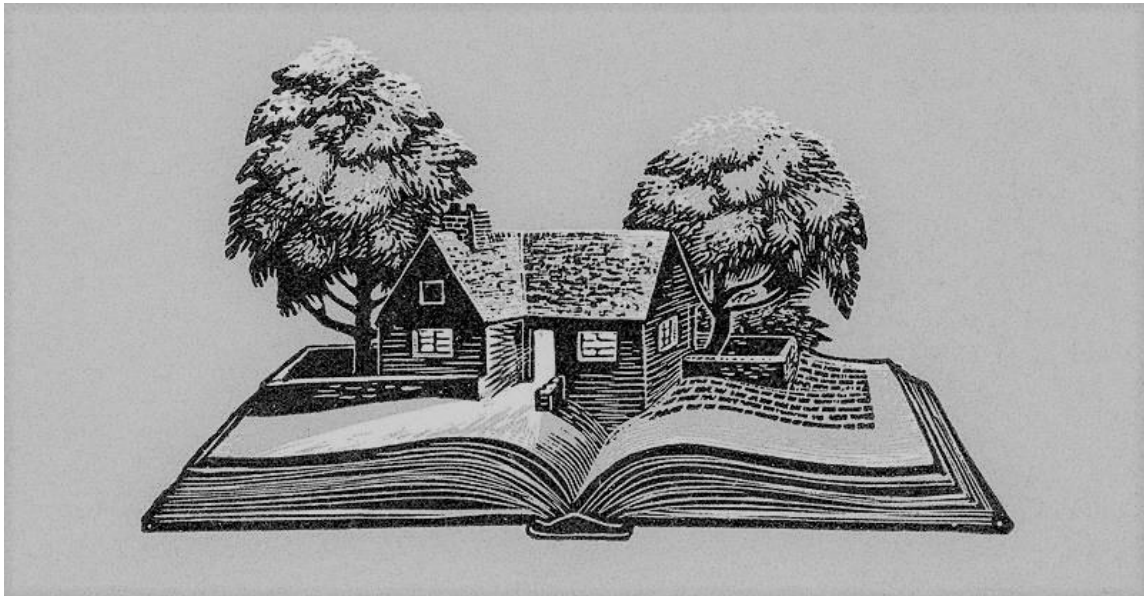# I'd like to hear your story

The narrative coherence of older adults in relation to the valence in emotion expression

Master thesis

Positive Psychology and Technology

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Abstract

Sharing autobiographical memories supports well-being among people, especially in the higher age as it helps to regulate emotions, maintain a positive mood and deal with the own mortality. Earlier research did not distinguish between different types of coherences and valence which emphasizes the importance of this research. The aim was to investigate if there is a relation between narrative coherence to the emotion expression among the participants when sharing autobiographical memories. In total, five participants were asked to share three happy and three sad memories after looking at life story books. The participants were interviewed openly to elicit as much information as possible. There were significant but small relations found between causal and biographical coherence and positive valence in emotion expression. Three cross tables were used to show how the relations were between the different types of coherences (temporal, causal, thematic, biographical and no coherence) and the different types of valence (redemption, contamination, stays the same, positive and negative). The main strength of this research were the distinctions of narrative coherences and valence in emotion expression that was made as this was never done in research before. The main limitations were the low sample size which makes it difficult to see a high reliability in this research. A recommendation for future research would be to focus on causal and biographical coherence as there was discovered a significant relation between these types of coherences and positive valence.

Dutch version of the abstract

Het delen van autobiografische herinneringen ondersteunt het welzijn van mensen, vooral op hogere leeftijd, omdat het helpt om emoties te reguleren, een positieve stemming te behouden en om te gaan met de eigen sterfelijkheid. Eerder onderzoek maakte geen onderscheid tussen verschillende soorten coherentie en valentie, wat het belang van dit onderzoek onderstreept. Het doel was om te onderzoeken of er een relatie bestaat tussen de narratieve coherentie en de emotie-uitdrukking van de deelnemers bij het delen van autobiografische herinneringen. In totaal werd aan vijf deelnemers gevraagd om drie gelukkige en drie droevige herinneringen te delen na het bekijken van levensverhaalboeken. De deelnemers werden openlijk geïnterviewd om zoveel mogelijk informatie te ontlokken. Er werden significante maar kleine relaties gevonden tussen de causale en biografische coherentie en de positieve valentie in de emotie-uitdrukking. Drie kruistabellen werden gebruikt om te laten zien hoe de relaties waren tussen de verschillende soorten coherentie (temporele, causale, thematische, biografische en geen coherentie) en de verschillende soorten valentie (redemptie, contaminatie, hetzelfde blijven, positief en negatief). De belangrijkste sterke punt van dit onderzoek was de onderscheid die gemaakt werd tussen narratieve coherentie en valentie in emotie-uitdrukking omdat dit nog nooit eerder is gedaan en daarom nieuw is. De belangrijkste beperkingen waren de lage steekproefomvang die het moeilijk maakte om een hoge betrouwbaarheid in dit onderzoek te zien. Een aanbeveling voor toekomstig onderzoek zou zijn om zich te richten op de causale en biografische coherentie, aangezien er een significante relatie werd gevonden tussen dit soort coherentie en positieve valentie.

Introduction

The role of aging, identity and well-being in autobiographical memory

"Remembering in old age is of great subjective importance for mental hygiene. We have the highest well-being, if we are allowed to stay how we once were (or wanted to be) – it is essential to gain mental stability." (Faust 2018, cited in Apfel, 2018). Faust emphasizes the importance of memories for processing emotions. The neurologist stresses that memories become more emotional and self-referential as people age. Through research there seems to be a lot of limitations people experience due to aging, especially in memory. Still, Balota, Dolan and Duchek (2000) identified that not all facets of memory are affected. Non-declarative memories are relatively unaffected from aging and contain several phenomena that reflect autobiographical memories (Balota et al., 2000). These are of high importance for every aging person as autobiographical memories (AM) are people's reminiscence of specific and personal events in life (Holland & Kensinger, 2010). Luchetti and Sutin (2018) define AM as enclosure of all memories a person collects throughout life. These are memories out of one's own personal past which include for instance, the begin of school, the marriage or financial troubles. Remember how we feel about a specific and personal event is beneficial for our well-being (Holland & Kensinger, 2010) as it helps to share and thereby process experienced stories. The reason why memories and especially AM have been afforded this special status is because they support one's continuous state of consciousness. When people do not memorize their experiences, they may lack their sense of self (Heiphetz, Strohminger, & Young, 2017). The re-experienced events of our AM have an influence on how we shape and develop an individual identity. Fivush, Bohanek, Marin and Sales (2008) think that the most prominent goal in remembering is to find meaning in emotional events and to integrate them into one's sense of self in order to gain a congruent and coherent life story.

Emotion expression, aging and well-being

According to a large body of literature, how we feel and find meaning in events is experienced differently in younger adults than in older adults (Pasupathi, Carstensen, Turk-Charles, & Tsai, 1998; Alea, Diehl, & Bluck, 2004). According to Westerhof, Bohlmeijer and Webster (2010) memories become more important in later life as they influence the regulation of emotion, maintaining a positive mood and dealing with one's own mortality. Considering that dealing with mortality is important in the higher age, emotions and especially research of emotions play a major role. Carstensen, Pasupathi, Mayr and Nesselroade (2000) discovered that older adults generally experience a higher valence in emotions and thus, more positive than negative emotions than younger adults do. Due to the difference that exists between

younger and older adults in experiencing emotions and more research that focuses on emotion expression in younger adults, an emphasis on emotion expression in older adults should come (Pasupathi et al., 1998). Another point that stresses the importance of focusing on emotion expression is that understanding one's own emotions and extract information from them, fosters emotional insight and therefore, an improved well-being (Kennedy-Moore & Watson, 2001).

Autobiographical memory and its functions

Sharing one's own stories supports emotional insight and regardless of how stories develop, they act as functions in people's lives that have important implications for mental health and well-being. Sharing negative or traumatic emotional events even has therapeutic benefits as it serves for a growth in well-being (Pennebaker & Seagal, 1999). Serrano et al. (2004) identified that practice in AM improves the mood state of older adults and their life satisfaction. Thus, practice in retrieving AM, talking about and thereby, processing AM creates higher mental health in older adults.

Several theories hold that AM even innate three functions that are important for every individual: The directive, self, and social function. The directive function includes using the past to guide individuals for present and future thoughts and behavior (Bluck, Alea, Habermas, & Rubin, 2005). Therefore, AM can be directive in form of helping an individual to use the past in order to solve problems, find solutions and develop own opinions that can help oneself for the present and future (Cohen, 1998, cited in Bluck et al., 2005). As discussed above, AM serves as a function for the continuity and congruence of the self (Bluck & Levine, 1998; Fivush et al., 2008). This function is concerning about how someone is now, if and how someone has changed and how someone stays the same over time (Bluck et al., 2005). The self-function of AM allows individuals to have and maintain an identity (McAdams, 2001) and to develop a coherent self-concept across the entire lifespan (Bluck & Levine, 1998; McAdams, 2001; Fivush et al., 2008), even in the face of developmental change and life events. Lastly, the social function represents a high importance of AM as it helps to develop, maintain and nurture social connections (Pillemer, 1998, cited in Bluck et al., 2005). Sharing personal memories can serve for a social bond between listener and responder, as it needs empathy and paying attention and therefore, a social bond can grow (Bluck et al., 2005).

Narrative coherence in autobiographical memory and aging

Memory encompasses our ability to remember past experiences in a coherent manner rather than intentionally remember disconnected bits of information (Holland & Kensinger, 2010). Coherence of personal stories or autobiographical stories correlate with psychological

functioning, health, and well-being of the storyteller which emphasizes the benefit of coherence (Freeman, 2010). Thus, narrative coherence equals both, a coherent mind and a coherent self. Talarico, LaBar and Rubin (2004) even found that the more sad a person experienced an event, the less coherent is the story. Thus, it can also be looked at vice versa. Coherence represents clarity, logicality, "making sense" and even persuasiveness. A coherent narrative indicates that "everything fits", that the identified textual parts all contribute to a whole, which is communicationally effective (Toolan, 2011). According to that, individuals who can find some unity in their sense of self have a better psychological functioning than those who cannot find this coherence (Adler, 2012). The way in which a person structures the own narrative has important implications for mental health. Freeman (2010) found a benefit in organizing oneself better when having coherent life stories as these stories organize the self into a unified and purposeful whole.

There are distinctions made in coherence, namely temporal, causal, thematic and biographical (Habermas & Bluck, 2000). The temporal coherence contains an integration of the selves across time. The person of the past must be seen to coherently develop into the person of the present (Adler, 2012). Habermas and Bluck (2000) found that life narratives in modern Western cultures usually follow a linear chronological order. In a coherent narrative remembered events should be temporally related to other events (Adler, 2012). The causal coherence combines the linking of life's event to one's developing sense of self (Pals, 2006). According to Habermas and Bluck (2000) causal coherence is used to connect the episodes within a life phase, to relate life phases and to explain changes in the narrators' values or personality as a result of events over time. Causal coherence can emerge by external causes for life events or internal causes that are dependent on the person's personality, needs and ambitions in life (Habermas & Bluck, 2000). In addition, the thematic coherence includes the reflective or evaluative linkages between episodes in the story (Habermas & Bluck, 2000). Another possibility to explain thematic coherence is by declaring a specific event to be typical of many others or by making comparisons between several events (Habermas & Bluck, 2000). Lastly, the biographical coherence seems to be the most complicated one. With the biographical perspective one's individuality is framed through a specific developmental history in order to form one's own biography. When people can understand and present themselves in a biographical manner by coherently organize recollective memories and other self-relevant information into a life story (McAdams 1996, cited in Habermas & Bluck, 2000).

The valence in emotion expression

According to Berntsen and Rubin (2006) valence is an important dimension when expressing emotions that is often overlooked in studying AM for emotional events because with valence, memories can be distributed in positive or negative. Therefore, valence refers to pleasantness that varies from positive (very pleasant) scores via neutral to negative (very unpleasant) scores (Viinikainen, Jääskeläinen, Alexandrov, Balk, Autti & Sams, 2010). Earlier research indicates that people develop either stories of redemption, where negative events are transformed into something positive or stories of contamination, where positive experiences are subsequently ruined by something negative (McAdams, Reynolds, Lewis, Patten, & Bowman, 2001). Redemption sequences begin negative with, for instance a broken relationship or being fired from one's job but currently develop into a positive event. Both can in a further development lead to an enhanced feeling of self-confidence which represents a positive outcome (Northwestern University, 1999). Oppositely, contamination sequences begin with difficult life scenes which begin acceptable or mildly positive but develop into a negative affect that follows. For example, a person characterizes a rare moment of pleasure when the family organizes a birthday surprise but spoils the positive memory with the conclusion that good things do not happen to the person (Northwestern University, 1998). A relation is found between redemption sequences in life narratives and psychological well-being, whereas contamination sequences predict more lower levels of well-being (McAdams et al., 2001).

Further, there seems to be a shift in emotional valence in older adults as they rate their AM as more positive than young adults do (Singer, Rexhaj & Baddeley, 2007). Another difference is that older adults remember more emotional information about AM than younger adults do (Alea, Diehl, & Bluck, 2004). Also, Gross et al. (1997) discovered that aging is associated with decreased emotional experience of anger, sadness and fear and with an increased experience of happiness. This compliments a more extensive phenomenon – an age-related "positivity effect" – because ageing is associated with more attention towards, and experience of, positive relative to negative emotion (Ford, DiGirolamo & Kensinger, 2016). The effect is that there will be more positive scores in valence as older adults use more positive words in narratives and a decreased amount of negative words. Thus, the increase of positive AM retrieval in aging may be a rare circumstance where healthy aging is associated with improvement of well-being and satisfaction (Ford et al., 2016).

Outline of the present research

According to Pennebaker and Segal (1999) and Freeman (2010) sharing AM has a beneficial effect on our well-being which emphasizes the importance of this research as higher well-being

serves for a more fulfilled and satisfied life. Pe, Koval and Kuppens (2013) investigated a relationship between having a stronger sense of coherence and older age groups. The researchers found that coherence and well-being both increases with age and develop over the entire lifespan (Pe, Koval, & Kuppens, 2013). Still, the different types of coherences and types of valence are not enough investigated when older adults share AM.

In the present research, stories were elicited by asking older adults to share their emotional memories using AM recall. In these stories narrative coherence is operationalized in relation to valence in emotion expression. Valence is divided in redemption, contamination, 'stays the same, positive' and 'stays the same, negative'. Further, there is a focus on the coherence of the story that has been told. There is a distinction between five types of narrative coherence made: temporal, causal, thematic, biographical and no coherence. This research will focus on the examination of the relation between narrative coherence and valence in emotion expression when older adults share AM. The following research question is formulated: *How is narrative coherence of older adults related to the valence in emotion expression?* It is expected that temporal, causal and biographical coherence is related to more positive scores in valence 'stays the same, positive' as more coherence in the story is related to more well-being. Further, it is expected that temporal, causal and biographical coherence is in relation with redemption which means that a story begins negative and ends positive because forming one's own biography begins not always good but especially older people tend to see the good in the end of a story. Lastly, it is expected that a fragment that is coded with two or more types of coherences is in relation with higher scores in valence 'stays the same, positive'. On these domains and especially on the relation between both variables, there is not much research conducted before. According to that, an exploration of these types of coherences and positive valence will be made as it is beneficial to know what types of coherences elicit positive emotion expression. Thereby, these types of coherences can be promoted to facilitate well-being.

Methods

Design and Participants

The original research had in total 23 participants who were asked about AM and how these affected them emotionally (see Nazareth et al., 2019). In this research the data from 5 participants (4 females, 1 male) were investigated. The participants were between 69 and 73 years old as AM of older adults were targeted (M=70,8; SD=1,79). The recruitment took place via advertisements in local newspapers. The following inclusion criteria for participants were applied: 1) being at least 65 years old 2) have normal or corrected vision and/or hearing and 3)

the ability to speak and read Dutch fluently. In turn, the exclusion criteria were 1) having memory problems 2) having traumatic experiences and 3) using a pacemaker. The data collection was conducted by the first author (Nazareth et al., 2019; Nazareth, Jansen, Truong, Westerhof & Heylen, 2019). The interviews were hold at the participant's home so that the participants felt comfortable.

Materials

During both sessions emotion reliving tasks were applied. During the first session AM recall was conducted and in the second session life story books based on Nazareth et al. (2019) were shown to discuss the AM in depth. These life story books were used in memory and life review research in order to improve older adult's quality of life (Westerhof & Bohlmeijer, 2014). The aim was to elicit three happy and three sad memories. The life story books should help to stimulate the conversations and retrieve more details in emotional memories. Three microphones served for a good quality in recording during the conversations. The researcher and the participant each had a lavalier microphone that recorded them, and one shotgun microphone recorded the whole conversation. In total three microphones served for a good audio quality. A 10.1 tablet was used to introduce the life story book. In order to analyze the data, the computer programmes Praat, Word and SPSS were used. Praat is a program to analyze acoustic characteristics in speech without the need for a transcription (De Jong & Wempe, 2009). Praat was used to segment the AM of the participants into fragments. The obtained transcripts were subsequently written in word. In the document, codes were identified to cover meaningful text fragments that could answer the research question. Lastly, in social science SPSS is an important tool for statistical analysis and originally stood for Statistical Package for the Social Science (Quintero et al., 2013).

Procedure

This research was approved by the BMS Ethics Committee (Nr 107426). The participants were recruited via a newspaper ad. After a response from potential participants, an information letter (see Appendix A) was sent to give more instructions about the research and inform about the requirements of participation. The data collection included two sessions and was conducted by two researchers of the larger research in which the participants were asked to recall AM. However, in both sessions the first author (Nazareth et al., 2019) conducted the interviews. The first session focused on a word association task and the second session focused on specific memories when looking at a life story book. Before the start of this research, the participants were informed of the objectives of this research. An informed consent was signed by the participants (Appendix B). The instruction for the participants included to be specific and brief

about their memories and to recall only specific memories. This research only focusses on the second session. These were conducted at the participants home. First, the participants were asked to complete the demographic questionnaire. Then, the life story book was shown on the tablet which compromised short verbal prompts of their emotional memories and a photo based on the first session. Each participant was asked in detail about their emotional memory and released their memories differently in quickness and amount of information they gave per memory. In between open questions were asked by the interviewer to elicit more detailed information about the participants' emotions. The sessions lasted around 2.5 hours. All participants received a small present for taking part at this research.

Qualitative analysis

The interviews were first recorded, then transcribed and analyzed. After the transcription of the interviews, they were divided into fragments. The interviews contained three happy and three sad memories and within every interview different fragments were created by the researcher. Different topics were discussed, like for instance a marriage or the death of a loved one. Related content became a meaningful fragment with an own heading, while a new content or a turning point indicated that a new fragment is required. Examples for different fragments in a story are the following: reaction on a diagnosis, prior examination, getting the diagnosis and course of treatment. These were segmented in different fragments in one memory and therefore, received different headings.

In order to code the different types of coherence in the AM, the different fragments were analyzed on how they varied in coherence and valence. In total, there were five different types of coherences, but it was also possible to code several types of coherences for one fragment. The types of coherences were: 1) Temporal, 2) causal, 3) thematic, 4) biographical and 5) no coherence (Appendix C, coding scheme for narrative coherence). For valence in emotion expression four codes emerged (Appendix D, coding scheme for valence): 1) redemption, 2) contamination, and 3) stays the same, positive and 4) stays the same, negative. Each fragment was coded with only one valence. By creating fragments, it was possible to categorize the data and thereby, make it measurable. In order to code narrative coherence, it was crucial to make long fragments to determine a type of coherence. In short fragments there were often no coherence found. Also, for coding redemption or contamination the fragments needed to be relatively long to see the transition from positive to negative or oppositely.

The coding process was interactive through deductive (top-down) and inductive (bottom-up) coding. Through the combination of both it was possible to cover all important text fragments that could answer the hypotheses. The literature about coherence and valence served

for the codes that were taken in order to analyze the hypotheses (top-down). An example for the top-down coding was the code temporal coherence (Habermas, & Bluck, 2000) or contamination in valence which means that a story begins mildly positive and turns negative (McAdams et. al, 2001). The data of the participants served for bottom-up codes like 'stays the same, positive' and 'stays the same, negative' as some fragments did not transfer from negative to positive or from positive to negative (redemption, contamination). Also, the code 'no coherence' emerged based on the data of the participants as some fragments did not fulfil the criteria for the other types of coherences. Thus, a coding scheme emerged for narrative coherence as well as for valence and emotion expression based on literature and the data and was merged by the researcher. All interviews were coded with the same coding scheme (see Appendix C and D).

Quantitative analysis

To answer the hypotheses based on the research question the coded data for narrative coherence and valence was analyzed and implemented in SPSS, as well as age and gender for all participants. In order to investigate how the variables narrative coherence and valence in emotion expression are related, the different types of narrative coherence and valence were inserted in SPSS. As some fragments were coded with more than one type of coherence, a classification was applied for all combinations a fragment was coded with coherence (see Appendix E). It shows that a fragment was coded with one to three types of coherences. After having all data and in order to answer the hypotheses, new variables needed to be made for positive valence 'stays the same, positive' and the other types of valences (redemption, contamination and 'stays the same, negative') to be able to compare these. This was also done for temporal, causal, biographical coherence, one type of coherence and redemption. With SPSS, different crosstabs were applied to measure the relationship between 1) temporal, causal and biographical coherence and positive valence, 2) temporal, causal and biographical coherence and redemption, and 3) more than one type of coherence and positive valence. Cramer's V ranges from 0 to 1 and 0.1 shows a small effect size, 0.3 a moderate and 0.5 a large effect size (Osteen, & Bright, 2010). The crosstabs investigated the relation between narrative coherence and valence in emotion expression. All analyses were conducted in SPSS.

Results

Descriptives and qualitative data

In total, 124 memory fragments were examined. Table 1 gives an overview of the descriptives. The most frequently coded valence was 'stays the same, positive' with 50 codes.

Right behind this code was 'stays the same, negative' with 49 codes, redemption with 21 codes and contamination with 4 (see table 1). Only one code was given per fragment and contamination was the fewest coded type for valence with four codes. Interesting about the results is that participant 12 were coded a lot with 'stays the same, negative' (13 out of 49 in total) whereas participant 13 was coded a lot with redemption when comparing the values with the other participants (8 out of 21). Participant 17 scored the highest on the code 'stays the same positive with 19 codes out of 50 for all.

The most coded coherence was causal coherence with 66 codes and the least coded coherence was thematic with 4 codes. Many fragments were coded with more than one coherence. In total, causal coherence was coded the most with 66 out of 174 codes for coherence. In between were the codes temporal coherence with 41 codes, biographical coherence with 37 codes and no coherence was also found 26 times. 15 % of the fragments were coded with no coherence which illustrates that some stories were not that clear in their coherence as some fragments did not indicate any type of coherence. Another important finding was that thematic coherence apart and in combination with other types of coherences was coded the least namely 4 times. Further, participant 13 indicated the most codes for biographical coherence with 12 out of 37 in total. By far participant 17 had 16 codes for temporal coherence out of 41 (see table 1).

Table 1

Frequency and percentage of valence and coherence

Valence	P12	%	P13	%	P14	%	P16	%	P17	%	Total	%
Redemption	3	13.3	8	33.3	5	26.3	5	17.2	0	0.0	21	17.0
Contamination	0	0.0	0	0.0	1	5.3	2	6.9	1	3.3	4	3.2
Stays the same (positive)	6	27.3	7	29.2	4	21.1	14	48.3	19	63.3	50	40.3
Stays the same (negative)	13	59.1	9	37.5	9	47.4	8	27.6	10	33.3	49	40.0
Total	22	100.0	24	100.0	19	100.0	29	100.0	30	100.0	124	100.0
Coherence	P12	%	P13	%	P14	%	P16	%	P17	%	Total	%
Temporal	3	10.7	9	24.3	6	21.4	7	18.9	16	36.4	41	23.6
Causal	16	57.1	13	35.1	10	35.7	12	32.4	15	34.1	66	38.0
Thematic	1	3.6	1	2.7	2	7.1	0	0.0	0	0.0	4	2.3
Biography	3	10.7	12	32.4	6	21.4	9	24.3	7	15.9	37	21.3
No coherence	5	17.9	2	5.4	4	14.3	9	24.3	6	13.6	26	15.0
Total	28	100.0	37	100.0	28	100.0	37	100.0	44	100.0	174	100.0

One example for a fragment coded with contamination in valence and causal coherence is the following:

> *Yes, that was just before Easter I believe that Friday. Friday before*
> *Easter included good Friday. The doctor initially thought it was*
> *appendicitis. So we just had to go to the hospital, he was examined*
> *there. (…) A friend was there. And every time he gave us such a*
> *wink. (laugh) And we thought that was funny. But then they*
> *recorded him into the hospital. (…) And then he called me that he*
> *wanted to see what was going on because they couldn't see it that*
> *way. (VA: 2, CO: 2)*

This fragment tells the story a participant whose husband was diagnosed with a major illness that needed to be operated. Still, the fragment begins harmless and shows the facility, the protagonists experience with each other. An example for the codes thematic coherence, biographical coherence and redemption in valence will be illustrated here:

> *I think what I am doing, and I often have things happen that way that*
> *you have to deal with government agencies because yes you are.*
> *They don't do it consciously, but you are a number. (…) You really*
> *are a number and you really have to see that for business. And that*
> *is really difficult. (…) And then I wrote another letter to them and*
> *then finally, I did not give up because I think yes, just continue to be*
> *friendly and then it will work and that will work. Such things are*
> *positive moments that, in turn, affect how you later act in such a*
> *situation. (VA: 1, CO: 3, 4).*

This participant claims about the government and that it is typical how they react. Also, the participant learned a lesson from her acting friendly towards them.

There were also fragments coded with no type of coherence. One fragment that shows no coherence and 'stays the same, positive' in valence is the following:

> *Well very positive one hundred percent. Yes and excited. Yes very*
> *positive yes. When I told you about that, very positively yes. Calm*
> *also a bit in the middle and I was calm but very happy (…). (VA: 3,*
> *CO: 5)*

Here, the fragment was too short and did not tell a story and therefore could not be coded with a type of coherence. Still, the participant stayed positive in the fragment.

The following example shows a relation between temporal coherence and negative valence.

> *And then every time. Every time I was confronted with that, I now*
> *realize that. Yes or you don't want to set about that. I don't know*
> *exactly how that works. (…) That he refrains from that and we are*
> *going to divorce, and it is over and that I have always condemned*
> *that from that I do not do but I cannot imagine something. It is an*
> *endless prayer and you cannot start your own life. (VA: 4, CO: 1)*

This story seems to shape the participant and made her/him realize that a divorce is indispensable, and this seems to help to develop into the person the participant is now. Still, it was a hard lesson that was needed to learn, and the participant experienced rather negative than positive emotions.

Quantitative data analysis

In total, seven chi-squared tests were investigated to answer the research question: *How is narrative coherence of older adults related to the valence in emotion expression?* Table 2 indicates an overview of the different types of coherences and how they relate to the valence 'stays the same, positive'. Three chi-squared tests were executed which analyzed the relationship between temporal, causal and biographical coherence and 'stays the same, positive' in valence. There was no test applied for measuring the relationship of thematic coherence and 'stays the same, positive' in valence as there were only four fragments coded with thematic coherence.

Table 2

Cross tab for the relation of temporal, causal and biographical coherence and positive valence (N=124)

	Stays the same (positive)	Other types of valence	Total
Temporal	13.71 %	19.35 %	33.06 %
Other types of coherence	26.61 %	40.32 %	66.94 %
Causal	18.55 %	38.71 %	57.26 %
Other types of coherence	21.77 %	20.97 %	42.74 %
Biographical	8.06 %	21.77 %	29.84 %
Other types of coherence	32.26 %	37.90 %	70.16 %

The chi-squared test which investigated the relation of temporal coherence and 'stays the same, positive' in valence revealed an insignificant asymmetry across cells [$x^2(1,N=124)=0.03$; $p=0.86$]. Further, the chi-squared tests to examine the relation between causal coherence and 'stays the same, positive' in valence revealed a significant asymmetry across cells [$x^2(1,N=124)=4.33$; $p=0.037$] with a Cramer's V of 0.187 which indicates a small relationship between the variables (Osteen, & Bright, 2010). Also the chi-squared test that investigated the relationship between biographical coherence and 'stays the same, positive' in valence indicated a significant asymmetry across cells [$x^2(1,N=124)= 3.874$; $p=0.049$] with a Cramer's V of 0.177. Thus, a small relationship is present between causal coherence and biographical coherence and 'stays the same, positive in valence (Osteen, & Bright, 2010).

Therefore, the first hypothesis (*It is expected that temporal, causal and biographical coherence is related to more positive scores in valence 'stays the same, positive' as more coherence is in relation to more well-being)* can be confirmed partly as there is a small significant relation between causal and biographical coherence and positive valence.

Table 3 displays an overview of the different types of coherences and how they relate to the valence 'redemption'. Three chi-squared tests were executed which investigated the relationship between temporal, causal and biographical coherence and redemption in valence. There was no test executed for measuring the relationship of thematic coherence and 'redemption' in valence as there were only four fragments coded with thematic coherence.

Table 3

Cross tab for the relation of temporal, causal and biographical coherence and redemption (N=124)

	Redemption	Other types of valence	Total
Temporal	7.26 %	25.81 %	33.06 %
Other types of coherence	9.68 %	57.26 %	66.94 %
Causal	8.87 %	48.39 %	57.26 %
Other types of coherence	8.06 %	34.68 %	42.74 %
Biographical	8.06 %	21.77 %	29.84 %
Other types of coherence	8.87 %	61.29%	70.16 %

The chi-squared tests investigating the relationship between the three types of coherences and redemption. The relation between temporal coherence and redemption revealed an insignificant asymmetry across cells [x^2(1,N=124)=1.1; p=0.30]. The chi-squared test which measured the relationship between causal coherence and redemption indicated an insignificant asymmetry across cells [x^2(1,N=124)=)=0.25; p=0.62]. In turn, the last chi-squared test analyzed the relation between biographical coherence and redemption and indicated an almost significant asymmetry across cells [x^2(1,N=124)=0.18; p=0.051] and a Cramer's V of 0.175. Thus, the second hypothesis (*It is expected that biographical coherence is in relation with redemption*) must be rejected as the final analysis of the chi-squared test revealed an insignificant asymmetry across cells.

Table 4 shows an overview of how more than one type of coherence (at least two types) relate to 'stays the same, positive' in valence. The last chi-squared test that was applied in SPSS analyzed, revealed an insignificant asymmetry across cells [x^2(1,N=124)=2.05; p=0.15]. Thus, the last hypothesis (*It is expected that a fragment that is coded with two or more types of coherences is in relation with higher scores in valence 'stays the same, positive' as more types of narrative coherence are related to more well-being)* can be rejected as there is no relation between more than one type of coherence and positive valence (see table 4).

Table 4

Cross tab for the relation of temporal coherence and positive valence (N=124)

	Stays the same (positive)	Other types of valence	Total
More than one type of coherence	11.29 %	24.19 %	35.48 %
One type of coherence and no coherence	29.03 %	35.48 %	64.52 %

Discussion

Current research

The aim of this research was to get to know how narrative coherence (temporal, causal, thematic and biographical) is related to different types of valence (redemption, contamination, stays the same; positive or negative) in older adults when retrieving AM. This is a new approach and thus, the first research that investigated the named relationship in a setting of

recalling memories highlights the importance of this research. Additionally, sharing AM increases people's well-being and therefore, is of relevance as a higher well-being elicits a more satisfied life (Pennebaker & Segal, 1999; Freeman, 2010).

Conclusive, the first hypothesis was partly confirmed as the results indicated a significant small relation between causal and biographical coherence and positive valence but not between temporal coherence and positive valence. No significant relation was proven between biographical coherence and redemption which leads to a rejection of the second hypothesis as well even though the values show an almost significant and thereby small relation between biographical coherence and redemption. The last hypothesis was rejected as no significant relation was found between more than one type of coherence and positive valence.

Findings

Noticeable were the frequencies of contamination in valence and thematic coherence as these were only coded four times with a percentage of 3.2 for contamination and 2.3 for thematic coherence. According to McAdams et al. (2001) contamination sequences are positively associated with depression and negatively associated with life satisfaction, self-esteem, and sense of coherence. Individuals differed in the way in which they tell their life stories in terms of reflecting about the objective past and differences in manners in which people choose to make narrative sense of life. When people tell stories in a redemptive manner, it is possible to elaborate a positive outcome and thereby, see the story in a positive light. By contrast, people who tell stories in a contaminative manner tend to find the negative consequence out of a positive scene (McAdams et al., 2001). Considering thematic coherence, it was unexpected that only 2.3 % of the fragments were coded with thematic coherence as it indicates the ability for autobiographical reasoning and thereby for the emergence of the life story. Still, the participants did not explain a specific event to be typical of many others often which led to only 4 codes for thematic coherence (Habermas, & Bluck, 2000).

The research question focused on the relationship between narrative coherence and valence in emotion expression. The first hypothesis implied a connection between temporal, causal and biographical coherence and positive valence. This hypothesis was partly confirmed as a result of a significant relationship between causal and biographical coherence and positive valence, but no significant significant relationship was found between temporal coherence and positive valence. Interesting was therefore a focus on causal and biographical coherence as this indicates a relationship to positive valence in emotion expression. Future research should focus on these types of coherences and an interview scheme that emphasizes these would serve for a

higher positive emotion expression among participants. An example for a question that evoked causal coherence could be: "How did a specific life event form your personality and ambitions in life?" (derived from the definition of Habermas and Buck, 2000). In consequence of this question, the participant was asked to deal with meaningful life events and how that had influence on the person. An example question for biographical coherence could be: "How did your history form you own biography?" (derived from the definition of Habermas and Buck, 2000). This directive question should elicit biographical coherence and serve for a good reliability as it leads to measuring what should be measured. Still, this research setting served for a benefiting aging process because emotion regulation, maintaining a positive mind and concerning with one's own mortality were encouraged (Westerhof, Bohlmeijer, & Webster, 2010). According to Pe, Koval and Kuppens (2013) there is a relationship between coherence and well-being in general. However, the named researcher did not distinguish in types of coherences and valence which makes it difficult to relate both findings with each other. Hence, other researchers investigated coherence in relation to well-being more general which lead to the conclusion that coherence in general is in relation with well-being. The developed distinction that was performed gave the possibility to look which types are in relation to well-being and how these types can be promoted then. The findings of this research show that only two types of coherences were in relation to positive valence which makes it easier and more applicable for future interventions to focus on causal and biographical coherence.

The second hypothesis indicated no significant relation between biographical coherence and redemption which leads to a rejection of the hypothesis as well even though it was almost significant, and a higher sample size would probably have served for a significant relation (Osteen, & Bright, 2010). According to McAdams et al. (2001) redemption sequences in life stories and psychological well-being showed a link to each other which highlights again the findings of Baerger and McAdams (1999) and Pe, Koval and Kuppens (2013). Coherence in autobiographical stories is related to an improved quality in mental functioning, health and well-being (Baerger, & McAdams, 1999; Freeman, 2010; Pe, Koval, & Kuppens, 2013). Nevertheless, none of the researcher made a distinction in types of coherences or valence which led to difficulty in comparison. This research indicated new distinctions and therefore has great value for future research as causal and biographical coherence and positive valence probably would show a significant and large relation with a larger sample size.

In the last hypothesis it was expected that more than one type of coherence is related to more positive valence than only one type of coherence. This hypothesis was rejected as no significant relation was found between these variables. When a fragment indicated more than

one coherence it was likely that the valence will be more positive as coherence is related to more well-being (Baerger, & McAdams, 1999; Freeman, 2010; Adler, 2012). Still, it is controversial if more coherence means more types of coherences or a larger amount of one type of coherence. Many researchers contend that mental health is inseparably connected to an individual's ability to create and maintain an integrated and cohesive life story (Baerger, & McAdams, 1999; Freeman, 2010; Adler, 2012; Pe, Koval, & Kuppens, 2013). Some researchers have looked at it the other way around. Talarico, LaBar and Rubin (2004) determined that the more negative a person experienced an event or situation, the less coherent is the story. This indicated that less coherence is in relation to negative emotion expression. Future research could investigate this in more detail to prove how important coherence is for well-being and how no coherence has a negative influence on emotion expression. According to Heiphetz, Strohminger and Young (2017) coherent stories are in relation to a congruent identity which facilitates well-being and demonstrates a positive relation between more than one type of coherence and positive valence. A larger sample size would probably serve for more reliable data.

Strengths, limitations and recommendations

A strength of this research was the interview study design as the environmental conditions were the same for all participants. Each participant was interviewed at home which generated a comfortable feeling in the participants. In addition, all participants were interviewed by the same researcher. Due to the same condition for every participant, the data is convenient for comparison.

Through examining the videos, it appeared that the participants learned something about themselves through recalling memories because they reflected a lot in these about their sad and happy moments in life. It seemed to have a learning effect, and in the end, they were often satisfied with their reaction to the events that happened. Earlier research indicated that retrieving AM generates well-being and therefore leads to more overall satisfaction (Pennebaker, & Segal, 1999; Freeman, 2010). This research setting supported the participants to reflect on their life which is beneficial, especially in the aging process as it supports the emotion regulation, maintaining a positive spirit and concerning with one's own mortality (Westerhof, Bohlmeijer, & Webster, 2010). Eliciting AM in old age is effective for mental hygiene and a high well-being can be generated when people share how they once were in order to gain mental stability (Faust 2018, cited in Apfel, 2018). Thus, sharing and thereby processing experienced stories helps to reflect on one's own life and emotions. During the interviews it was visible that even when talking about sad memories the participants were able to see the

good in the experienced events and how they develop through that. This suggests that talking about AM supports mental hygiene and well-being.

Moreover, no other research investigated the relation between coherence and valence in the context of AM in older adults. This emphasizes the importance and novelty of this research which could be used as a basis for further research as it is an important add to the literature how coherence and valence are related among older adults.

Additionally, a coding scheme was developed for valence in emotion expression based on literature which possessed strengths as well as limitations (Northwestern University, 1999; McAdams et al., 2001).

Beneficial was that two professional researchers investigated a coded document of one participant which served for a valid coding scheme for valence and narrative coherence. The coding for valence of the last coded participant was challenging due to some fragments were neither clearly positive nor negative. A code for neutrality would have served for more clarity, especially in the data of the last participant because it was difficult to distinguish between positive and negative as it seemed to be more neutral. Thus, an additional code called "staying neutral in valence" would have been beneficial in differentiating the data. However, this was recognized in the end which made it difficult to apply a new code as the other participants were already coded. The scheme stayed how it was intended and developed by the researcher. The arrangement of the fragments and the coding process was set by only one researcher and may have affected the results. The coding scheme was not investigated for interrater reliability which would have been important for research in the future. Besides, it was difficult to set a coding scheme for narrative coherence as there seemed to be overlap between temporal coherence and biographical coherence. The definitions for temporal and biographical coherence were difficult to distinguish why only one definition was chosen by the researcher to make it more discriminable. Temporal coherence was only coded when the time played a major role in the fragment. Oppositely, biographical coherence was coded when the individual development played a major role.

This research indicated other limitations as well that will be named in the following. The researcher was not a native Dutch speaker which made it more difficult to transcribe and analyze the data.

The frequencies showed that contamination in valence and thematic coherence were only coded four times. This was dependent per participant, for instance participant 16 was coded the most with contamination (two times) which gives an indication of how the participant experienced events more often as good and then getting worse, than others do. In turn,

participant 14 was most coded with thematic coherence (two times). This was unlikely to occur among the other participants that a specific event seems to be typical of many others or by making comparisons between several events (Habermas, & Bluck, 2000, see thematic coherence). A reason for this finding could be that the questions that were asked did not elicit these codes or it was not that applicable for the participants. A larger sample size could lead to a more reliable picture of the frequency of the codes and answer the question whether it is typical that these codes will not appear as often as the other codes do. Also, participant 12 indicated most codes for 'stays the same, negative' (13 times) which may gave a hint on the difference of perception of AM between men and women as the women had more tendency to look back in a positive and reflective manner. This is contradictory to Ros and Latorre (2010) who discovered that men remember more positive memories than women do. Still, Alea and Bluck (2006) identified that AM elicit a feeling of closeness, especially among women who experience more closeness, changes in intimacy and warmth. This emphasized that there is a distinction between men and women experiencing in recalling AM which would be beneficial to focus on for future research as a higher feeling of closeness can serve for more information exchange. When investigating the frequencies of the fragments, the men had 22 and the women on average 25,5 fragments which indicates a small difference between men and women. By means of the results, the interviewer could keep that in mind and use more questions that could elicit closeness and warmth among men as well.

Based on the findings in this research, a recommendation for future research would be to focus on causal and biographical coherence because there is a relation between these types of coherences and positive valence. A focus on questions that elicit causal or biographical coherence should be a recommendation. For eliciting causal coherence in participants, questions are recommended like: "What kind of life events influence your personality, needs or ambitions in life?" or: "What kind of inner reasons influence your personality, needs or ambitions in life?" (derived from the definition of Habermas and Buck, 2000). To evoke biographical coherence the following questions are recommended: "How is your individuality framed through a specific developmental history?" or: "What did form your individuality when you look at your history?" (derived from the definition of Habermas and Buck, 2000). Through these questions both types of coherences would be elicited because they aim specifically the types of coherences. By having a stronger focus on causal and biographical coherence, it is possible to take a deeper look at the relation between these types of coherences and positive valence.

Additionally, for further research it would be beneficial to interview more people, thus have a larger sample size than five. Interviewing more people would have led to more reliable results as more people serve for more generalizability of the population.

It would be interesting to know if men and women distinguish in their coherence and valence. A further research that would examine this difference would need a larger sample size as it expands the statistical power of the research and serves for a more reliable possibility of comparison. With an insufficient sample size, the effects may not be statistically significant which emphasizes the need for a higher sample size for further research (Osteen, & Bright, 2010). It can be investigated if the men show more or less positive valence than women do as Ros and Latorre (2010) found that men recall memories in a more positive manner than women do. The investigation of other age groups would be interesting as younger and older adults can be compared in their coherence and valence. It would be interesting to know whether older people show more coherence or less coherence than younger adults do. Therefore, investigating if there is a peak in coherence depending on age of participant or a decrease and how coherence in aging then could be supported. Considering the few frequencies for thematic coherence it would be interesting to investigate how the frequencies distinguish among younger adults and how valence and coherence is related among this target group. According to Singer et al. (2007) elderly people were more likely than younger people to recall memories in a positive manner but important is also the investigation of coherence in the story. Further, it would be beneficial to focus on patients suffering from dementia as the non-declarative memories are relatively unaffected from aging and include AM (Balota et al. 2000). Talking about AM supports people's reminiscence and thereby, generates well-being (Holland, & Kensinger, 2010; Westerhof et al., 2010).

With these findings the following implementation and intervention for the practice could be beneficial. An intervention should focus on eliciting positive memories by promoting biographical and causal coherence through watching life story books or even watch family videos. By watching these personal memories, the participants will probably see external causes for life events or internal causes that have influence on the person's ambitions in life which will facilitate causal coherence among the people who will watch the videos. Getting questions after watching the family videos will promote causal coherence among the people. Also, life story books or photos in a sequence that show the development of a person and the accomplished events and successes of a person will facilitate the development of a specific history and biography. The effect of promoting biographical and causal coherence could be higher when the participants see the family videos in a cinema and directly after that there will be questions

asked about AM so that these will be activated shortly before. Thee photos sequenced one after another could be watched in a cinema in order to elicit biographical coherence among the participants. By doing this the probability was higher that the participants will be more coherent in their stories. It was helpful for promoting well-being to elicit AM and especially in older people it is helpful for identity development, thus remember who they once were (Heiphetz, Strohminger, & Young, 2017). Further, it is beneficial to promote coherence as not much research focused on it and especially not on the different types of coherence even though this research showed that causal and biographical coherence is in relation to positive valence in emotion expression.

In general, this research setting elicits well-being and reflection among participants. Eliciting AM among patients suffering from dementia can have a positive effect on their well-being which in turn can have positive influence on the treatment of this disease. When having the data of both target groups it can be compared how both groups differ.

Conclusively, it can be stated that there seems to be a significant but small relation between causal and biographical coherence and positive valence and an almost significant relation between biographical coherence and redemption which empathizes the importance of focusing on these types of coherences to elicit positive emotional expression. The other hypotheses did not show a significant relation which emphasizes the importance to go deeper into the matter and change some conditions. More participants and more coders should serve for more reliable results. More research is necessary to replicate these findings in a more effective way, and to gather more knowledge about how narrative coherence and positive valence is connected. Nevertheless, this research innates a great contribution for literature as there were no other researchers who made the distinctions between the different types of coherences. Consequently, a new way of analyzing narrative coherence and valence was invented and serves for new data to use in the future.

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Appendix A – Information letter in Dutch

Informatie over de studie 'Emoties en Ouderen'

Geachte heer/mevrouw,

U heeft aangegeven geïnteresseerd te zijn in deelname aan de studie 'Emoties en Ouderen'. Wij willen u alvast bedanken voor uw openheid en interesse. In deze informatiebrief staat meer informatie over de studie. We leggen uitgebreid uit wat deelname voor u betekent. U kunt deze informatie nog eens rustig doorlezen en eventuele vragen die u heeft opschrijven. Bespreek het met uw familie en vrienden. Als u vragen heeft, kunt u terecht bij de onderzoekers, Deniece Nazareth en Michel Jansen of de projectleider, Prof. dr. Gerben Westerhof. U vindt de contactgegevens onderaan deze brief.

Wat is het doel van het project?

Het eerste doel van onze studie is te onderzoeken hoe herinneringen van *mensen van 65 jaar of ouder* positieve of negatieve emoties kunnen oproepen.

Het tweede doel van deze studie is om te onderzoeken of we emoties kunnen herkennen op basis van verschillende metingen: uw gezichtsuitdrukkingen, uw spraak en een aantal lichamelijke signalen zoals hartslag, lichamelijke activiteit (beweging) en huidgeleiding.

Wanneer kunt u deelnemen aan de studie?

Voor deze studie zoeken wij mensen die 65 jaar of ouder zijn zonder noemenswaardige geheugenproblemen. Daarnaast is het belangrijk dat u de Nederlandse taal kunnen lezen en begrijpen. Verder is het belangrijk dat u goed kunt zien en horen, eventueel met bril of gehoorapparaat. Een laatste punt is dat u geen pacemaker heeft.

Wat houdt dit voor u in?

Na het ontvangen van deze informatiebrief zullen wij u binnen een aantal dagen bellen om te vragen of u interesse heeft om mee te doen aan deze studie. Tijdens dit telefonisch gesprek kunt u al uw vragen stellen aan de onderzoekers. Natuurlijk mag u ook eerder of juist later nog een keer bellen voor meer informatie of om aan te geven dat u wilt meedoen. Als u aangeeft dat u wilt meedoen aan de studie zullen we samen een eerste afspraak inplannen. Deze eerste afspraak zal bij u thuis of in een voor u bekende omgeving plaatsvinden en is bedoeld om kennis te maken met elkaar. Deze afspraak zal ongeveer anderhalf uur duren.

Als voorbereiding voor de eerste afspraak vragen we u een aantal foto's of documenten te verzamelen waaraan u een positieve of negatieve herinnering heeft. U kunt bij documenten denken aan bijvoorbeeld geboortekaartjes, trouwuitnodigingen of krantenartikelen maar geen voorwerpen die niet in een boek kunnen worden verwerkt. Tijdens de eerste afspraak zullen we u vragen om positieve en negatieve herinneringen te benoemen en deze te laten zien door middel van een foto of document. We zullen deze digitaal opslaan voor uw levensalbum. Een levensalbum is een boek waarin mensen hun levensverhaal vastleggen. Door middel van persoonlijke foto's of documenten kunt u uw herinneringen opslaan en bekijken in het boek. U kunt bijvoorbeeld een herinnering hebben van een gebeurtenis waarin u iets positiefs overkomt of een moment in uw leven waar het u tegen zat. Denkt u bijvoorbeeld aan een foto uit uw jeugd waar u een positieve herinnering aan heeft. Met deze persoonlijke herinneringen en

bijbehorende foto's maken wij een digitaal levensalbum dat u doet herinneren aan een aantal van deze gebeurtenissen. Ook zullen er tijdens deze afspraak drie vragenlijsten worden afgenomen. Tijdens deze afspraak zullen we alleen audio-opnames maken. Tot slot plannen we een tweede afspraak in. Die zal ongeveer één tot twee weken na de eerste afspraak zijn. Tijdens de tweede afspraak willen we u gaan interviewen over uw levensalbum en de fotos, documenten en verhalen die u heeft uitgekozen. Ter vergelijking leggen we ook een aantal foto's voor die niets te maken hebben met uw herinneringen, dit zijn algemene foto's. Deze afspraak zal maximaal anderhalf uur duren. Tijdens deze afspraak zullen we audio- en video-opnames maken en metingen uitvoeren van de hartslag, beweging en huidgeleiding. Aan het einde van deze sessie willen we u nog een klein presentje als waardering voor uw medewerking overhandigen.
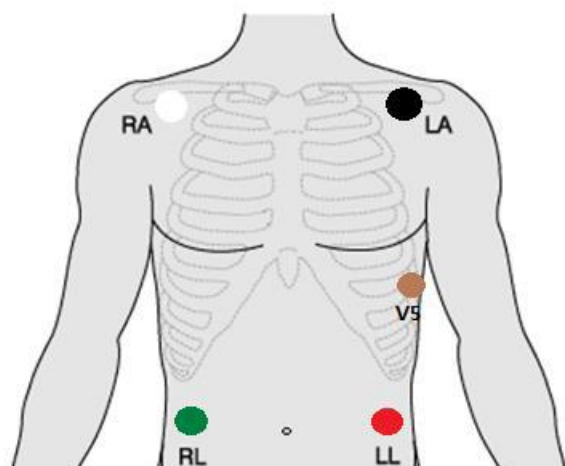
Wat houden de video-opnamen precies in?
In de praktijk zal het er op neer komen dat er bij de tweede sessie een aantal camera's op statieven worden geplaatst in de kamer om uw gezichtsuitdrukkingen te filmen. Deze camera's zullen alleen aan staan op het moment dat het interview begint.

Wat houden de audio-opnamen precies in?
Er wordt centraal tussen u en de onderzoeker een microfoon geplaatst. Daarnaast krijgen u en de onderzoeker ieder een eigen draagbare microfoon omgehangen zodat we uw stem goed kunnen opnemen.

Wat houden de metingen in? Voor het meten van uw hartslag worden er een soort pleisters op uw huid geplakt. Deze pleisters zijn anti-allergisch en ontworpen om gemakkelijk verwijderd te worden na de studie. Voordat deze pleisters geplaatst kunnen worden moet de huid op deze plaatsen even schoongemaakt worden met een alcoholdoekje. Er zijn 2 sensoren ter hoogte van het sleutelbeen en 2 sensoren op navelhoogte. De laatste sensor zit links op uw zijkant. De afbeelding laat zien waar we een pleister plakken.

Voor het meten van de huidgeleiding worden er aan twee vingers meetapparaatjes geplaatst. Hieronder ziet u een voorbeeld hoe deze bevestigd zullen worden.

Een derde apparaatje meet hoeveel u beweegt. Deze wordt om uw pols bevestigd. Hieronder ziet u een afbeelding hiervan.

Alle meetapparaten zullen door de onderzoekers worden bevestigd die er op zijn getraind dit snel en met zo weinig mogelijk last te verwijderen. Ze zijn ontworpen om zo min mogelijk ongemak te veroorzaken. Mocht u hier vragen over hebben, neem dan gerust contact op.

Wat zijn voordelen van deelname?
Uw deelname aan de studie wordt zeer op prijs gesteld. Het draagt bij aan belangrijk wetenschappelijk onderzoek naar hoe levensalbums emoties kunnen opwekken. Deze inzichten kunnen in de toekomst worden toegepast om de stemming van mensen te meten en met levensalbums te verbeteren.

Is mijn deelname vrijwillig?
We geven u graag volledige vrijheid om deel te nemen. Als u niet mee wilt doen, dan hoeft u daarvoor geen reden te geven. Ook als u op dit moment besluit om wel mee te doen, kunt u zich later altijd nog bedenken. Tijdens de studie mag u vragen weigeren als u zich niet comfortabel daarbij voelt of een pauze inlassen als u dat zou willen.

Wat gebeurt er met mijn gegevens?

We gaan zeer zorgvuldig met uw gegevens om omdat we snappen dat het gevoelige gegevens zijn (video en audio gegevens). Uw gegevens zullen worden beveiligd door de Universiteit Twente en zullen niet zonder uw toestemming worden gedeeld. Ook zullen uw gegevens absoluut niet voor commerciële promotiedoeleinden worden gebruikt.

Op de schriftelijke toestemming kunt u aangeven voor welke doeleinden uw gegevens mogen worden gedeeld. Deze doeleinden zijn als volgt:

We geven u de optie om aan te geven of u uw gegevens wilt delen met andere wetenschappelijke onderzoekers die uw gegevens kunnen gebruiken in hun studies. Dit zal gebeuren in de vorm van een database waarin alle gegevens van deze studie zijn opgeslagen. Deze database is beveiligd door de Universiteit Twente. Alle wetenschappelijke onderzoekers die de database willen gebruiken moeten een licentie aanvragen bij de hoofdonderzoekers waarin zij verklaren dat de gegevens niet publiek gedeeld mogen worden of voor commerciële promotiedoeleinden worden gebruikt. Ook moeten ze aangeven de gegevens niet verder te delen en alleen voor hun specifieke studie te gebruiken Na het ondertekenen van de licentie en goedkeuring van de hoofdonderzoekers, krijgen de wetenschappelijke onderzoekers pas toegang.

Ook geven we de optie om aan te geven of uw gegevens gepresenteerd mogen worden bij colleges voor studenten of bij wetenschappelijke conferenties of presentaties. Dit kan alleen als u hier toestemming voor geeft.

Alle vragenlijsten worden genummerd en apart van uw persoonlijke gegevens bewaard. Zolang het project loopt kunt u al uw gegevens bij de onderzoeker opvragen.

Ondertekenen toestemmingsverklaring

Als u besluit deel te nemen, vragen we u daarvoor schriftelijke toestemming te geven. Dit zal gebeuren tijdens de eerste kennismakingssessie. Hiermee bevestigt u uw voornemen mee te doen. Ook bevestigt u daarmee dat we u voldoende geïnformeerd hebben over de studie.

Ten slotte

Deze studie wordt uitgevoerd na een positief oordeel van de Commissie Ethiek van de Universiteit Twente te Enschede. De voor deze studie internationaal vastgestelde richtlijnen voor de studie en databescherming zullen nauwkeurig in acht worden genomen.

Verdere informatie

U kunt altijd contact opnemen met de uitvoerders van de studie, Michel Jansen (e-mail: m.jansen-1@utwente.nl ; tel: +31534897808) of Deniece Nazareth (e-mail: d.s.nazareth@utwente.nl; tel +31534896590). U kunt met uw vragen ook terecht bij de projectleider, Prof. dr. Gerben Westerhof (e-mail: g.j.westerhof@utwente.nl; tel: +31534896074).

Na het ontvangen van deze informatiebrief zullen wij u binnen een aantal dagen bellen om te vragen of u interesse heeft om mee te doen aan deze studie. Tijdens dit telefonisch gesprek kunt u al uw vragen stellen aan de onderzoekers. Natuurlijk mag u ook eerder of juist later nog een keer bellen voor meer informatie of om aan te geven dat u wilt meedoen.

Appendix B – Informed Consent

Toestemmingsverklaringformulier (informed consent)

Titel van de studie: Emoties en Ouderen
Verantwoordelijke onderzoekers: Deniece Nazareth en Michel Jansen

In te vullen door de *deelnemer*

Ik bevestig dat ik de informatiebrief heb gelezen en ik begrijp de informatie, doel en de belasting van deze studie. Ik heb voldoende tijd gehad om over mijn deelname na te denken. Ik ben in de gelegenheid geweest om vragen te stellen. Deze vragen zijn naar mijn tevredenheid beantwoord.

Als u toestemming geeft kunt u hieronder de gegevens invullen en ondertekenen. Vergeet niet aan te kruisen of u wel of geen toestemming geeft voor het maken van video-opnames voor de studie. Uw gegevens zullen absoluut nooit gebruikt worden voor commerciële doeleinden.

Kruis per stelling in de vakjes aan of u toestemming geeft of niet.		
	JA	**NEE**
1. Ik geef toestemming voor het maken van audio, fysiologische en video opnames tijdens de studie.		
2. Ik begrijp dat ik op ieder moment kan stoppen zonder enige reden hiervoor te moeten opgeven. Mijn opnames zal dan geen onderdeel uitmaken van de studie.		

	JA, ik geef toestemming	**NEE**, ik geef geen toestemming
3. Mijn opnames mogen gebruikt worden voor het doel van deze studie.		
4. Mijn opnames mogen getoond worden, bijvoorbeeld voor onderwijs aan studenten of voor wetenschappelijke presentaties en bijeenkomsten waarbij uw gezicht herkenbaar in beeld kan zijn en uw stem herkenbaar hoorbaar is.		
5. Mijn opnames mogen ook voor vervolgstudies gebruikt worden door andere wetenschappelijke onderzoekers en mogen daartoe worden opgenomen in een database.		

Ik weet dat mijn deelname geheel vrijwillig is en dat ik mijn toestemming op ieder moment kan intrekken zonder dat ik daarvoor een reden hoef op te geven.

Naam deelnemer: ....

Datum: ....

Handtekening deelnemer:..

In te vullen door de *uitvoerende onderzoeker*

Ik heb een mondelinge en schriftelijke toelichting gegeven over de studie. Ik
zal resterende vragen over de studie naar vermogen beantwoorden. De deelnemer zal van een eventuele voortijdige beëindiging van deelname aan deze studie geen nadelige gevolgen ondervinden.

Naam onderzoeker : ....

Datum: ....

Handtekening onderzoeker: ....

Appendix C

Coding scheme narrative coherence

Type	Definition	Example
1. Temporal coherence	- the person of the past must be seen to coherently develop into the person of the present	Ja ik weet nog van dat die fotograf op school kwam en dat dan. En die meisjes die moesten dan ben je zo'n poppen wiegetjes staan en jongens van denk ik bij een auto of zo. (…) Hele andere tijd. Moeten ze allemaal stil zijn en ja nee hoor er was lawaai. Maar als die de juf X pakte aan het horen en er waren ze wel stil dan moesten ze luisteren. Ja het was heel anders. (HM)
2. Causal coherence	- emerge by external causes for life events or internal causes that are dependent on the person's personality, needs and ambitions in life	Ja ze waren misschien wel bang dat het te veel zou worden. Maar ik zei ja dermate dat ik dus daar energie een beetje van krijg. Ja ik wil me toch omscholen ik wil toch verder werken. (…) Of ook helemaal niet zo belangrijk dat ze daarbij waren daar heb ik helemaal niet aan gedacht. Maar dat deden de anderen dus wel dat was wel even dat ik dacht hé grappig. Ik ben alleen ja met die vriendin. Ja dat was het. (HM)
3. Thematic coherence	- declaring a specific event to be typical of many others or by making comparisons between several events	(…) Ze doen het niet bewust maar je bent wel een nummer ik laat me dan gasunie heeft ook mee was gereflecteerd toen. Je bent echt een nummer en je moet dat echt zakelijk zien. En dat is echt lastig. En toen had ik eens nou te doen want ik had echt te veel aandacht besteed aan dat mailtje hoe ik dat geschreven had en precies getekend gaat getekend hoe dat was met die schroef (…) (HM)
4. Biographical coherence	- one's individuality is framed through a specific developmental history in order to form one's own biography	Nou ik had wel een gevoel een soort van eenzaamheid maar dat was dan een andere eenzaamheid dan zij hadden. Dus het was niet het was nog niet zo speciaal een verwijt maar het was een ja gewoon afscheid een soort verlies van een route die zich toen vaag begon af te tekenen van misschien ga ik wel acteren. (…) En het was duidelijk dat ik daar gewoon niet niet in zou gaan passen. Maar zij hadden dat niet in de gaten dat dat op dat moment al dat

		ik toen dacht van nou dit is echt wel behoorlijk definitief. (SM)
5. No coherence	- None of the coherence types are found within one fragment	Dus eigenlijk wel leuk om te vertellen of ja ook al roept het emoties op dan is er nog goed om te vertellen en ik vind het wel heel ja het lucht wel op. God werk. En je compagnon. Jij doet psychologie? Dan ben je wel geschikt voor dit hoor heel goed mooi rustig gedoseerd heel mooi. Ja dat is heel positief. Altijd wel iets opgewonden ja. Zeker positief. Ja toch blij. (HM)

Note. Adapted from "Getting a life: the emergence of the life story in adolescence."
by Habermas, T., & Bluck, S. (2000). Retrieved from
https://www.researchgate.net/profile/Susan_Bluck/publication/281368010_Getting_a_life_The_emergence_of_the_life_story_in_adolescence/links/57cd87e608ae83b37460d7d6.pdf

Note on coherence
- As there seems to be a lot of overlap between the types of coherence one of the definitions was chosen in order to be able to distinguish these and to be as clear as possible in coding the fragments
- It was the clearest definition chosen by the researcher to make the coding best applicable

Appendix D
Coding scheme valence:

Type	Definition	Example
1. Redemption	From bad to good: A transformation from bad, affectively negative life event to a subsequent good, affectively positive life event.	Nou ik voel me nu heel erg negatief zo. Ik was negentien, was nieks waard. (…) En meest emotionele situaties verhuizen overlijden en echtscheiding dus dan moet je natuurlijk wel een beetje emotie bij tonen ja. Op dit moment voel ik me prima nou en redelijk kalm want ik ben er wel blij mee ben wel tevreden de dat ik dat zo gedaan heb. (SM)
2. Contamination	From good to bad: The move from good, affectively positive life event to a bad, affectively negative life event.	De kinderen weten dat wel ik heb gegeven moment ook gezegd. Ik zie ons niet meer als getrouwd. Het was een soort. Ja ik kon het gewoon niet meer en toen ging het ook eigenlijk veel beter. Toen was het voor hem niet meer vanzelfsprekend wat ik deed voor hem. Ergens was dat nog een stukje wat ik dan ook wel nodig had, een soort

		dankbaarheid van hem en wat ik dan toch nog voor hem deed. (…) Dat maak je eenzaam of zoiets. Ik kon het niet loslaten. Dat hij dat niet kon kon ik gewoon niet. Ja ik weet niet of je daar die positieve en negatieve kunt voor woorden maar het ja. Laat ik hem op neutraal staan. (SM)
3. Stays the same (positive)	The story stays good within one fragment.	Oh ja die stad. Ja die straat dit is de fleet hier werden de feesten gehouden 's zomers ja. Ja mijn oom en tante ze hadden zes zeven kinderen of zo nichtje van mijn leeftijd. Dat vond ik geweldig ik had daar het gevoel. (…) Het was op zich wel een leuke relatie. Zo hij plaagde haar wel maar ze kon het ook wel aan. Oh dat was zo leuk en het was dan ook nooit lastig je kon daar mee ja. Oké. (HM)
4. Stays the same (negative)	The story stays bad within one fragment.	Ja dat was een drama echt een drama. Want die meisjes die ja. Die meiden die hadden zo een andere dingen zo'n ding bij met zo'n waar je op kunt staan staan inmiddels zo'n peddel hoe ze heet. En die zijn dus afgedreven. (…) Ik ben helemaal niet meer op dat ding geweest. En dan was die tijd voorbij. Het was nog wat tot half vijf of zo en dan kun je dat ding huren of tot vijf uur. Het is verder niet meer ja misschien wel over gesproken maar dan in het arabisch ja. Ja dat versta ik niet. (HM)

Note. Adapted from "When bad things turn good and good things turn bad: Sequences of redemption and contamination in life narrative and their relation to psychosocial adaptation in midlife adults and in students."

by McAdams, D. P., Reynolds, J., Lewis, M., Patten, A. H., & Bowman, P. J. (2001). Retrieved from:
https://journals.sagepub.com/doi/pdf/10.1177/0146167201274008?casa_token=g8daEOTPWj oAAAAA:XZNGiAMhulQOm812O5RVd_ImN642UzTD2pQrnz6uiFCUB6SpwTK5Ye4_sf N6BcNXZPTrA6xyAT4

Appendix E

Classification of coherence in SPSS

1	Temporal
2	Causal
3	Thematic
4	Biography
5	No coherence
6	Temporal, causal
7	Temporal, biography
8	Causal, thematic
9	Causal, biography
10	Temporal, causal, biography
11	Temporal, thematic, biography