfaction ^a	-.13 (.04)***	-.29 (.04)***	-.16 (.03)***
depressive symptoms—bitterness ^b	-.02 (.03)	.10 (.03)***	.13 (.02)***
<i>Intimacy maintenance</i>	<i>b (S.E.)</i>	<i>b (S.E.)</i>	<i>b (S.E.)</i>
Depressive symptoms—intimacy	-.01 (.02)	.08 (.03)*	.03 (.02)(*)
Need satisfaction—intimacy	.13 (.04)*	.06 (.05)	.01 (.04)
Depressive symptoms—need satisfaction ^a	-.12 (.03)***	-.34 (.04)***	-.21 (.03)***
Depressive symptoms—intimacy ^b	.01 (.02)	.10 (.03)***	.03 (.02)*

* $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

^a Controlled for reminiscence function

^b Controlled for need satisfaction

were associated with a higher frequency of depressive symptoms among Czech and German participants. In contrast, intimacy maintenance related to a higher need satisfaction which in turn was associated with lower levels of depressive symptoms in the Cameroonian sample. In sum, indirect effects identified in analyses were small to medium in size (Cohen 1988).³

4 Discussion

Theoretical considerations outline that reminiscence serves self-continuity, guidance, and emotional regulation throughout the life-span (e.g., Cappeliez et al. 2005). Yet, early work on reminiscence ignored that life review can be agonizing and obsessive (Coleman 1986)

³ Due to the cross-sectional nature of our data, alternative relationships between psychological constructs cannot be ruled out. Recent longitudinal research indicates that both self-negative reminiscence functions and need satisfaction predict changes in depressive symptoms. However, the direction of the association between reminiscence functions and need satisfaction is less clear. Thus, we tested whether there is an indirect effect of need satisfaction on depressive symptoms via self-negative reminiscence functions. Due to a non-significant path between reminiscence functions and depressive symptoms ($ps > .39$), no indirect effects were found in analyses within the Cameroonian sample ($z < .84$; $p > .40$). Whereas no significant indirect effect could be verified in analyses for intimacy maintenance among Czech and German participants ($zs < 1.07$; $ps > .28$), significant negative indirect effects were found in analyses on boredom reduction (German sample: $-.02$; $S.E. = .01$; $z = -2.06$; $p < .05$; Czech sample: $-.06$; $S.E. = .02$; $z = -2.92$; $p < .01$) and bitterness revival (German sample: $-.05$; $S.E. = .02$; $z = -3.61$; $p < .01$; Czech sample: $-.04$; $S.E. = .02$; $z = -2.23$; $p < .05$). In both samples, lower levels of need satisfaction were linked to more pronounced boredom reduction and bitterness revival which in turn were associated with higher levels of depressive symptoms.

and thus, may not support developmental regulation but rather may result in an impairment of mental health. Based on research on different functions of reminiscence and their relationship with psychological distress, we examined the relationship between self-negative functions and depressive symptoms among elderly people from Cameroon, the Czech Republic, and Germany. We hypothesized that self-negative reminiscence functions are related to the frequency of depressive symptoms, as they are associated with a lack of satisfaction of psychological needs. This pattern of relationships among psychological constructs was assumed to be found regardless of individuals' cultural background. Initial analyses mostly pointed to the applicability of psychological constructs in each of the cultural contexts. Yet, only partial measurement invariance could be found for the reminiscence scales of boredom reduction and bitterness revival. Thus, subsequent analyses were conducted separately for each of the cultural samples.

With respect to boredom reduction and bitterness revival, findings were in line with our hypotheses: In each of the cultural samples, both reminiscence functions were associated with lower general need satisfaction which in turn related to more frequent depressive symptoms. A pronounced preoccupation with and rumination about past unresolved conflicts and lost opportunities (bitterness revival) as well as strong longings for better times (boredom reduction) both reflect the inability to achieve self-continuity, social bonding, and guidance. Frequently re-experiencing these regrets relates to an increased inability to invest resources into the satisfaction of basic psychological needs. According to O'Rourke et al. (2011), adaptation to current life affordances fails as psychological resources are focused on the past. The frustration of needs may result in psychological distress as the current life appears meaningless (Sheldon and Krieger 2007). Thus, the frustration of psychological needs might explain the well-established effect of self-negative reminiscence functions on mental health.

Our findings are in line with research showing that psychological resources mediate the link between reminiscence functions and well-being (Cappeliez and Robitaille 2010; Korte et al. 2012). Moreover, our findings extend research on the relationship between reminiscence and need satisfaction. Whereas Philippe et al. (2012) reported that need satisfaction in memories significantly predicts well-being, our findings emphasize a link between self-negative reminiscence functions and need satisfaction in daily life.

Results on the relationship between intimacy maintenance, need satisfaction, and depressive symptoms are less straightforward. Contrary to our hypotheses, no indirect effect of intimacy maintenance on depressive symptoms via need satisfaction was found among Czech and German participants. Intimacy maintenance was significantly associated with depressive symptoms (see Cappeliez et al. 2005) in both cultural samples but not with need satisfaction. More frequent memorizing about maintaining contact with a departed person, a function typically considered to be negative in affective tone, does not necessarily have deteriorating effects on need satisfaction. Cappeliez et al. (2005) argue that sadness can be an adaptive emotion in contrast to the negative valence of memories characteristic of obsessive reminiscence. Thus, intimacy maintenance, if not characterized by rumination, might be adaptive for the regulation of emotions associated with the loss of a significant other (Cappeliez et al. 2008). Webster et al. (2010) emphasize that future longitudinal research ought to focus on dynamic aspects of the reminiscence process as for intimacy maintenance (and death preparation) associations with mental health are inconsistent: For example, intimacy maintenance might entail negative effects shortly after the loss of a close person but at some point in the future may be perceived as positive as memories help to reestablish interpersonal closeness. Thus, intimacy maintenance may serve different functions at different times. Such different functions of intimacy

maintenance may also help to explain different categorizations of intimacy maintenance in models of reminiscence (e.g., Bluck and Alea 2002; Cappeliez et al. 2005).

The findings obtained in the Cameroonian sample also point to different functions associated with intimacy maintenance. Among Cameroonian participants a significant indirect effect of intimacy maintenance on depressive symptoms was found. Interestingly, higher reports of intimacy maintenance are associated with enhanced need satisfaction. It seems that intimacy maintenance, i.e., keeping alive the memory of a significant lost other, changes its meaning in the cultural context of Nso participants.

Among the Nso, like in many other sub-Saharan cultural contexts, the ancestral cult represents a strong sense of solidarity between the living and the dead (see Jindra 2005, who argues that conversion to Christianity, as is prevalent among the Nso, has even led to a strengthening of the ancestral cult). The family is not limited to the living but embodies the dead relatives who are in literature characterized as “the living dead” (Kriven 2005). There is a constant communication between the living and the dead: Ancestors can only survive and be happy if they live in the affectionate remembrance of their descendants (Mbaku 2005). A smooth bond between ancestors and their descendants is significant as the dead have power over the living (Jindra 2005): The living seek their intervention on important issues and ancestors are expected to support the living by providing health, wealth, or plenty of offspring (Mbaku 2005). However, ancestors can also cause harm if they are forgotten or neglected. Thus, it might not be surprising that intimacy maintenance positively relates to need satisfaction among elderly people from Cameroonian as remembering lost people seems to strengthen interpersonal bonds, to allow environmental control, and generally give a sense of security in life. The findings gained in the Cameroonian sample indicate that more research has to be done in non-Western cultural contexts to learn more about universal and culture-specific aspects of reminiscence functions. The last-mentioned issue points to limitations that should be noted in the following.

4.1 Limitations and Outlook

First, results were obtained in a cross-sectional design and do not allow drawing conclusions on causation (Maxwell and Cole 2007). Although evidence suggests that self-negative functions and need satisfaction predict depressive symptoms longitudinally (O’Rourke et al. 2011; Sheldon and Elliot 1999), it still might be that lower levels of current need satisfaction lead to higher levels of self-negative reminiscence which in turn affects depressive symptoms (see footnote 3). Testing this alternative order of variables verified no indirect effects within the Cameroonian sample. Yet, indirect effects were found in analyses on both boredom reduction and bitterness revival among Czech and German participants. Thus, an alternative temporal order of psychological constructs cannot be ruled out definitely and longitudinal designs are indispensable to bolster the effects of our model.

Second, a remark has to be made concerning our measures. Whereas analyses on applicability of instruments supported measurement invariance of most scales, single items of the RFS measuring boredom reduction and bitterness revival were problematic. Thus, future studies ought to shed further light on universal and culture-specific facets of reminiscence functions in non-Western cultural contexts that might not be covered by methods developed in Western cultural contexts, particularly as the notions of reminiscence and autobiographical memory have traditionally been viewed as an individuated process of focusing on the self in the past and only recently the decisive role of an individual’s cultural context in remembering has been elaborated (e.g., Wang and Ross 2007).

Furthermore, to continue the process of integrating the fields of research on reminiscence and autobiographical memory, it would be fruitful if future research could assess memory functions with both, the TALE and the RFS cross-culturally.

Finally, a more fine-grained definition of the onset of old age in diverse cultural contexts may be used for recruitment of participants. Whereas evidence suggests that chronological definitions of old age show similarities across cultural contexts (e.g., Togunu-Bickersteth 1988), the beginning of old age may best be explained by a combination of chronological, functional, and social definitions.

To conclude, our findings add to the evidence that self-negative reminiscence functions relate to mental health in old age as they are associated with an impairment of the satisfaction of basic psychological needs. Additionally, our findings indicate that types of reminiscence might differ in meaning and, consequently, in their effects on mental health across cultural contexts. Thus, future studies on reminiscence functions ought to include individuals' cultural background. Above all, future studies ought to implement longitudinal designs as effects of reminiscence functions on developmental regulation might differ depending on their timing. Such findings are beneficial to build more advanced theories on reminiscence and developmental regulation over the life-span but also to enhance the efficacy of reminiscence or life review therapy (Bohlmeijer et al. 2007) by adapting interventions to significant individual characteristics.

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