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Running Head: ELICITATION, NARRATIVE, AND WELL-BEING

Oral vs. Written Narrative Memories and Well-Being in Late Adolescence

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## Abstract

Researchers have been investigating possible psychological functions connected to personal memories that are presented in a narrative form. This study examines whether the structure of these narrative memories relate to psychological functioning. In addition, it tries to determine the best method of eliciting these narrative memories, whether oral or written. Thirty five upper level undergraduates (18 females and 17 males) completed Personal Well-Being and Satisfaction with Life likert scales. A few weeks later, participants provided four personal memories: a childhood memory, a high point, a low point, and a turning point. Half of the participants wrote their memories down and half related their memories orally. We hypothesized that oral memories would be longer, more specific, and more coherent than written memories. We also hypothesized that these oral memories, which would be higher in specificity and coherence, would correlate with higher levels of well-being and life satisfaction than written memories. We found that oral memories were longer than written memories but there were no differences in the degree of specificity and coherence between them. We also found some moderate negative correlations between specificity, coherence, and Well-Being scales, which was surprising given positive correlations in previous research.

## Introduction

In recent years, the field of narrative memory research is rapidly expanding. Researchers are looking into the psychological function of producing personal narratives, and examining whether the nature and structure of narrative memories relate to the teller's well-being. The critical hypothesis tested is whether the ability to tell specific and coherent personal narrative memories is related to one's assessment of well-being and satisfaction with life. This study builds on previous research and examines this relation between narrative personal memories and well-being with a group of late adolescents. It also examines the best methodology for conducting this research and, in particular, whether we obtain best results when the memories are told to an experimenter or whether they are written down.

### The Significance of Personal Narrative Memories

The sharing of personal narrative memories seems to be ubiquitous. Conversations among family members or friends frequently involve the exchange of personal experiences. If interesting things happen in people's lives, they typically find someone to share them with, and seem to thrive off the reaction their story induces. It is as if people's feelings about an event are validated simply because another person hears about it. It may be that the action of relating a personal experience to others forces people to organize their memories, internally making sense of it before it can be expressed. This motivates a beneficial coherence and sense of personal understanding. These conversations also seem to serve a great function for society. From the beginning of life, one of the reasons for human survival has been that one generation is able to communicate its knowledge to the next one, and people generally impart knowledge through the sharing of their experiences. Tomasello (1999) referred to this as the uniquely human ability for cultural transmission. For example, if people injure themselves doing a certain activity, they are

likely to tell their family and friends not to participate in that activity. These are some of the most common reasons that narrative memories are useful in the social world.

With regards to the benefits personal memories have for the teller, researchers such as McAdams (2001), Thorne (2000), and Pillemer (2001) have argued that the creation of life stories may be necessary for successful psychological development from a naïve child to a mature adult. As Habermas and Bluck (2000) noted, when one speaks to children, it is noticeable that they can relate scores of detailed episodic memories, memories that are of one specific time, relating to one specific event. They seem to tell stories all the time, but these stories are not connected or integrated with one another in a significant or global way. Habermas and Bluck (2000) hypothesized, based on an extensive review, that a transition takes place in adolescence so that by adulthood people have developed a coherent life story. This life story is an interpretive version of one's life, which attempts to tie various key events into a coherent whole. This life story flows along like any other narrative in the sense that it is presented in chronological order, maintains a stable theme throughout, and draws causal, meaningful connections between and among different episodes. However, it differs from other narratives because the life story includes elements of personal interpretation, not simply the objective recounting of events.

Habermas and Bluck explain the timing of this development in terms of Piaget's cognitive theory (1970). According to Piaget, as cited by Habermas and Bluck (2000), before adolescence, people do not possess the formal operational thinking necessary to integrate the various disparate aspects of their lives. For instance, the concrete operational child does not see the contradiction between his at school with his friends and that at home, but for the formal operational adolescent, the connection is clear. They try to reconcile these two situations, and

likely comment on the connection. In this way, the autobiographical information that children can produce differs greatly from the autobiographical capability of adolescents. Throughout adolescence, a life story is forming. This life story that emerges is essentially the cohesion of several personal memories into a whole meaningful story. This coherent life story, according to Habermas and Bluck (2000), only starts to emerge in adolescence but the end result is characteristic of a mature adult who is prepared to examine their lives as a whole, and use this information to make educated, intelligent decisions regarding their future. The coherence that develops allows them to see patterns in their lives, reacting to significant trends in their lives, rather than isolated experiences. In this sense, the development of a coherent life story is quite important to one's success as an adult because it provides the knowledge that goes into deciding important issues. McAdams and Bauer (2004) refer to this as "intentional self-development," suggesting that when people are aware of their life story, consciously knowing the meaning they have assigned to things and the way they perceive things, they can act accordingly to go along with this pattern or alter it. A component of self-determination comes with the creation of a life story, and this self-determination is a characteristic of a mature, successfully developed person.

Narrative memory may be also quite important for a person's psychological development because of its contribution to the formation of personal identity. Adolescence is the time when people are confronted with the task of constructing their sense of identity (Erikson, 1968). It is at this stage of life that major decisions have to be made that incorporate every aspect of life including work, family, social relationships, and religious beliefs. McAdams (2001) conceptualizes the sense of identity that comes from establishing a life story as a construct that provides purpose to one's life, and attributes a deeper meaning to the progression that one's life is taking. The causal connections between the past, present, and anticipated future events of their

lives, provides a person with a sense of unity in their lives. He claims that this self-understanding gives people a sense of significance that was absent when they thought of their lives as disconnected episodes, the way children do. This sense of meaning and purpose in one's life is psychologically beneficial because it provides a sense of unconditional worth as well as some personal direction for the future.

### The Structure of Personal Memories and its Relation to Psychological Functioning

Many researchers are also examining the connections between narrative memory and well-being. One current trend looks at the structure of a narrative, including the way it is constructed and portrayed. Our episodic memories include vivid information about who was there, where something occurred, when it happened, and the responses of relevant characters (Thorne & McLean 2003). However, the way one organizes this information, for instance the degree of specificity or coherence used seems to be related to one's general well-being.

The construction of a life story seems to have a great impact on its effectiveness of providing the personal functions described earlier. This is similarly true for stories that are meant to be told to other and life stories that are internally formulated. Whereas effectiveness for a conveyed story implies a transfer of information or emotions, effectiveness for an internal, personal life story can include the ability of one to form an identity, and how this impacts personal well-being. A growing number of researchers have looked into the ways these life stories and narrative memories are structured. Two specific dimensions they have found to be intriguing are the specificity and coherence of a life story. The specificity refers to the extent the memory reflects one specific occasion, rather than general remembrance of a type of situation. Coherence refers to how connected and integrated aspects of the life story are within themselves, and to each other.

Pillemer (2001) found that differences in the way a life story was composed would impact a person's well-being. He reviewed the work of Williams (1996) which demonstrated that the specificity or lack thereof in a life story correlated with well-being, and Pillemer bases his own claims on the Williams's findings. Williams asked participants for specific memories. However, he found that there were some participants who, no matter what kind of cue or encouragement he gave, could not provide a specific memory. Even after multiple instructions, these people did not produce a memory of a specific time and place, but would only contribute what he termed "overgeneral" memories, such as "When I was young," or "When I'm in a relationship." He examined psychological measures of these participants who lacked specificity in their memories, and found that overgeneral life stories correlated with depression, posttraumatic stress disorder, and other negative psychological conditions. Williams (1996), as cited by Pillemer (2001), reasoned that this connection between specificity and well-being might result from the possibility that an overgeneral response is a defense mechanism meant to shield the person from hurtful specific memories.

In addition to specificity, the coherence of a person's life story has also been shown to relate to well-being. Baerger and McAdams (1999) developed a coherence scale for personal memories that consisted of four components: orientation, structure, affect, and integration. The choice of these four constructs was based upon previous research that they reviewed. Baerger and McAdams felt that, just as other stories function more effectively if they are coherent, narrative memories should resemble the same relationship. Thereby, they examined whether having coherent life stories produced beneficial effects for psychological well-being. [For further details on their coding scheme for coherence, please refer to Baerger and McAdams (1999) pp. 72-74.] In this study, participants between the ages of 35 and 65 completed self-



report measures of satisfaction with life, happiness, and depression prior to coming in for their interview. The experimenter requested that participants relate eight specific memories. The memories asked were “critical events,” including a peak experience, a nadir experience, a turning point experience, an early memory, a childhood scene, an adolescent scene, an adult scene, and one other memory the participant could choose. These eight memories were scored for their level of coherence. In addition, a score for overall coherence for all eight memories was given. This overall coherence score was thought to represent the coherence of a life story because it measured how coherently various episodes of one’s life reflected each other. Baerger and McAdams (1999) found a strong relationship between a person’s overall coherence in their memories Baerger and McAdams to measures of their satisfaction with life, happiness, and depression. Measures of satisfaction with life and happiness were positively correlated with high coherence in their personal memories, while depression was negatively correlated with coherence in their personal memories; thereby confirming the hypothesis that coherence in a life story is related to psychological well-being.

The sample Baerger and McAdams used, ranging in age from 35 to 65, could have had an effect on their results. That these participants were in the middle years of their lives suggests that they should have previously resolved the psychological task of forming their identity in order to contend with the higher developmental demands of middle adulthood. In the process of forming a sense of identity people integrate various aspects of their life, leading to coherence in their life stories (McAdams, 2001). This implies that a person who has chronologically reached middle adulthood, but does not demonstrate coherence in his life story has not successfully formulated their identity. This identity confusion would impact a person’s well-being, thus explaining why perhaps middle adults who have less coherent life stories would show signs of

lower levels of well-being. However, this leaves unanswered the question of whether similar results would occur with younger people who may have less coherent life stories because of an unformed identity. Because developmentally adolescents are not expected to have a completely formed identity, their lack of coherence in their life story may not negatively impact their well-being the way it does for middle adults.

Bauer and McAdams (2004) looked into the life span goals and everyday goals included in one's life story, and found that coherence between the two had a greater impact on well-being than possessing either of the goals separately. This study looked at both college students and adults, to see whether coherence in life stories mediates the relationship between age and personality measures (such as well-being). Also, this study takes a slightly different approach than others because instead of asking participants to relate a life story, they were asked about their life goals and everyday goals, and the authors interpreted the connection between these goals as their life story. Participants were asked to write 2 paragraphs indicating 2 of their major life goals, which were coded for exploratory vs. intrinsic motivations. An exploratory motivation is wanted to expand one's perspective and understanding of themselves and other; while intrinsic motivations include aspirations such as autonomy, competence, and relatedness. Then participants were asked to complete the sentence, "I typically try to..." 10 times as a representation of their everyday goals. These sentences were coded for whether they incorporated growth goals or not (including both exploratory and intrinsic), and the number of growth-oriented goals for each person was added. Participants also filled out The Washington University Sentence Completion Test of Ego Development (Hy & Loevinger, 1996) which measures different stages in personality development; the Personal Well-Being scale (Ryff & Keyes, 1995) which consists of scales for six dimensions of personality; and the Satisfaction

With Life Scale (Deiner et. al., 1985), which depicts overall life satisfaction. In the end, the determining factor for well-being was not that one has goals; but rather that they have coherence in their life stories, as exemplified by similarity between the goals in their everyday goals and major life goals. Also, the results with regards to age were mixed and only with low significance, thereby implying that further research is needed in this area. Although this was not the traditional route, one can recognize how examining the coherence between one's goals is similar to examining the coherence in one's life story. Regardless of the method, this study supports the theory that well-being relates to the personal construction of a life story.

#### Using Various Elicitation Techniques

There are many variations in the way researchers approach the topic of narrative memory, and the questions posed by the previous section. One can ask participants for a detailed, long description of their entire life story, as McAdams does. Or one can ask participants for more specific episodic memories of certain events. As described earlier, a life story is a coherent integration of many episodes of a person's life that attributes meaning to the sequence of events. Personal event memories are specific memories from a particular time and place. In an overview, Thorne and McLean (2002, 2003) look into self-defining memories, a specific type of personal episodic memories that remain highly vivid and personally important long after the event occurred, contribute to one's self-understanding, and convey a great deal of feeling. Through an extensive review of the literature, Thorne (2000) determined that personal memories are usually atypical events in one's life, such as first experiences or turning points in one's maturity, cluster in adulthood, and the content expressed in a particular narrative is hard to predict (even though the general themes tend to stay consistent between memories). This means that our personal memories, experiences that stand out in our mind, are ones that are uncommon

and have significance to us. Examining these specific memories is an alternate to looking at McAdams's life stories as previously described.

Within looking at specific memories, a distinction must also be made between those methods which ask for any "self-defining memory" (e.g., Thorne's experiments) and Pillemer's method of asking for pointed, directed memories, such as a high point or turning point in one's life. Since each of these different methods has provided significant results, one may choose between these methods depending on whether it matters if the topics of various participants' memories are similar to each other.

Another methodological question of interest is whether the participants should write their memories or orally relate them to an experimenter. Researchers have utilized both of these elicitation methods. Some examples are Thorne (2003) and Thorne and McLean (2002) that used written questionnaires soliciting memories specific memories, or Thorne, Cutting, and Skaw (1998) and Baerger and McAdams (1999) that used scripted interviews. However, none of the previous studies have compared which of these techniques is better methodology. Research that compares the functionality of these two methods for achieving the same task is lacking.

### The Current Study

Although based on previous findings, the current study explored a distinctly different angle than previous research. Whereas most researchers, including Plunkett (2001) and Baerger and McAdams (1999), who have looked at well-being, have looked at this through depictions of a life story, this study examined well-being from the lens of self-defining personal memories of specific accounts. This study also meant to answer the methodological question of the best way to conduct this sort of research. Whereas other studies have either asked participants to write their memories or to interview with an experimenter, we used both methods to collect our

sample. We compared the results from the two types of elicitation, oral and written, to detect if there were differences in the quality of the narrative memories provided. In turn, if there were differences between the narratives written and the narratives spoken, we should be able to determine if these differences impact the correlation to a person's well-being.

In reviewing previous research, it becomes clear that the exploration of narrative memory is quite pertinent for successful psychological development, but also psychological well-being. Many structural dimensions of narratives show this connection to well-being, and this experiment was meant to provide support for this relationship. One hypothesis then of the current experiment therefore was that the specificity and coherence of participants' personal memories would directly correlate with their level of well-being. Another important issue in narrative memory is the manner in which it is expressed to the external parties. The way a memory is related presumably would effect what is included, how it is organized. Therefore, a second hypothesis is that the elicitation method will affect what is told, and the way it is told.

To test these hypotheses, we asked half of the participants to tell a researcher about four specific, self-defining memories, and half of the participants to write about four specific, self-defining memories in response to 4 separate probes in a booklet. The four memories asked were a childhood memory, a high point, a low point, and a turning point. These memories were coded for length, specificity, and coherence. The participants also provided responses to the Personal Well-Being scale (Ryff & Keyes, 1995) and the SWLS (Diener et. al., 1985; appendix A). Correlations between scores on these measures of well-being and scores on the three dimensions of life stories (i.e., length, specificity, and coherence) were computed. Also, we compared the similarity between the memories told to the experimenter and the memories written in a booklet,

and examined whether the effect on well-being is perceived more easily with one type of elicitation versus the other.

Our predictions were: a) that life stories with more specificity and coherence would be correlated with tellers who have higher levels of self-reported well-being as previous research has found (Pillemer, 2001; Baerger & McAdams, 1999); and b) that personal memories orally given would show the positive correlations between specificity and coherence and well-being more strongly than written memories because they would presumably be longer, providing more opportunity to be specific and coherent. We presumed they would be longer because of the larger effort and time writing takes as compared to speaking.

## Method

### *Participants*

The participants were 35 upper level undergraduates at Lehigh University, who ranged in age from 20 to 22 and came from a variety of academic disciplines.

### *Design*

For the memories obtained, the first independent variable was the method of elicitation of the memory, with two levels: orally relating the memories to an experimenter or writing down the memories. The second independent variable was the gender of the participants. The dependent variables were the length, specificity, and coherence of the narrative personal memory obtained for each participant. To examine the relation between the structure of memories and well-being, we also obtained two other dependent measures: participants' well-being score and satisfaction with life score.

Intercorrelations were performed to validate the coding systems of specificity and coherence. Intercorrelations were obtained for specificity and coherence of personal memories with the participants' satisfaction with life and well-being scores.

### *Materials*

The measures of well-being used were the Personal Well-Being scale (PWB; Ryff & Keyes, 1995; Appendix A) and the Satisfaction With Life Scale (SWLS; Diener et. al., 1985; Appendix B). Both of these scales have shown to be reliable and valid measures (McAdams et. al., 2005). The Personal Well-Being scale consists of sections with multiple statements relating to one dimension of well-being. For each statement, a person designates on a 6 level Likert scale the degree to which they believe the statement applies to them. Six dimensions of well-being were measured: personal growth (continued growth and development of one's potential), self-acceptance (having a positive attitude of one's self and one's past), purpose in life (comprehension of one's purpose or greater meaning, a sense of intentionality), autonomy (self-determination, independence, individuation, and having an internal evaluation system separate from others' opinions), positive relations with others (warm relations with others, including feelings of trust, empathy, and affection), and environmental mastery (ability to manipulate one's environment purposefully and take advantage of environmental situations). The scores for each statement were added within a dimension, after reverse scoring had accounted for a variation in the wording of particular questions, to determine a person's score on that dimension. The scores from each of the six dimensions were added to depict an overall well-being score. The SWLS consists of five statements for which a person designates on a 7 level Likert scale the degree to which they agree with the statements. Each statement reflects an evaluation of the participant's general satisfaction with their life.

For half of the sample, booklets were used to collect the self-defining personal memories. The first page had a description of what constitutes a self-defining memory including: that it is vivid, highly memorable, personally important, and at least one year old; the type of memory that conveys why you are the way you are (Thorne & McLean, 2003), the instructions to be as specific and detailed as possible, including giving the age at the time of the episode, location, who was there, and all the relevant characters' reactions. Participants were instructed to take their time and not worry about spelling or grammar. The following pages solicited the four self-defining memories with a description at the top of every other page stating exactly what type of experiences constitute each type memory. There were pages left in between each solicitation to provide ample space for an answer. The memories solicited were a childhood memory, a high point, a low point, and a turning point in one's life. These specific memories were chosen because previous research has shown that they correlate to measures of well-being (Baerger & McAdams, 1999). The childhood memory was specifically chosen to be asked first because people are more accustomed to being asked to relate a childhood experience. Thereby, it could serve as a warm-up question to acclimate participants to the task of relating personal memories.

For the remaining half of the sample, a structured interview was used to collect the self-defining memories. An audio tape-recorder was used, and a transcribing machine facilitated the transcribing of the interviews.

### *Procedure*

*Recruitment of participants:* The experimenter visited six advanced level classrooms from all three colleges at Lehigh University, and asked for volunteers to participate in a study on evaluations of life. They were told they would be compensated, but were not told the amount. This encouraged participation, but also discouraged participating solely for the money because



they did not know if the amount money would be worth it. They were not told about the memory portion of the study, because we wanted each collection (the psychological measures and the memories) to appear to be different studies. This would decrease the chance that a person's answers to one would impact their answers to the other. A sign up sheet was circulated, and all volunteers were later e-mailed with available time slots to participate. Only the people who responded to that email were scheduled for an appointment.

*Psychological measures:* Participants came either alone or in small groups (with 2-4 participants). They were explained that the surveys contained questions that required them to evaluate their lives. They were assured that everything would be kept anonymous and confidential. Then the surveys were distributed and consisted of some personal information to create identifications numbers for the participants as well as the PWB scale and the SWLS. Participants were asked to provide the first letter of their first name, last letter of their last name, last number of their social security number, number of the day they were born, and the number of siblings they have. This provided an identification number for each participant, which allows us to keep the data confidential. If there were multiple participants, they were told to wait quietly until everyone had finished, so as not to rush anyone. Then the surveys were collected. The participants were given four dollars (\$4.00) for their effort, and asked if they would like to participate in a second study. They were told the next study would be about memories, and they would be compensated with some more money. Again, a sign up sheet was used, and then an email was sent to volunteers on that list. Anyone who responded to the email was scheduled to participate in the second part of the study, so these were the only people used. Surveys of people who did not return for the memory portion were destroyed.

*Oral elicitation:* Before the participant arrived, the experimenter recorded the participant's code from their surveys, and turned off the recorder. Participants completed the experiment in a room alone with the experimenter. The experimenter began with a 2-3 minute rapport building conversation. This conversation consisted of the experimenter explaining that the experiment would require the participant to remember and relate personal episodes from their lives, and the participant was assured that their responses would be kept anonymous and confidential. During this conversation, the experimenter attempted to make the participant feel comfortable, and acclimatize them to sharing personal information with a stranger. Topics of discussion for the rapport building session included such things as where the participant grew up, if they have any siblings, and what was their favorite class in elementary school.

Next, the experimenter started the tape recorder, and informed the participant that the study is looking for self-defining memories and provided a definition for these types of memories. A self-defining memory was defined as a memory that is "vivid, highly memorable, and personally important. Such memories occurred at least one year ago. Basically it is the type of memory that conveys something about why you are the way you are." They asked the participant to be as detailed and specific as possible, and to include in their account the age they were at the time of the memory, the location of the event, who was there, and all the relevant characters' reactions. Then each memory was elicited with a 2-3 sentence description of the type of memory being asked for. A childhood memory included anything that occurred before the participant completed elementary school, or roughly before the age of 10 or 11. A high point memory was a peak moment in the participant's life that had an overall positive connotation and made the person generally feel good. A low point memory was a bad moment in the participant's life, or something with an overall negative connotation. A turning point memory

was a moment in the participant's life that caused them to redirect their life's plan. It had *an altering effect* on their life. It did not have to be the #1 *biggest* change in their life, but it was something that made them reevaluate themselves or redirect a certain aspect of their life. (The exact instructions used are presented in Appendix C). We always started by asking for a childhood memory because it was seen as a more commonplace question, thereby still serving as a warm up. The high point always preceded the low point because in a pilot study, asking for the low point first seemed too shocking for the participant. The turning point either came before the high point or after the low point, with half of the participants receiving each order. The participants spoke until they chose to stop, and then the experimenter probed for any necessary clarifications, specifics, or glaring gaps that were left out.

When this phase was completed, participants were compensated eight dollars (\$8.00) for their efforts. The monetary compensation was known to the participants prior to the interview as a method of encouraging them to take the study seriously. If they knew they would be paid, they would hopefully realize that the study was important enough to merit that compensation. On average the interview took about 30-45 minutes.

*Written elicitation:* The procedure for the written elicitation was precisely the same as the verbal elicitation procedure up through and including the rapport building conversation. Following this conversation, the experimenter gave the participant the booklet containing the solicitation of memories. The order of the solicitations was exactly the same as in the oral elicitation procedure. The researcher read through the first page of the booklet with the participant, explaining everything, and answering any questions the participant had. The participant sat at a desk near the experimenter, who occupied themselves with other things, so as not to be closely watching the participant and making them nervous. The participants were given

as much time as they needed to complete the booklet. When they were finished, they were thanked, debriefed about both parts of the study and their connection, monetarily compensated, and dismissed. The experimenter labeled the booklet with the participant's code from the surveys. This packet was stored to be coded after all of the participants had been tested. On average the procedure took about 30-45minutes.

### *Coding the Memories*

A total of 140 memories were obtained that were coded for length, specificity, and coherence.

*Length.* This was measured by counting the number of propositions used in participants' responses whether oral or written. A proposition is an "idea unit" that includes a subject, a verb, and an object, but the key part is the verb, as subject or object can be optional. This is a respected measure of length used in past research (Shapiro & Hudson, 1991). Compound (e.g., and, so) and subordinate statements (e.g., that, which) start new propositions. Phrases that were exact repeats were not counted as new propositions. During the oral interviews, any reconstructions, minor re-phrasings or corrections were not counted as separate propositions.

*Specificity.* To measure specificity, we constructed a coding system that scored four sub-indices then computed a sum to represent overall specificity. We determined the sub-indices by examining the data and deciding what characteristics distinguished specific and unspecific narratives. Four clear differences were apparent between specific and unspecific narratives which then became the four sub-indices. These included the time period of the episode, the use of proper nouns, the description of the setting, and the presence of details. The *time period index* referred to the time span of the events related in the memory; whether the events occurred at one succinct and definitive time (such a specific lunchtime), or over the course of a long,

disconnected period (such as a year). The *proper noun index* was a measure of how specifically nouns were named in the memory. The proportion of the amount of proper nouns used to how many people, places, and things could have been called by a proper now determined a memory's score on this index. The *setting index* depicted the amount of detail the participant included in describing the physical surroundings and setting of the memory. The *detail index*, the one that presumably had the largest significance, was a general expression of how much detail was given to the narrative. This included the details provided about the events and people's reactions to them, and was also slightly related to the orientation and setting indices because the details of these aspects contributed to the overall amount of detail in the memory.

Each component received a score between 1 and 3 (with 1 being low and 3 being high) for each memory. Then the scores for each component were added, with the detail score counted twice because of the global nature of that measure and the higher impact of that measure on a general determination of specificity. Thus, scores on overall specificity could range from 1-15.

*Coherence.* To measure the coherence of each memory, we constructed a coding scheme based on the life story coherence scale used by Baerger & McAdams (1999). Since they used their measure for coding life stories, adjustments were made to fit the narrative memories elicited in our study. In the current study, indices of orientation, affect, temporal coherence, and causal coherence contributed to the overall coherence score of each memory. The *orientation index* reflected the amount of background, contextual information was provided. Was the memory situated in a personal, temporal, social context? Essentially this was setting the story in a particular situation. The *affect index* depicted whether the account included evaluative statements regarding the episode, whether there was emotion or significance attached to the event, or if certain judgments were expressed about the event. *Temporal coherence* referred to

whether the events in the episode led from one to another in a temporally logical way. For our purposes, chronological order was determined to be the logical order because that order is generally accepted in Western cultures. If a memory only contained one isolated event, they were given the lowest score for temporal coherence. *Causal coherence* referred to whether there were causal links tying the sequenced events to one another; in other words, if the shift from one event to the next was explained. For instance, the presence of, “because,” “due to,” “as a result of,” “so,” generally indicates the presence of a causal link.

Each memory was given a score from 1-4 (with 1 being low and 4 being high) for each of the indices, and then those 4 scores were added to determine the overall coherence of each memory on a scale from 1-16. (A detailed coding scheme is presented in Appendix D.)

## Results

### *The Structure of Narrative Personal Memories and Optimal Method of Elicitation*

To test the first hypothesis of the study, the effect of elicitation method on length, specificity, and coherence, three separate 2 (Gender) x 2 (Elicitation Method) x 4 (Memory Type) mixed analyses of variance (ANOVAS) were conducted. Gender and elicitation method were the between variables and memory types was the within variable.

Looking at length, a significant main effect was found for Elicitation Type,  $F(1, 31) = 8.14, p < .01$ , with oral memories ( $M = 55.68, S.D. = 33.87$ ) being significantly longer than written memories ( $M = 31.96, S.D. = 11.54$ ). This is to be expected because it requires less effort to speak lengthy passages than to write them. The main effect of Gender was approaching significance,  $F(1, 31) = 3.73, p = .06$ , such that the memories given by females ( $M = 51.18, S.D. = 33.60$ ) were significantly longer than those given by males ( $M = 35.33, S.D. = 16.08$ ) (see Figure 1). This may be explained by the general encouragement in our society for women to be

more open and men to be more reluctant in sharing personal information. Or it may be that the interviewer was the same gender as the participants; so maybe participants perceived female interviewers as more understanding and acceptable audiences for their memories than male interviewers.

Looking at specificity, the ANOVA produced only one interaction that approached significance, Memory Type x Gender x Elicitation Method,  $F(1, 31) = 3.43, p = .07$ . The high point and low point memories orally provided by males had the lowest specificity. In contrast, turning point orally provided memories by males had the highest specificity. For females, the oral memories (as opposed to the written) were more specific in the high point and low point memories, but less specific in the childhood and turning point memories. Overall, the childhood memory showed the least differences in specificity between the genders (see Figure 2).

Looking at coherence, there was a significant effect of Memory Type,  $F(1, 30) = 26.33, p < .001$ , such that coherence progressively increased from childhood memory, to the turning point memory, to the high point memory, to the low point memory (See Figure 3). It should be noted that the memories were not asked for in the same order from each participant. The childhood memory was always asked first, and the high point memory was always asked before the low point memory. However, the turning point was asked either before the high point or after the low point.

In summary, our first hypothesis, that the elicitation method would affect the structural dimensions of the memories, proved significant only in terms of the length of the memories. It is of practical interest that oral and written memories did not differ with respect to specificity and coherence. This means that one does not have to provide participants with the more cumbersome

oral method to obtain narrative memories that are equally specific and coherent for this age group.

*The Structure of Narrative Memories and their Relation to Well Being and Life Satisfaction*

Before we could examine the second hypothesis of the degree of relationship between structural measures, well-being and life satisfaction, intercorrelations were run between the indices for specificity and an overall score of specificity as well as indexes of coherence and an overall score of coherence. If the specific indexes contributed significantly to the overall score, this allows us to use the general score rather than the specific scores (see Tables 1 and 2).

To test the second hypothesis of the relationship between structural dimensions of personal memories and well-being, correlations were performed. Eight separate correlation matrices were constructed, 4 for specificity and 4 for coherence, for each of the four types of memories. These correlations did not support the main hypothesis because the overall measures of specificity and coherence did not positively correlate with the overall measures of well-being or satisfaction with life. Interestingly, the majority of the correlations turned out to be negative which was surprising given previous research that found positive correlations (Baerger & McAdams, 1999; Bauer & McAdams, 2004; and Williams, 1996). In terms of specificity, childhood specificity correlated significantly with the Autonomy component of the PWB scale ( $r = -.34, p < .05$ ), showing the Autonomy is an especially important aspect of this measure. In addition, there were correlations approaching significance between turning point specificity and the Environmental component ( $r = -.30, p < .05$ ) and the Self-acceptance component ( $r = -.31, p < .05$ ) of the PWB scale, as well as a correlation approaching significance between low point specificity and the SWLS ( $r = -.30, p < .05$ ). In terms of coherence, a significant correlation between childhood coherence and the Autonomy component of the PWB scale ( $r = -.34, p < .05$ ) was found.



## Discussion

The purpose of this study was twofold: (1) determine the best methodology for eliciting narrative memories; and (2) examine the degree of relationship between the structure of life stories and well-being when we obtained personal self-defining memories with a group of late adolescents. In terms of the first hypothesis, our results revealed that length correlated significantly with elicitation method, although specificity and coherence did not. This means that for participants ranging in age from 20 to 22, although written memories were longer than oral memories, both elicitation methods yielded memories with similar specificity and coherence. Thus, either written or oral elicitation methods could be used for future research on narrative memories.

In terms of the second hypothesis, we found a significant negative correlation between specificity and coherence of personal memories and the autonomy dimension of the well-being measure, while specificity approached significance in negative correlation to the self-acceptance and environmental mastery dimensions. However, measures of specificity and coherence did not significantly correlate with overall levels of well-being. Other studies have found positive correlations between overall specificity and coherence and overall well-being, life satisfaction, and depression, but these positive correlations between overall measures do not appear in the current study. In contrast, the current study produced negative correlations between specificity and coherence and well-being. This unexpected, opposite result can have interesting implications for the particular age sample we used.

In speculating why these negative correlations occurred, they could be a result of certain psychological tasks of adolescence. For example, moderately significant but negative correlations were found between childhood specificity and coherence and autonomy (one of the

components of well-being measured by the PWB scale). One possible explanation may be the fundamental task of adolescents, which according to Erikson, is to form a sense of personal identity. Throughout this process, adolescents progressively begin to perceive themselves as autonomous individuals, separate from their parents or other caregivers (Erikson, 1968).

Therefore, if they are only beginning this progression, they would presumably have a lower level of autonomy. In addition, since rumination over one's past and present life has been seen as one of the beginning steps in the process of forming an identity, an adolescent who is beginning this process will be ruminating a great deal, and thus has access to very specific and coherent memories. Looking at these two points together (that adolescents earlier in their identity formation process will be more autonomous and ruminating more) provides a possible explanation for why some adolescents, relative to others in a different stage of development, will have low levels of autonomy and high levels of specificity and coherence, and vice versa. A future study should look at whether age would significantly affect this relationship between narrative memory and well-being. Maybe there is a distinction between how the structural aspects of personal memories reflect well-being in various age groups.

Also, perhaps the level of analysis we used was not specific enough. Our coding system used the broad designations of 1-3 or 1-4. The previous research by Baerger & McAdams (1999) that found a correlation between coherence and well-being, measured coherence of life stories with a scale of 1-7 for each component. Perhaps the range of specificity and coherence among the memories given the same score could have been quite large, thereby not allowing for sufficient comparison to elicitation method or well-being. In addition, our measures of specificity and coherence may not be accurately representative because only one coder was used,

so we did not test for reliability. Perhaps this coder fluctuated somewhat in the scores she gave, thereby decreasing the likelihood that strong results would be found.

Another difference between our study and previous research is that we looked at the four memories given by a person as a between-subjects variable. Baerger & McAdams (1999) collapsed the eight memories they elicited from each participant to have one overall measure of coherence. They did this because of their interest in life story coherence. Since our interest was in the structure of personal memories, we measured specificity and coherence for each of the four memories separately for each person.

In addition, we measured well-being differently than previous research. Other studies have incorporated a depression scale as one of their determinations of well-being, while we excluded this type of measure. We only used the PWB scale (Ryff & Keyes, 1995) and the SWLS (Diener et. al., 1985) because we thought these two measures would produce a sufficient evaluation, and were feasible regarding our time constraints in meeting with participants. Perhaps scores reflecting depression characteristics could have shown hypothesized correlation more distinctly than the two measures of well-being.

In this study the relationship between the themes of the personal memories and well-being was not explored. However, McAdams, Reynolds, Lewis, Patten, and Bowman (2001) found that redemption and contamination themes in free response narratives related to high and low levels respectively of self-reported well-being. Also, Plunkett (2000) found that themes of agency in the narratives of young adult women in their careers related to higher well-being than themes of serendipity. Although it was not a focus of the current study, the impact of themes certainly requires more attention. Future research should attempt to demonstrate exactly how the

theme of a person's personal narratives reflect their level of well-being, and how these themes can mediate the effects of other dimensions of the memories, such as specificity and coherence.

In conclusion, the current study addressed some of the issues suggested by previous research as being important, but also suggests avenues for continuing research in this field. One accomplishment of the study was to demonstrate the validity of a new measure for coherence of personal memories. Also, the results exhibited a new possible connection between the structural dimensions of personal memories and life stories. Unexpected negative correlations were found, and if these correlations prove to be significant in the future, this would change the direction of current research in the field. Although the hypotheses motivating this study were not explicitly proven, the study does contribute to the claim that this is an important topic to research because of the impact on psychological well-being. Also, because few significant differences were found between the oral and written memories, perhaps either method of elicitation is sufficient. However, it still may be the case that one is more valuable, and should be used in certain circumstances.

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Table 1  
**Specificity Intercorrelations**

	Time Period	Proper Nouns	Setting	Details
Childhood	.03*	.57**	.73**	.83**
	.03	.000	.000	.000
High Point	.55**	.62**	.78**	.87**
	.001	.000	.000	.000
Low Point	.56**	.55**	.68**	.66**
	.001	.001	.000	.000
Turning Point	.40*	.35*	.70**	.73**
	.02	.04	.000	.000

Table 2  
**Coherence Intercorrelations**

	Affect	Orientation	Temporal Sequence	Causal Sequence
Childhood	.56**	.75**	.61**	.75**
	.000	.000	.000	.000
High Point	.55**	.72**	.69**	.71**
	.001	.000	.000	.000
Low Point	.38*	.79**	.61**	.75**
	.03	.00	.000	.000
Turning Point	.62**	.83**	.58**	.64**
	.000	.000	.000	.000

Figure 1  
**Elicitation: Length**

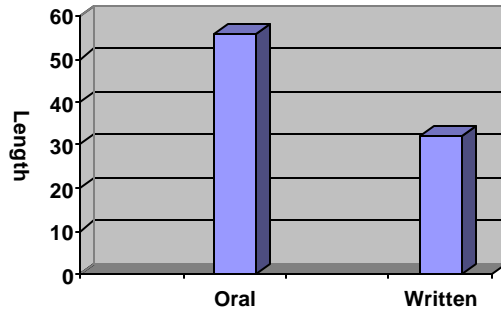


Figure 2  
**Specificity ANOVA**

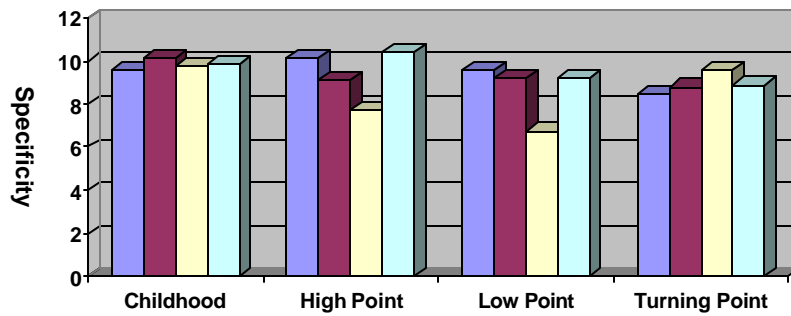
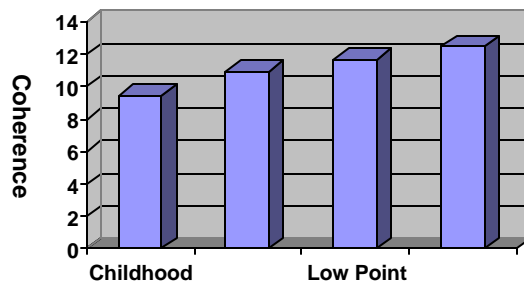


Figure 3  
**Coherence ANOVA**





Appendix A

Satisfaction With Life Scale (Deiner et. al., 1985; SWLS)

Below are five statements with which you may agree or disagree. Using the 1-7 scale below, indicate your agreement with each item by placing the appropriate number on the line preceding that item. Please be open and honest in your responding.

1	2	3	4	5	6	7
strongly agree	disagree	slightly disagree	neither agree or disagree	slightly agree	agree	strongly agree

- \_\_\_ 1. In most ways my life is close to my ideal.
- \_\_\_ 2. The conditions of my life are excellent.
- \_\_\_ 3. I am satisfied with my life.
- \_\_\_ 4. So far I have gotten the important things I want in life.
- \_\_\_ 5. If I could live my life over, I would change almost nothing.

Appendix B

Personal Growth portion of the Personal Well-Being scale (Ryff & Keyes, 1995; PWB)

1	2	3	4	5	6
Strongly disagree	Moderately disagree	Slightly disagree	Slightly agree	Moderately agree	Strongly agree

1. I am not interested in activities that will expand my horizons.  

1	2	3	4	5	6
---	---	---	---	---	---
  
2. In general, I feel that I continue to learn more about myself as time goes by.  

1	2	3	4	5	6
---	---	---	---	---	---
  
3. I am the kind of person who likes to give new things a try.  

1	2	3	4	5	6
---	---	---	---	---	---
  
4. I don't want to try new ways of doing things-- my life is fine the way it is.  

1	2	3	4	5	6
---	---	---	---	---	---
  
5. I think it is important to have new experiences that challenge how you think about yourself and the world.  

1	2	3	4	5	6
---	---	---	---	---	---
  
6. When I think about it, I haven't really improved much as a person over the years.  

1	2	3	4	5	6
---	---	---	---	---	---
  
7. In my view, people of every age are able to continue growing and developing.  

1	2	3	4	5	6
---	---	---	---	---	---
  
8. With time, I have gained a lot of insight about life that has made me a stronger, more capable person.

- |     |  |   |   |   |   |   |
|-----|--|---|---|---|---|---|
|     | 1  | 2 | 3 | 4 | 5 | 6 |
| 9.  | I have the sense that I have developed a lot as a person over time.                                    |   |   |   |   |   |
|     | 1  | 2 | 3 | 4 | 5 | 6 |
| 10. | I do not enjoy being in new situations that require me to change my old familiar ways of doing things. |   |   |   |   |   |
|     | 1  | 2 | 3 | 4 | 5 | 6 |
| 11. | For me, life has been a continuous process of learning, changing, and growth.                          |   |   |   |   |   |
|     | 1  | 2 | 3 | 4 | 5 | 6 |
| 12. | I enjoy seeing how my views have changed and matured over the years.                                   |   |   |   |   |   |
|     | 1  | 2 | 3 | 4 | 5 | 6 |
| 13. | I gave up trying to make big improvements or changes in my life a long time ago.                       |   |   |   |   |   |
|     | 1  | 2 | 3 | 4 | 5 | 6 |
| 14. | There is truth to the saying you can't teach an old dog new tricks.                                    |   |   |   |   |   |
|     | 1  | 2 | 3 | 4 | 5 | 6 |

Environmental portion of the Personal Well-Being scale (Ryff & Keyes, 1995; PWB)

- |    |   |                     |                   |                |                  |                |
|----|---|---------------------|-------------------|----------------|------------------|----------------|
|    | 1   | 2                   | 3                 | 4              | 5                | 6              |
|    | Strongly disagree   | Moderately disagree | Slightly disagree | Slightly agree | Moderately agree | Strongly agree |
| 1. | In general, I feel I am in charge of the situation in which I live. |                     |                   |                |                  |                |
|    | 1   | 2                   | 3                 | 4              | 5                | 6              |
| 2. | The demands of everyday life often get me down.                     |                     |                   |                |                  |                |

- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
3. I do not fit very well with the people and the community around me.
- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
4. I am quite good at managing the many responsibilities of my daily life.
- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
5. I often feel overwhelmed by my responsibilities.
- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
6. If I were unhappy with my living situation, I would take effective steps to change it.
- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
7. I generally do a good job of taking care of my personal finances and affairs.
- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
8. I find it stressful that I can't keep up with all of the things I have to do each day.
- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
9. I am good at juggling my time so that I can fit everything in that needs to get done.
- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
10. My daily life is busy, but I derive a sense of satisfaction from keeping up with everything.
- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
11. I get frustrated when trying to plan my daily activities because I never accomplish the things I set out to do.
- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
12. My efforts to find the kinds of activities and relationships that I need have been

quite successful.

1                    2                    3                    4                    5                    6

13. I have difficulty arranging my life in a way that is satisfying to me.

1                    2                    3                    4                    5                    6

14. I have been able to build a home and a lifestyle for myself that is much to my liking.

1                    2                    3                    4                    5                    6

Purpose in Life portion of the Personal Well-Being scale (Ryff & Keyes, 1995; PWB)

1	2	3	4	5	6
Strongly disagree	Moderately disagree	Slightly disagree	Slightly agree	Moderately agree	Strongly agree

1. I feel good when I think of what I've done in the past and what I hope to do in the future.

1                    2                    3                    4                    5                    6

2. I live life one day at a time and don't really think about the future.

1                    2                    3                    4                    5                    6

3. I tend to focus on the present, because the future nearly always brings me problems.

1                    2                    3                    4                    5                    6

4. I have a sense of direction and purpose in life.

1                    2                    3                    4                    5                    6

5. My daily activities often seem trivial and unimportant to me.

1                    2                    3                    4                    5                    6

6. I don't have a good sense of what it is I'm trying to accomplish in life.

1                    2                    3                    4                    5                    6

7. I used to set goals for myself, but that now seems like a waste of time.

1                    2                    3                    4                    5                    6

8. I enjoy making plans for the future and working to make them a reality.

1                    2                    3                    4                    5                    6

9. I am an active person in carrying out the plans I set for myself.

1                    2                    3                    4                    5                    6

10. Some people wander aimlessly through life, but I am not one of them.

1                    2                    3                    4                    5                    6

11. I sometimes feel as if I've done all there is to do in life.

1                    2                    3                    4                    5                    6

12. My aims in life have been more a source of satisfaction than frustration to me.

1                    2                    3                    4                    5                    6

13. I find it satisfying to think about what I have accomplished in life.

1                    2                    3                    4                    5                    6

14. In the final analysis, I'm not so sure that my life adds up to much.

1                    2                    3                    4                    5                    6

Autonomy portion of the Personal Well-Being scale (Ryff & Keyes, 1995; PWB)

	1	2	3	4	5	6
	Strongly disagree	Moderately disagree	Slightly disagree	Slightly agree	Moderately agree	Strongly agree
1. Sometimes I change the way I act or think to be more like those around me.						
	1	2	3	4	5	6
2. I am not afraid to voice my opinions, even when they are in opposition to the opinions of most people.						
	1	2	3	4	5	6
3. My decisions are not usually influenced by what everyone else is doing.						
	1	2	3	4	5	6
4. I tend to worry about what other people think of me.						
	1	2	3	4	5	6
5. Being happy with myself is more important to me than having others approve of me.						
	1	2	3	4	5	6
6. I tend to be influenced by people with strong opinions.						
	1	2	3	4	5	6
7. People rarely talk me into doing things I don't want to do.						
	1	2	3	4	5	6
8. It is more important to me to "fit in" with others than to stand alone on my principles.						
	1	2	3	4	5	6

9. I have confidence in my opinions, even if they are contrary to the general consensus.

1                    2                    3                    4                    5                    6

10. It's difficult for me to voice my own opinions on controversial matters.

1                    2                    3                    4                    5                    6

11. I often change my mind about decisions if my friends or family disagree.

1                    2                    3                    4                    5                    6

12. I am not the kind of person who gives in to social pressures to think or act in certain ways.

1                    2                    3                    4                    5                    6

13. I am concerned about how other people evaluate the choices I have made in my life.

1                    2                    3                    4                    5                    6

14. I judge myself by what I think is important, not by the values of what others think is important.

1                    2                    3                    4                    5                    6



## Appendix C

**Exact Instructions Used with Participants**

*Childhood Memory:* “Please tell me about a childhood memory. This can be any memory, but it has to be something that occurred before you completed elementary school, or roughly before the age of 10 or 11. This can be any experience you remember from any time during your childhood. Please include as much detail as you can about the memory.”

*High Point Memory:* “Please tell me about a high point memory. That is, a memory that describes a peak moment in your life, a memory which has an overall positive connotation and one that in general makes you feel good. This can include a time that made you feel happy, excited, proud, and so on. This memory can be from any time in your life up to one year ago. Please include as much detail as you can about the memory.”

*Low Point Memory:* “Please write about a low point memory. That is, a memory that describes a bad moment in your life, or something with an overall negative connotation. This can include a time that made you feel sad, disappointed, frustrated, upset, angry, anxious, and so on. This memory can be from any time in your life up to one year ago. Please include as much detail as you can about the memory.”

*Turning Point Memory:* “Please write about a turning point memory. That is, a memory that describes a moment in your life that caused you to redirect your life’s plan. It could cause a drastic change in your life’s direction, or be something smaller, but in any case it had *an altering effect* on your life. In other words, it does not have to be the #1 *biggest* change in your life, but it is something that made you reevaluate yourself or redirect a certain aspect of your life. Please include as much detail as you can about the memory.”

## Appendix D

### Detailed Coding System

#### **Specificity**

*Time Period:* (3) The memory describes one distinct episode occurring at one specific time.

(2) The memory takes place over the course of a specific time period, but includes many events, such as a memory of a certain week, or the happenings of one semester.

(1) The memory is of a general time in the person's life, or a recurrent event. There is no specific episode or sequence of episodes mentioned.

*Proper Nouns:* (3) The memory referred to every noun by its proper name (e.g. Uncle Mark, my friend Sue, or Dante's Pizzeria).

(2) The memory referred to most nouns by their proper names, but a few relevant nouns were only given more general indications (e.g. my uncle, my friend, or the pizza place).

(1) The memory did not refer to any nouns by their proper name.

*Setting:* (3) Many details were given regarding the physical setting of the episode (i.e. sensory details about the surroundings). With this type of memory, a listener could really picture the scene.

(2) Some details were given of the setting, but not enough to picture it (e.g. the old pizzeria downtown, or my uncle's small, smelly apartment).

(1) No information was given about the physical surroundings during the episode.

*Details:* (3) A large amount of detail was provided regarding everything about the event: the setting, who was there, what everyone was doing, how the participant felt, etc. Nothing seemed to be missing.

(2) Most of the relevant details were there to make the story interesting, but some information was left out (e.g. in describing getting a new pet, the participant talks about where they were and what the pet looked like, but leaves out who else was there, or how they felt, or the exact actions in purchasing the pet).

(1) Very few, if any, details were included (e.g. in describing getting a new pet, all they say is that they went to the store, they bought it, and they liked it a lot).

#### **Coherence**

*Orientation:* (4) In depth coverage of the personal, social, and temporal contexts of the event (i.e. the memory described what was going on internally for the participant, how it related to other relevant people, and how it fit into that time in their lives or in society).

(3) There was in depth coverage of two of these contexts (personal, social, and temporal), but no mention of the third, when the third was relevant to the episode (e.g. in describing receiving a good grade on a test, talking about how they really wanted to get a good grade, and how they did better than classmates, but not whether they had typically done well or poorly in the past, or what the grade implied for their future). Or, there was a mention of all three contexts, but not using much detail.

(2) There is a very brief mention of the surrounding situation, but perhaps only referring to one of the contexts.

(1) There was no mention of the surrounding context of the episode.

*Affect:* (4) There was an abundance of personal evaluation of meaning given to the episode. Many times emotion was used, but evaluations included the connotation and positive or negative interpretation of the episode. These memories sometimes even included external characters' evaluations of the episode (e.g. my sister thought it was a big step for me). The memory was infused with evaluation.

(3) There is a good amount of evaluative nature to the memory (only from the participant's point of view). However, sometimes the evaluation is not explicitly stated, but rather sometimes it is implied by the choice of vocabulary, emphasis on a certain point, or vocal tone in the orally provided memories.

(2) There is a brief evaluative point made, or an aside given that provided an evaluation of the episode. There may be a slight implication of evaluation, but nothing explicitly stated.

(1) There is no evaluative point made in the narrative.

*Temporal Coherence:* (4) One event in a sequence logically followed another, most often in a chronological order without gaps left between events. A listener could easily piece together how one event followed the previous one, without wondering about any missing details.

(3) The memory generally flowed from one event to the next in a logical (typically chronological) sequence, but sometimes there was a link missing (e.g. how they got from their house to the store). It is easy enough to follow the memory, but not everything connects perfectly.

(2) Some of the parts of the episode followed logically from the previous one, but many were given out of sequence (i.e. in telling the episode, the participant jumps back to a point made earlier to plug in a certain detail).

(1) The narrative memory is very difficult to follow because there seems to be no logical order to which the participant is relating the events. The time period seems to jump back and forth without any explanation.

*Causal Coherence:* (4) Explanations and reasoning behind each occurrence in the episode is provided. Nothing, including actions, thoughts, surrounding contexts and consequences, is left unexplained by the participant.

(3) Most of the actions, thoughts, context, and consequences are explained, but some or the lesser important explanations are not explicitly given (e.g. in describing a shopping trip the participant describes why they need what they need, and that they go to a certain store, but not why that store was chosen).

(2) Some explanation is given for certain key details in the narrative memory, but other important explanations of causes are left out (e.g. in describing a participant's reaction to someone's death they say that they are sad because they loved the deceased person, but not why they loved them, or why they felt such a connection).

(1) No explanation of the episode is given. The narrative memory recites almost like a simple listing of circumstances or events.