

EFFECTS OF CHILDHOOD CONTEXT, IMPLICIT MOTIVES, AND
EXPLICIT SOCIOCULTURAL ORIENTATION ON
AUTOBIOGRAPHICAL MEMORY IN PR CHINA, CAMEROON, AND
GERMANY

Dissertation
zur Erlangung des akademischen Grades eines
Doktors der Naturwissenschaften

vorgelegt von

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by

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A Dissertation Submitted to the Graduate Faculty
of the University of Osnabrück
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Natural Science (Dr. rer. nat.)

University of Osnabrück,
Osnabrück, Germany
2006

ACKNOWLEDGEMENTS

I would like to express my gratitude to my supervisor Heidi Keller, for all the comments she shared with me that helped to improve this thesis. I am wholeheartedly grateful to Athanasios Chasiotis, for his support throughout this whole project and his encouragement in crucial stages. I wish to thank Jan Hofer for the methodological support and many valuable critical comments that have broadened my perspective. Thanks go to Florian Kießling and Holger Busch for assessing the Cameroonian sample, and many helpful comments. I am grateful to Ursula & Jens Frost, who assisted and encouraged me during my time in PR China, and introduced me to William, who translated the questionnaires, and John and Robert who helped in acquiring the Chinese sample. I wish to express my thankfulness to Xiadong Yue, who proofread the Chinese questionnaires and provided valuable comments, and to Relindis Yovsi, who did the same for the Cameroonian questionnaires.

I would like to thank all those who helped in coding the questionnaires: Lisa Bünger, Carolina Cardenas, Birk Hagemeyer, and Daniel Korsmeyer. And of course, I am grateful to all the participants from PR China, Cameroon, and Germany who made this study possible.

Finally, I am very thankful to Edward B. Robertson for proofreading this thesis.

And I want to express my gratitude to my parents and grandparents for their never ending support and encouragement in 28 years.

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THEORY

1. Introduction

The configuration of our memories, the themes involved, how we recall them, as well as with whom we share them establishes our very foundation of identity. Ultimately, “*we are what we remember*” (Schacter, 1996, p.169).

We may remember for a multitude of reasons. When in dire straits, we may remember that it is not the first time we mastered a very difficult situation. Meeting an old friend we have not seen for an extended period of time may result in recalling a shared experience – and may end up with both of us laughing and the feeling that it was only yesterday when we last met. Sometimes we sit back and think about our past life trying to imagine what the future holds. In these moments we bring the past forward in time to guide the present. When sitting with our family, we may enjoy sharing anecdotes of the past that bring us all closer together.

Yet, people are different: some among us may be more inclined to sit and share common experiences with the people we like; while the concern of others for reminiscence may be to see whether they have remained the same across their life. It is likely that most of us engage in both of these activities – albeit to varying degrees. But what is it then that makes us recall events related to others or memories of ourselves?

Again, the key may be in our past. We remember what we deem important, and we have been taught to distinguish between important and less important instances in life by the ones who raised us and who introduced us to the demands of our environment. As well, in this early stage of our life, our notion of “self” developed, and – even before that – our basic motivation formed. In a nutshell, our memory is shaped by what we learn, our motivations, and our self-construal.

In the last twenty years, evidence has accumulated that cultural differences exist in autobiographical memories. The focus of this study was therefore on relating these cultural differences to interindividual differences in childhood contextual variables, implicit motivation, and sociocultural orientation.

For this purpose, different cultural contexts have been investigated; a prototypical independent German context (affluent, educated, middle class) and a prototypical interdependent Chinese context (lower socioeconomic status, rather rural). Moreover, this study represents the first to investigate autobiographical memory in an African (Cameroonian) sample, which can be considered prototypically interdependent as well (lower socioeconomic

status, rural). In addition, the concept of cognitive complexity was introduced to cross-cultural psychology to assess the functions of autobiographical memory.

In the following sections, autobiographical memory will be defined, and its functional importance for our everyday behavior presented. Methods to assess these functions will be outlined, as well as previous findings on cross-cultural differences in content and structure of autobiographical recall. Subsequently, the explanatory potential of the childhood context for differing styles of reminiscing will be described. Next, the role of implicit motives as an organizing instance of autobiographical memory will be considered, followed by implications of differing self-construals (independence/interdependence) for the characteristics of autobiographical recall. The theoretical section concludes with the integration of these concepts as predictors of autobiographical memory, the reasons why a functional approach to cultural differences in autobiographical memory may be especially fruitful, and an overview of the hypotheses of this study.

The Methods section begins with the rationale of sample selection and comprises a presentation of the measures of autobiographical memory (in particular cognitive complexity), implicit motives, and sociocultural orientation. The main focus of the Methods section is on presenting the procedures that were applied to ensure methodological equivalence of measures across the investigated cultural contexts.

In the first part of the Results section, analyses of variance are presented replicating the cultural differences in autobiographical recall obtained in prior studies. In the following, the effect of childhood contextual variables (e.g., number of siblings) on autobiographical memory variables is investigated. Subsequently, implicit motives (agency/communion) and sociocultural orientation (independent/interdependent) are entered into regression analyses to predict interindividual differences in the functions of autobiographical memory across cultures.

Results are discussed with special emphasis on the methodological adequacy of the selected measures for comparability of results across the cultural samples. Afterwards, the importance of a contextual and functional perspective towards differences in autobiographical memory is outlined and future perspectives on a methodologically improved assessment of the influence of implicit motivation and sociocultural orientation on autobiographical memory is presented.

2. Autobiographical Memory – an Everyday Toolbox

Interdisciplinary interest in autobiographical memory is growing and diverse, from neuro-psychology (e.g., Welzer & Markowitsch, 2001), clinical psychology (e.g., Williams & Broadbent, 1986), cognitive psychology (Conway & Pleydell-Pearce, 2000), personality psychology (e.g., McAdams, 1982; Woike et al., 1999), developmental psychology (e.g., Nelson & Fivush, 2004), evolutionary psychology (Skowronski & Sedikides, in press) to cultural psychology (e.g., Wang & Brockmeier, 2002). Accordingly, definitions of autobiographical memory vary across these different perspectives (Rubin, 1992). In the following section a working definition is provided for the present study.

2.1. What is Autobiographical Memory?

Broadly coined, autobiographical memory is memory for information related to the self (Brewer, 1986, but see also Pillemer & White 1989) and thus distinguishes itself from other memories by this self-referential quality: „*only those memories that are linked to the self through emotional or motivational significance for one's life are truly autobiographical*“ (Bluck & Habermas, 2000, p. 122).

Traditionally, four long-term memory systems (and an additional short-term working memory) have been differentiated (for details, see Tulving, 1995, Tulving & Markowitsch, 1998): episodic memory (the memory for events, i.e., the knowledge of having had carrots as a side dish for dinner last Monday), semantic memory (containing factual knowledge, i.e., knowing that carrots are a form of vegetable), procedural memory (automated action patterns; i.e., knowing how to hold a knife and fork), and priming memory (associative networks, i.e., being presented with carrots increases likelihood of thinking about rabbits). Autobiographical episodes qualify as a part of the episodic memory system (see also Welzer & Markowitsch, 2001), but there are several features that distinguish autobiographical memories from mere episodic memories.

First, autobiographical memories are embedded into a more comprehensive structure and thus are more complex than other types of memories. Autobiographical memories are assumed to be organized in different levels of specificity (Conway & Pleydell-Pearce, 2000) as elements of a larger general knowledge base (Conway, 1992). These levels comprise lifetime periods (e.g., when I lived in Berlin); general events that are more specific than lifetime periods by spanning periods of months, weeks, or days, or may consist of repeated events (e.g., the times I went to the theater); and event-specific knowledge which contains sensory or affective information (see Conway & Pleydell-Pearce, 2000). To retrieve a

memory, this hierarchy can be searched bottom-up or top-down to meet the demands of the current reconstruction context. Bluck and Habermas (2000) suggested that the pervasiveness of autobiographical memory can best be captured by a fourth, comprehensive level: the life story (see also McAdams, 1990), which constitutes autobiography in a stricter sense, and provides coherence across life.

Furthermore, autobiographical memories are distinguished by the occurrence of the so-called ‘reminiscence bump’, an accumulation of memories recalled from the age of transition to adulthood (Conway & Rubin, 1993). When asked to recall events of their lives, participants remember significantly more events of this life stage than predicted by general forgetting mechanisms that assume an exponential decline of memory recall (Rubin, Wetzler, & Nebes, 1986) or by recency effects (as also exhibited by individuals older than 60 years, for the same period). This effect is explained by several theoretical approaches including the emergence of identity (Conway & Rubin, 1993), or more specifically, the emergence of a life story which proposes that the emergence of a coherent autobiography makes events of this phase more available (see Neisser, 1988).

In addition, an adult cannot typically recall events before the age of three, marking the upper limit of the so-called ‘infantile amnesia’ (e.g., Usher & Neisser, 1993), which is traditionally explained by the change of a sensory-based coding structure of memories (which cannot be communicated) to a language-based memory system that may render prior memories unavailable for the revised memory structure (for an overview, see Pillemer & White, 1989).

A further special characteristic of autobiographical memory is the affective quality of specific memories. So-called ‘flashbulb memories’ (Brown & Kulik, 1977, Conway, 1995) can be recalled seemingly to the last detail. The most extreme form of flashbulb memories follow the experience of trauma; they are characterized by the intrusion of highly specific details and are therefore considered a clinical symptom of post traumatic stress disorder. However, because autobiographical content is not essential to this study, the next section focuses on the function and structure of autobiographical recall.

2.2. Functions of Autobiographical Remembering

Traditional research in autobiographical memory was concerned with the identification of the organization of memories (e.g., Robinson, 1976), the completeness of recall (e.g., Kopelman, Wilson, & Baddeley, 1989) or the specificity of recall (e.g., Williams & Broadbent, 1986; Williams, 1996). Recently, however, a shift in focus is noticeable as the questions changed from ‘how much’ to ‘what for’ we recall episodes of our life (e.g., Bluck,

2003, Robinson & Swanson, 1990). Thus far, only a few studies have addressed empirically what functions autobiographical memory may serve (e.g., Bluck, Alea, Habermas, & Rubin, 2005, Hyman & Faries, 1992; Pasupathi, Lucas, & Coombs, 2002), even though the benefits of a functional approach had been addressed quite early (Bartlett, 1932; Baddeley, 1988; Neiser, 1988; Robinson & Swanson, 1990). Bluck identified three functions of autobiographical memory generally referred to as ‘self’, ‘social’, and ‘directive’ functions (Bluck, 2003; Bluck & Alea, 2002; Bluck et al., 2005, see also Pillemer, 1992). These functions are presented in the following sections.

2.2.1 Functions for the Self

Knowledge of the self in the past as well as being able to project the possible self into the future is regarded as a crucial element of the self function of autobiographical recall. Promoting continuity and development of the self (Conway, 1996; Neisser, 1988) and preserving a sense of coherence over time (Barclay, 1996) enables an individual to perceive of her-/himself as having a consistent identity separate from others throughout one’s life span (Welzer & Markowitsch, 2001).

This especially holds true when encountering challenges that require self change (Robinson, 1986), even though this may imply – at first glance – the impossibility of being the same person throughout one’s entire life. Since autobiographical recall does not provide us with exact copies of past events but is a reconstructive process largely depending on current goals of the self and life themes (Conway & Rubin, 1993; Singer & Bluck, 2001; Wilson & Ross, 2003), it allows us to change – but to remain the same in hindsight. Similarly, reconstructive – or more precisely ‘biased’ – recall fosters the preservation of the current self-concept, allows for self-enhancement (Ross, 1989), and can thus reduce cognitive dissonance (Festinger, 1957).

Furthermore, autobiographical recall can help regulating an individual’s mood (Pasupathi, 2003) in adverse circumstances (e.g., facing an exam) by providing instances in which such challenges have been previously mastered (e.g., having succeeded in a prior exam), thereby enhancing positive and minimizing negative emotions (Hyman & Faries, 1992). The integration of one’s memories to form a coherent life story (Bluck & Habermas, 2000) is especially important at the end of life (e.g., Bühler, 1968; Erikson, 1982), when the ratio of life in the past and still expected lifetime changes. The act of reminiscing represents a crucial part in this task (Butler, 1974). For example, older adults recall themselves as having been more similar to the present (thus feeling no more need to change) than adolescents who

typically perceive of themselves as having drastically changed (see also Conway & Ross, 1984; Loftus, 1982).

Moreover, individuals suffering from depression seem unable to use their autobiographical memories to contrast their present mood with past successes (de Jong-Meyer & Barnhofer, 2002), as they cannot access their event-specific knowledge (see Conway & Pleydell-Pearce, 2000) to provide such instances (which constitutes the 'mnemonic interlock', see Williams & Broadbent, 1986). Irrespective of the debate whether an impaired autobiographical recall may merely perpetuate depression or whether overgeneral autobiographical memories are a vulnerability factor for depression, the detrimental effects of an impaired self function of autobiographical memory become obvious (Brittlebank, Scott, Williams, & Ferrier, 1993; Kuyken & Brewin, 1995). However, Williams and colleagues (Williams, Teasdale, Segal, & Soulsby, 2000) have demonstrated that a specifically designed cognitive therapy aimed at a reduction of overgeneral autobiographical memory retrieval is successful in reducing depression.

2.2.2 Social Functions

Neisser (1988) assumes that the most fundamental function of autobiographical memory is of social nature, because autobiographical memory provides material for conversations, thereby easing the initiation and maintenance of social interactions (Cohen, 1998; Robinson & Swanson, 1990; see also Nelson & Fivush, 2004). Similarly, including personal autobiographical memories can make such conversations more truthful, believable and persuasive (Pillemer, 1992), and it can enhance activities of teaching and informing others. Especially with regard to the interaction of parents and children, engagement in so-called 'memory talk' (Neisser, 1988) is of supreme importance for socialization (for details, see Theory, section 2.3 & 2.4).

In addition, autobiographical memory allows us to better understand others and empathize with them (Cohen, 1998, Pohl, Bender, & Lachmann, 2005; cf. Chasiotis, Bender, Kiessling, & Hofer, in press, for results concerning theory of mind), supposedly as "*people who are less aware of their own subjective states may also be less insightful about others*" (Robinson & Swanson, 1990, p. 330). Accordingly, individuals who perceive of each other as sharing a similar autobiographical background exhibit more empathy towards each other (Stotland, 1969). Sharing memories to create social bonds (Pillemer, 1998) and intimacy (Fivush, Haden, & Reese, 1996) has been tied to an evolutionary adaptive value of autobiographical recall (Neisser, 1988; Nelson, 1993, 2003).

Especially when impaired, the importance of the social functions becomes apparent, as local brain damage (cf. Welzer & Markowitsch, 2001) resulting in retrograde amnesia can lead to immense problems in social interaction: such individuals essentially have no memory of their prior social life (see also Robinson & Swanson, 1990). Quite similarly, depressed patients are at a disadvantage in tasks of solving social problems (Goddard, Dritschel, & Burton, 1996), because they cannot recall specific instances of past successful social interactions to successfully (and satisfyingly) interact with others in the present (Evans, Williams, O'Loughlin, & Howells, 1992).

2.2.3 Directive Functions

Remembering our past can be directed at the future (Nelson, 2003) to formulate plans, make decisions, and generally to predict future events (Baddeley, 1987). The three functions (self, social, directive) are not conceptualized as distinct categories, and their overlap is especially apparent concerning the directive function (Bluck, 2003): using our own experience helps us in empathizing with others (social function) but also helps us to understand their inner world to predict their future behavior (directive function; see also Robinson & Swanson, 1990). Similarly, lessons an individual learned are often regarded useful in guiding present or future interaction (McCabe, Capron, & Peterson, 1991; Pratt, Arnold, Norris, & Filyer, 1999). The directive function has been repeatedly noted for its evolutionary significance and practical importance (Pillemer, 1992, 1998, 2001, 2003), and the impact of autobiographical memory for problem-solving processes is well documented (Cohen, 1989, for an overview see Bluck & Alea, 2002). With an impaired autobiographical (as in depression) imageability of the future is restricted (de Jong-Meyer & Barnhofer, 2002; Williams, Ellis, Tyers, Healy, Rose, MacLeod, 1996; Williams, Healy, & Ellis, 1999), resulting in impaired problem-solving capacities.

2.2.4 Identifying the Functions

One of the few empirical studies (Hyman & Faries, 1992) on the functions of autobiographical memory coded participants' spontaneous memories for specificity, valence and especially the subsequent uses of the memory inferred by the content of the narrative. Using this procedure, Hyman and Faries (1992) found support for the self and social functions but not for the directive function of autobiographical memory.

Watt & Wong (1991) examined reminiscence functions by asking older participants in an interview to recall important memories that had substantial influence on their lives. Transcribed memories were then coded by assigning functional categories of recall to each

paragraph. Results indicate support for three categories resembling the three major functions of autobiographical memory (see Bluck, 2003, Pillemer, 2003): integrative (self), narrative (social), and instrumental (directive) uses of reminiscing.

Webster developed a self-report measure (Reminiscence Functions Scale, RFS; Webster, 1993, 1997, 2003) to assess an individual's belief about how frequently she/he uses memory in general to fulfill different functions. The scale assesses eight different functions (Webster & McCall, 1999), three of them closely resembling the self, social and directive functions of autobiographical recall: identity, conversation, and problem-solving.

To identify the functions in a more ecologically salient situation, Pasupathi, Lucas & Coombs (2001), observed conversations of couples who were asked to discuss past topics, both pleasant and unpleasant. Afterwards, the conversations were transcribed and coded, revealing functions of memory for planning and problem solving (directive), self-explanation (self) and for persuasion of the interaction partner (social).

By deriving items from theoretical literature, Bluck, Alea, Habermas, and Rubin (2005) recently set out to design a self-report measure to directly ask people how they use their autobiographical memories (see also Webster, 1993). Thus, the 'Thinking About Life Experiences' questionnaire (TALE, Bluck et al, 2005) for the first time compasses numerous items for the three major functions of autobiographical memory (self, social, directive). First results support the existence of these three functions (for details, see Bluck et al., 2005).

In summary, conceptualization and methodology of assessing the functions of autobiographical recall vary substantially from content coding (Hyman & Faries, 1992; Walker et al., 2002), interviews (Watt & Wang, 1991), observation of conversations (Pasupathi et al., 2001), to self-report measures (Bluck et al., 2005; Webster, 1993). In particular, there are only a few prior studies investigating autobiographical memory of adults cross-culturally (see Theory, section 2.4).

For the present cross-cultural study with adults, a structural approach was chosen, as structure indicates function by defining "*the parameters of potential functions*" (Robinson & Swanson, 1990, p.330). Participants were asked to provide memories that were then coded for the potential functions they may serve. To investigate only the principal uses of autobiographical memory, the focal point of this study was the investigation of differences between structures serving intrapersonal and interpersonal purposes (see Robinson & Swanson, 1990). Therefore, functions will be referred to as self and social functions (see Theory, section 2.2). Such a mnemonic structure, i.e., the manner in which autobiographical

information is processed, can be distinguished into a differentiated and an integrated way of organization thus determining the cognitive complexity of the narrative (Woike et al., 1999). While a differentiated structure refers to the number of distinct and contrasting aspects in a memory, integration is characterized by expressions of causalities and similarities between aspects (for details, see Methods, section 2.3.1). Both operate together but serve different purposes: perceiving oneself as being different and unique as opposed to feeling interdependent and connected. Thus, these structural processes capture key elements of the functions of autobiographical memory for self (differences, uniqueness) and social purposes (relationships and interdependence). Accordingly, cognitive complexity (i.e., integration and differentiation) serves as an indicator of the self and social function of autobiographical memory in this study.

2.3. Early Socialization Contexts of Autobiographical Memory

Essential for the advent of autobiographical memory is the development of a stable self to which these memories can be referenced (see Fivush, 1988; Howe, 2003; Howe & Courage, 1993; Neisser, 1988). Accordingly, the relationship between the self and autobiographical memory is closely intertwined and mutually constitutive (Barclay, 1986; Fitzgerald, 1986; Ross, 1989). In the process of co-constructing stories of their past experiences with adults, children necessarily construct stories of themselves, thereby progressing with the development of selfhood (Mullen & Yi, 1995). While children's earliest verbal reports consist of two-word associations, 3 ½ year old children are already capable of producing coherent stories about past experiences (Fivush, Haden, & Adam, 1995).

The role of social interaction for the development of autobiographical narratives, and especially the influence of parent-child interaction, is well established (e.g., Fivush, 1998; Fivush, Brotman, Buckner, & Goodman, 2000; Reese & Fivush, 1993, Reese, Haden, & Fivush, 1996). An elaborative reminiscing style of parents', characterized by extensively confirming and encouraging a child's responses, results in an elaborative style of reminiscing by the children themselves, both with parents and with others (Hudson, 1993). Likewise, a less elaborative parental style, i.e., repeating the same questions until the child produces the expected responses, results in a less elaborated style of reminiscing by children. Memories of the latter children are found to be more skeletal and brief, both when reminiscing with their parents and with other people (for an experimental design, see Peterson, Jesso, & McCabe, 1999).

Several other features have been found predictive of a child's style of reminiscing. Providing children with evaluations (e.g., mental state terms) predicted the structure of

children's independent narratives at a later time (Haden, Haine, & Fivush, 1997).

Furthermore, both mothers and fathers were found to be more elaborative and evaluative with their daughters than with their sons, resulting in more memory information contained in autobiographical narratives of girls (while controlling for differences in linguistic ability, cf. Reese & Fivush, 1993; Reese, Haden, & Fivush, 1996) and thereby supplementing possible gender differences in adulthood (see Davis, 1999; Pillemer, Wink, DiDonato, & Sanborn, 2003; Pohl et al., 2005). In addition, attachment security and maternal reminiscing style are mutually influencing and play an important part in the development of autobiographical memory (e.g., Etzion-Carasso & Oppenheim, 2000), as does the child's linguistic skills (Reese, Haden, & Fivush, 1993): children with high language skills, secure attachment, and highly elaborative mothers reported the greatest amount of memory information in a longitudinal study by Reese (2002; for a comprehensive overview on the emergence of autobiographical memory, see Nelson & Fivush, 2004).

Beyond mother-child dyads (and father-child dyads, see e.g., Haden et al., 1997; Reese et al., 1996) there have not yet been any studies concerning the role of other interaction partners like siblings. An investigation of the effects of other interaction partners may be necessary for an understanding of cross-cultural differences in autobiographical memory (see next section).

2.4. Autobiographical Memory in Different Cultural Contexts

Research indicates that the structure of a child's act of reminiscence is heavily scaffolded by adults in early childhood (Hudson, 1990; Reese & Fivush, 1993). Therefore, purposes and norms of autobiographical recall are instantiated early in life, supporting a Vygotskian perspective of structural internalization (Vygotsky, 1962). The finding that parents differ on an individual level with respect to the elaborateness of their reminiscence style indicates contextual, and consequentially, cultural influences (see Reese & Fivush, 1993). When engaging in memory talk (Neisser, 1988), parents help their child in identifying those events that are important for establishing the child's autobiography (Snow, 1990) and transmit which life events are appropriate cornerstones of biography in the particular cultural context (Bluck & Habermas, 2000; Conway & Bekerian, 1987). This process is considered to become increasingly more important during the preschool years when children are called upon to remember culturally significant facts and pragmatic information.

Therefore, co-constructing the past is a mean of socialization (Miller, 1994). Differences in this process are identified with respect to the level of elaborateness in parent-child conversations about the past (Reese & Fivush, 1993, Reese et al., 1996). Mullen and Yi

(1995) investigated naturally occurring conversations of mother-child dyads (3-year-old children), and found that Caucasian (Western) dyads were more likely to cast the child as the central character of a story, to talk about the child's feelings and thoughts, and to make many references to personal attributes. This elaborated style of reminiscing is contrasted with a normative approach to joint remembering in Korean mother-child dyads, who emphasized behavioral expectations and social roles to a greater extent than did Caucasian (Western) mothers (Mullen & Yi, 1995). This pattern could be replicated in a study of Chinese and Euro-American mother-child dyads (three-year olds; Wang, 2001a). Euro-American mother-child pairs exhibited a highly elaborative conversational style (more turn-taking, supplementing each other's responses), while Chinese dyads adopted a relatively low-elaborative style (repetition of questions until the desired response was elicited – passive responses without new information; Wang, 2001a). Replicating Mullen and Yi's finding (1995), Wang (2001a) also found that Euro-American mother-child pairs focused on the child as central character, while Chinese dyads emphasized social norms and behavioral expectations (for similar findings, see also Wang, Leichtman, & Davies, 2000). These findings of differential conversational styles in mother child-dyads are complemented by differences in the structure and content of memories that four- and six-year old children recall on their own (Han, Leichtman, & Wang, 1998). Han and colleagues (1998) found that Euro-American children's memories, compared with Korean and Chinese children's memories, included more references to specific past events, more references to internal states and evaluations, and more mentioning of themselves relative to others. Results of both studies (Mullen & Yi, 1995; Wang, 2001a) are mirrored in findings for six-year olds' memories (Wang & Leichtman, 2000), as well as for four-, six-, and seven-year olds, from the US and China, respectively (Wang, 2004; see also Miller, Wiley, Fung, & Liang, 1997).

The obtained cultural differences are expected to “*become larger and more stable among older children*” (Wang, 2004, p.5), indicating increased differences in adult autobiographical recall across cultures (Pillemer, 1998). Indeed, adults' autobiographical recall shows similar differences as children's autobiographical memory: Caucasian Americans have more detailed memories with themselves as the central character, whereas Chinese individuals had rather general memories with a strong group orientation (Wang, 2001b). Furthermore, in four studies by Mullen (1994), Caucasian participants reported a significantly earlier memory than Asian individuals, consistent with findings by Wang (2001b; see also MacDonald, Uesiliana, & Hayne, 2000; Mullen, 1994; Pillemer, 1998).

Differential styles of parent-child reminiscence are assumed to be the main factor for the emergence of differences in adults' and children's autobiographical memory. However, the parent-child dyad constitutes the major investigated interaction constellation in past research and is a typical constellation only for Western cultures (where the major part of studies also originated). This may constitute a restricted approach, because it is likely that in other cultural contexts further interaction partners may as well shape how children learn to reminisce. Siblings, for example, could as well fill the role of an interaction partner reminiscing with another child.

Only one study so far investigated effects of birth order on autobiographical memory systematically in a Chinese sample (Wang, Leichtman, & White, 1998). Chinese adults with no siblings reported a significantly earlier age of first memory than any other individuals and were found to be more self-oriented. The one-child policy in China, instituted in 1979, thus has changed family contexts substantially (Lee, 1992), and accordingly the environment in which Chinese children learn how to reminisce, as parents devote their attention more often to only one child – a constellation more typically found in Western contexts (e.g., Germany). Nevertheless, researchers are reluctant to and “*do not intend to equate Chinese only-children in an overarching way with independently oriented Western individuals*” (Wang et al., 1998, p.92).

As contexts of socialization change so will psychological variables – especially considering the influence of having siblings (and so birth order, see Bjorklund & Pellegrini, 2002; Harris, 1998; Sulloway, 1996). Studies have shown that children as young as age four perform motherese in the presence of younger children (Papoušek & Papoušek, 1987; Shatz & Gelman, 1973) and show cultural teaching (Maynard, 2002) or behavioral aspects of the culture-independent intuitive parenting program (Papoušek & Papoušek, 1987; see also Keller, Chasiotis, & Runde, 1992; Keller, Lohaus, Völker, Cappenberg, & Chasiotis, 1999). Supporting this line of thought, recent findings indicate that the existence of younger siblings leads older children to exhibit more implicit prosocial power motivation (Chasiotis, Hofer, & Campos, 2006) and delays their reproductive development (Chasiotis, Keller, & Scheffer, 2003). This body of research indicates that having or not having siblings substantially influences developmental pathways. Accordingly, it appears plausible that siblings are involved in memory talk (Neisser, 1988) and thus in the process of co-constructing their siblings autobiographical memory as a form of ‘collective remembering’ (Barclay & Smith, 1992) which is not necessarily restricted to parent-child interaction.

Findings from the growing field of autobiographical memory highlight the importance of a functional approach to autobiographical recall to understand the nature of individual and thus cultural differences. For this purposes, studies are needed that address the gap between theoretical conceptualizations of the functions of autobiographical memory and their empirical investigation. Such an approach should be supplemented by inclusion of contextual childhood variables that have been found to shape autobiographical memory. Therefore, it is advisable to include samples from different cultural contexts whose individuals can be assumed to vary in such contextual factors (cf. Methods, section 1.1).

3. Implicit Motives

The investigation of motivation has a long tradition in research on personality characteristics (Atkinson, 1958; Bischof, 1985; Maslow, 1954; Murray, 1938). Motivational variables can be considered to have a substantial influence on human memory (Mandler, 1975; Rapaport, 1942). In this section, research on implicit motives and their impact on autobiographical memory will be outlined.

Traditionally, motivation is distinguished between implicit (or operant) motives and explicit (or respondent) motives (McClelland, Koestner, & Weinberger, 1989). Motives have been assessed using self-report questionnaires and projective measures like picture-type story tests (e.g., the Thematic Apperception Test, Murray, 1943), which present participants with an ambiguous picture and ask them to invent a fantasy-based story (which is coded for motive content). The differentiation between two motivational systems originated from the observation that such projective measures and self-report scales of motivation are generally unrelated and – moreover – related to different behavioral correlates (deCharms, Morrison, Reitman & McClelland, 1955; Goschke, 1997).

Accordingly, McClelland (1980, 1985) and colleagues (McClelland et al., 1989) have argued that ‘operant’ (i.e., projective) and ‘respondent’ (i.e., self-report) measures assess distinct aspects of personality. Operant motives reflect recurring preferences for particular qualities of affective experiences, are not consciously accessible, and are accordingly termed ‘implicit motives’ (see McClelland et al., 1989). Respondent motives (or self-attributed motives) are explicit in the sense that they reflect well-articulated and cognitively elaborated goals and representations (see Biernat, 1989; Koestner, Weinberger, & McClelland, 1991; McClelland et al., 1989). While implicit motives have been shown to predict spontaneous behavioral trends with substantial predictive validity over time (see McAdams & Vaillant, 1982; McClelland & Pilon, 1983; Meyer & Pepper, 1977; see also Hofer & Chasiotis, 2003; Hofer, Chasiotis, & Campos, 2006), explicit motives are better predictors of short-term,

specific responses to a current choice situation (McClelland, 1980). In other words, implicit motives “provide a general orientation toward certain types of goals, but [...] self-attributed desires often reflect social norms that help define more narrowly the area in which these goals are to be accomplished” (McClelland et al., 1989, p.692).

A further distinction of explicit and implicit motivation can be found in their respective ontogenetic development. Implicit motives are built on affective, pre-linguistic experiences early in childhood, while explicit motives, requiring a well-developed self-concept, develop later in socialization (cf. McClelland et al., 1989). This seems to be the reason for their substantial predictive validity concerning long-term behavior compared to self-reports of explicit goals and values (McClelland & Pilon, 1983; see also Hofer & Chasiotis, 2003; Hofer, Chasiotis, & Campos, 2006). Furthermore, implicit motives are also strongly related to endocrinological processes (Mazur & Booth, 1998; McClelland, 1985; Schultheiss, Dargel, & Rohde, 2003) while explicit self-reports are not (Archer, 1991; McClelland et al., 1989). In conclusion, implicit motives represent a more basal and enduring influence on human behavior than self-attributed motives. They may thus be considered suitable to fill the gap between socialization practices and explicit ethnotheories or socialization goals across diverse cultural contexts.

Three types of implicit motives emerged as so-called ‘basic needs’ (cf. Murray, 1943): the need for Affiliation, the need for Power, and the need for Achievement:

nAffiliation: An implicit motivation for Affiliation is directed at the establishment and maintenance of warm and caring relationships (Atkinson, Heyns & Veroff, 1954; Winter, 1991) and reflects a basic need for connectedness and belonging (see also Baumeister & Leary, 1995). Similarly, notions of sadness about the loss of such qualities are perceived of as expressions of the need for Affiliation. McAdams (1982, 1989) proposed an intimacy motive that is regarded as encompassing the need for qualitatively more intimate relationships (in contrast to a general, more superficial, need for closeness). However, as it is highly related to the need for Affiliation in empirical studies (McAdams & Constantian, 1983), it is considered a subcategory of the Affiliation motive (Winter, 1991; Kuhl, 2001), and thus not further differentiated in this study.

nPower: The Power motive is characterized by the desire to exert influence on one’s social environment: the recurrent preference or readiness in behavior and thought for dominance and control over others (Heckhausen, 1980; McAdams, 1982, 1985; Winter, 1973, 1991) as well as the desire to rise in hierarchies. It is also associated with aggressive, risk-

taking behavior (McClelland, 1975; Winter, 1973; for further differentiations of the Power motive, e.g., concerning generativity, see Hofer, Busch, Chasiotis, Kärtner, & Campos, 2005; Chasiotis et al., in press, Chasiotis, Hofer, & Campos, 2006).

nAchievement: An implicit motivation for Achievement is characterized by the need to fulfill certain standards of excellence (self-defined or given; McClelland, Atkinson, Clark & Lowell, 1953; Winter, 1991).

More broadly defined, these three basic needs can be aligned to the need for Communion (*nAffiliation*), which is characterized by concerns for connectedness and interdependence, and to the need for Agency (*nPower*, *nAchievement*), which is concerned with the need for separation and autonomy (see Bakan, 1966; Leary, 1957, McAdams, 1985, see Woike et al., 1999, for a similar distinction).

Because the realization of each motive can be either positively or negatively affectively toned (Kuhl, 2001; see also Deci & Ryan, 1985), each of the above motives can again be separated into components of approach and avoidance. For example, indications of powerlessness (e.g., in a picture-type story test) represent a concern for power (avoidance component) just like notions that express satisfaction with gained status (approach component). A modified and extended version of the original Thematic Apperception Test (Murray, 1943), the Operant Multimotive Test (Kuhl & Scheffer, 1999) incorporates this differentiation and was therefore applied in this study (see Methods, section 2.4) to measure the need for Affiliation, Power, and Achievement (and thus the broader categories of communion and agency).

3.1. Implicit Motives in Cross-Cultural Comparison

There is considerable agreement that implicit motives constitute a universal base of human psyche (Weinberger & McClelland, 1990). However, research on implicit motives focused primarily on Euro-American cultures (e.g., McAdams & Vaillant, 1982; McClelland & Pilon, 1983; Pang & Schultheiss, 2005), while only few studies have assessed implicit motives in non-Western cultures by using TAT-type picture-story tests (e.g., Hofer & Chasiotis, 2003, 2004; McClelland & Winter, 1969). As most of these applied different and/or culturally adapted picture stimuli for data collection (Kornadt & Voight, 1970; Lee, 1953), direct comparisons are mostly futile (Holtzman, 1980).

Methodological complications have been identified as the major source impeding cross-cultural studies using projective methods and may explain why only few of them exist (Van de Vijver, 2000). Thus, despite a claim for universality (Weinberger & McClelland, 1990), the conceptual equivalence of definitions of motives across cultures has to be further

elaborated, especially as motive genesis is shaped by learning experiences during early socialization processes that differ across cultures (Kornadt, Eckensberger, & Emminghaus, 1980; McClelland, 1961; see also Keller & Greenfield, 2000; Markus & Kitayama, 1991). In particular, cross-cultural studies on the achievement motive indicate that the definition of the construct might have to be adapted for studies in non-Western cultures (e.g., De Vos, 1968; Doi, 1982; Kagan & Knight, 1981; Yu, 1996). In this context, one would have to examine the functional equivalence of behavior related to implicit motives across cultures (Allen & Walsh, 2000).

Therefore, studies are needed that address methodological issues prior to drawing inferences about differential motive strengths (Hofer, Chasiotis, Friedlmeier, Busch, & Campos, 2005; Van de Vijver, 2000). For example, comparison of data on implicit motives assessed with identical picture stimuli from Zambian and German participants revealed that bias (see Methods, section 6) interferes with cross-cultural score comparability (Hofer & Chasiotis, 2004). Additionally, even intracultural comparisons of motive strengths were threatened by bias due to sociodemographic aspects (e.g., social and educational status) and the enculturation status of participants, i.e., the extent of a person's integration into his cultural environment (Huber, 1989; Shimahara, 1970; Van de Vijver, 2000; see also Okazaki & Sue, 1995).

To conclude, these findings highlight the need for studies that adhere to the current methodological suggestions (Hofer et al., 2005; Van de Vijver & Leung, 1997; Van de Vijver, 2000) but reduce bias in cross-cultural research on implicit motives and thereby can provide data that are comparable across cultures. This is especially important as the present study is not concerned with finding differences in motive strength in cultures but with testing relationships of implicit motives, sociocultural orientations, and autobiographical recall across cultures.

3.2. Implicit Motives and Autobiographical Memory

Very early, experimental psychologists (e.g., Bartlett, 1932) assumed that an important factor in an individual's reconstruction of memory was her or his attitudes and motives towards the recalled event. Accordingly, personality was perceived of as a frame of reference for recall processes (see also Markus, 1977), a view that is still prominent (DeSteno & Salovey, 1997; Singer & Salovey, 1993).

3.2.1 Implicit Motives and the Content of Autobiographical Memory

The themes and contents of autobiographical memories may represent an individual's most important concerns (Ross & Wilson, 2000; Singer & Salovey, 1993), and ample evidence exists for such a link between implicit motives and the content of autobiographical recall (Hanson, 1992; McAdams, 1982, 1985; McAdams, Hoffman, Masnfield, & Day, 1996; Woike, 1994a, Woike, et al., 1999; Woike, Lavezzary, & Barsky, 2001). This research indicates that individuals motivated for the need for Agency generally recall autobiographical memories with a pronounced agentic theme, while in contrast, communally motivated individuals more often recall memories about connectedness and interdependence. This pattern is further substantiated by results from longitudinal diary studies (Woike, 1995; Woike & Polo, 2001). Accordingly, implicit motives are regarded as possessing “*an organizing function in retrieving such [autobiographical] memories*” (Woike et al., 2001, p.936).

However, the causality of this relationship could run both directions: An implicit motive, e.g., the need for Communion, may influence the accessibility of particular memories, e.g., about connectedness; or having communal autobiographical memories may lead to a pronounced communion motive. Irrespective of direction, it has been clearly documented that a mutually influencing relationship between implicit motives and the content of autobiographically memory exists (McAdams, 1982; see also Woike, McLeod, & Goggin, 2003).

3.2.2 Implicit Motives and the Structure of Autobiographical Memory

The structure of an autobiographical memory can serve as an indicator of its functions (see Theory, section 2.2). In the last 10 years, evidence has accumulated that implicit motives have substantial influence on the style of autobiographical information processing and thus the structure – and presumably the function – of autobiographical recall (e.g., Woike et al., 1999; Woike et al., 2001; Woike et al., 2003). In particular, the cognitive complexity of an autobiographical memory has been found to be related to communal and agentic motives.

Cognitive complexity comprises two styles of information processing:

(a) differentiation, which refers to the number of distinct and contrasting aspects in a memory, and (b) integration, which is characterized by expressions of causalities and similarities between aspects (cf. Schroder, Driver, & Streufert, 1967; Suedfeld, Tetlock, & Streufert, 1992; Woike, 1997; Woike et al., 2001; see also Methods, section 2.3.1). Both styles are assumed to operate together but to serve different purposes. While differentiation helps in the perception of oneself as being different and unique, integration supports feelings of interdependence and connectedness. Differentiation and integration thus capture key aspects

of the self and social functions of autobiographical recall, respectively (see Theory, section 2.2.4).

Individuals have been assumed to structure their autobiographical memories in a motive-congruent way, with agentic individuals making more use of differentiation and thereby setting themselves apart from others in their memory, while communally motivated individuals are supposed to make more use of integration to structure their autobiographical memories. In particular, Woike and colleagues (Woike et al., 1999, studies one and two) demonstrated this pattern in a recall task investigating individuals characterized by specific constellations of implicit motives. One group of these pre-selected individuals was characterized by a high need for Agency and at the same time a low need for Communion, while the other group exhibited a high need for Communion and a low need for Agency. When these individuals were asked to report memories about separation and connectedness, the above pattern was substantiated: agentic individuals used more differentiation in memories about separation, while communal individuals used more integration in memories about connectedness (Woike et al., 1999, study three).

These findings were further supported in an experimental variation (Woike et al., 1999, study four): in a motive-congruent recognition task, agentic individuals recognized more differentiated information, and in a motive congruent free recall task, communal individuals recalled more integrated information.

A further study by Woike and colleagues (Woike et al., 2001) complemented these findings. Agentic and communal participants (featuring the same motive constellations as in Woike et al., 1999) read vignettes that differed with respect to prevalent motive (communion vs. agency) and cognitive complexity (differentiation vs. integration). One vignette featured a differentiated structure and an agentic content and the other an integrated structure accompanied by a communal theme (for construction of the stimulus material, see Woike et al., 2001). Participants then had to perform a free recall and recognition task about these vignettes. Individuals with a high need for Agency recalled and recognized more elements of differentiation from the agentic vignette, while participants with communal motivation recalled and recognized more elements of integration from the communal vignette. Further findings from priming experiments and computerized replications support this pattern of results (for details, see Woike et al., 2001).

Additionally, Woike and colleagues (Woike et al., 2003) could show that implicit motives are related to specific personal memories (event-specific knowledge, see Conway &

Pleydell-Pearce, 2000, and Theory, section 2.1) which includes, for example, autobiographical recall of peak experiences or earliest childhood memories.

In conclusion, the above studies suggest that a high need for Communion is related to an integrated structure of autobiographical memory and may thereby serve a social function, while a high need for Agency relates to a differentiated structure, which indicates a self-function of autobiographical memory. This relationship should especially hold true for individuals high in one and, at the same time, low in the other implicit motive (cf. pre-selected individuals, Woike et al., 1999, Woike et al., 2001), suggesting an interaction between the need for Communion and Agency. Further results (Woike et al., 2003) report differential effects of implicit and explicit motives on autobiographical memory. However, since recent cross-cultural studies are more concerned with the effects of congruencies between explicit and implicit motives, (e.g., an enhanced life satisfaction, Hofer & Chasiotis, 2003; see also Theory, section 4.2), differential effects of implicit and explicit motivation were not addressed in this study.

4. Independent and Interdependent Self-Construal

In traditional Western research, only one manner of self-construal received substantial attention – the Western view of the self, regarded as featuring a unique arrangement of internal qualities that are seen as the source of and reason for an individual's behavior. This view has been extended by Markus' and Kitayama's seminal paper (1991) contending that individuals in different contexts hold divergent views of themselves and others.

Some basic aspects of the self can be regarded as universal: people are likely to develop an understanding that they are physically distinct from others (Hallowell, 1955) and to possess a knowledge that they remain this physically distinct person across life (Allport, 1937). Furthermore, beyond such an ecological self (Neisser, 1988), people are likely to develop some awareness of internal, cognitive activities (e.g., dreams) that lead them to form a private self (cf. Markus & Kitayama, 1991; see also Triandis, 1989). However, aspects of these private selves can vary substantially across individuals.

At the beginning of the 20th Century (Durkheim, 1912/1968) the self was already perceived of as a product of social factors. Especially since contexts of self-formation, developmental pathways, social norms and expectations show substantial variation across different cultural and economic environments (cf. Cantor & Kihlstrom, 1987; Erikson, 1950; Veroff, 1983; and especially Keller, 2003; Keller et al., 2004), the ultimately emerging self-construal can be assumed to be different, as well (e.g., Chasiotis et al., in press).

The independent manner of self-construal is regarded to be the dominant mode in many Western countries in which individuals are faced with the developmental imperative of forming a unique, inseparable, and independent identity (Johnson, 1985; see also McAdams, 1990). This necessitates the perception of behavior as being rooted in the person itself, not as explicable by environmental and situational factors. Hence, this reflects the primacy regarding oneself as an independent, volitional agent of one's own actions (i.e., 'agency', but not in a motivational sense, see Theory, section 3). The social environment is only in so far important as it represents "*standards of reflected appraisal, or [...] sources that can verify and affirm the inner core of the self*" (Markus & Kitayama, 1991; p.226).

By contrast, an interdependent mode of self-construal is focused on the fundamental connectedness with others and the normative imperative of maintaining this interrelatedness (De Vos, 1985; Miller, 1988; Shewder & Bourne, 1984). The origin of one's behavior is not primarily perceived as being rooted in the person itself but as contingent on social and contextual factors. Accordingly, such a self is regarded as being less differentiated from others, since others constitute significant elements of an individual's self. Therefore, an "*interdependent self cannot be characterized as a bounded whole, for it changes structure with the nature of the particular context*" (Markus & Kitayama, 1991, p. 227). Interdependent individuals derive their sense of uniqueness from the particular configuration of their social background (Hamaguchi, 1985). For example, even in the rapidly changing Chinese society, interrelatedness and kindness (representing Confucian values) remain prevalent (Bond, 1986).

However, such independent and interdependent instances of the self may be regarded as constituting two extreme poles. Based upon the considerations of Kağıtçıbaşı (1996), they represent combinations of two dimensions differentiating the dimension of interpersonal distance (separateness – relatedness) and agency (autonomy – heteronomy). The combinations of these dimensions that represent an independent self would be 'separateness' and 'autonomy', while 'relatedness' and 'heteronomy' would constitute an interdependent self-construal. However, considering these dimensions as constituting a dichotomy between "Western" and "Non-Western" selves may thwart the heuristic value of the distinction by Markus and Kitayama (1991; see also Fiske, Kitayama, Markus, & Nisbett, 1998), because distributions of self-construals are not regarded as clear-cut (Markus & Kitayama, 1991) and may be blurred across contexts (Matsumoto, 1999). This suggests that such differences between independent and interdependent self-construals may, in the first instance, constitute interindividual differences and not cultural differences per se. Accordingly, their individual degrees need to be assessed. With no direct measures of independent and interdependent self-

construal, indicators of independent and interdependent sociocultural orientation were used in the present study (see Methods, section 2.5).

4.1. Implications of Independent and Interdependent Self-Construals

In the following, implications of different self-construals for both motivational and mnemonic aspects of this study will be outlined (for further details, see Cross, Bacon & Morris, 2000; Markus & Kitayama, 1991, 1998).

Markus and Kitayama (1991, see also Fiske et al., 1998) have proposed that individuals with a pronounced interdependent self can be expected to be “*more attentive and sensitive to others*” (p.231) – an assumption implying effects for the vast domain of social and cognitive information processing, including memory. In particular, the notion that this social orientation results in “*greater cognitive elaboration of the other*” (Markus & Kitayama, 1991, p.231) has been connected to differential information processing in individuals.

Woike (1994b) has suggested that cognitive complexity may be linked to an individual’s social orientation (see also Tetlock, Peterson, & Berry, 1993). Drawing on Markus’ and Kitayama’s (1991) conceptualization, individuals holding an independent self-construal are assumed to process information in a differentiated style (see Methods, section 2.3.1), separating oneself from others by applying contrasts, comparisons and rules of exclusion. In contrast, information processing of individuals with an interdependent self is assumed to be executed in an integrated manner by establishing connections to other social objects and perceiving similarities between them (see Woike, 1994b). Accordingly, these different modes have also been labeled “*separate and connected way[s] of thinking*” (Woike, 1994b, p. 142; see also McAdams, 1985; Triandis, 1989).

Furthermore, individuals with a pronounced interdependent self-construal are assumed to express motives that refer to others and are social in content – particularly affiliation motives (Markus & Kitayama, 1991). However, intuitively appealing as this connection between self-construal and motivation may appear, it is unclear to which motivational system in particular an independent or interdependent self-construal may relate, as up to now, no studies have specifically addressed this issue. A possible link, however, could be inferred from intra-cultural (US) studies on implicit motives (i.e., need for Communion and need for Agency, see also Theory, section 3.2.2). Implicit motives have been found to influence the structure (and content) of autobiographical memories (Woike et al., 1999; Woike et al., 2001; Woike et al., 2003). Individuals with a high implicit communal motivation make more use of integration to structure their autobiographical recall, whereas individuals exhibiting a highly

agentic implicit motive make more use of differentiation to structure their memories. This means that both the mode of self-construal (Markus and Kitayama, 1991) and implicit motivation (e.g., Woike et al., 1999; Woike et al., 2001) have been related to different modes of information processing, especially with regard to autobiographical memory.

Several studies indicate that field dependence (i.e., a holistic style of thinking, characterized by the perception of similarities and a relational information processing) and field independence (i.e., an analytical style of thinking, characterized by an inferential style of information processing) may be closely related to an interdependent and independent self-construal, respectively (for an overview see Hannover & Kühnen, 2002, Berry, 1991). Obviously, the concept of field dependence and interdependence bears close semblance with aspects of integration and differentiation. However, a direct cross-cultural assessment of the relationship between independent or interdependent sociocultural orientation and differentiated or integrated information processing (i.e., cognitive complexity) in autobiographical recall is still lacking.

There are further indications that autobiographical recall may be linked to different modes of self-construal. In numerous cross-cultural studies, differences in the structure (and content) of autobiographical memories (especially of children) have been attributed to differences in sociocultural orientations on the country level (e.g., Han et al., 1998; Mullen, 1994; Wang, 2001a, 2001b; Wang & Leichtman, 2000; Wang et al., 2001), and could be related to differences on the individual level (Wang, 2004). American individual's memories were found to be long, specific, self-oriented, and early, and were attributed to the dominance of an independent self-construal in the population of the USA, as such memories facilitate the perception of being different from others. By contrast, Asian individuals are generally assumed to hold an interdependent view of the self. They reported shorter, more general and later memories, and referred to others more often. Such memories are regarded as more suitable for social purposes (see also Theory, section 2.4).

4.2. Congruence of Implicit Motives and Explicit Sociocultural Orientation

Studies on the relationship of implicit and explicit motives in Euro-American samples have found that the respective measures of the same motivational disposition are not significantly correlated (e.g., King, 1995; McClelland, Atkinson, Clark, & Lowell, 1953): being implicitly motivated for Power is not the same as explicitly articulating a Power motivation. While findings like these corroborated the existence of two distinct motivation systems (see Theory, section 3), a study by Emmons and McAdams (1991) found that explicit idiographic, self-generated strivings were related to corresponding implicit motives (measured

with the TAT, Murray, 1943). This offers an avenue to investigate different constellations of explicit and implicit motives. Explicit goals and implicit motives are often not compatible, as individuals may pursue goals that do not correspond with their implicit motives. The realization of an explicit goal may even impede the satisfaction of an implicit motive, which can ultimately result in personal distress (Winter, 1996). The reverse can be the case as well: an alignment between the two motivational systems, which is not considered an ontogenetically prepared constellation (Brunstein, Maier, & Schultheiss, 1999), has been found to increase one's emotional well-being (Brunstein, Lautenschlager, Nawroth, Pöhlmann, & Schultheiss, 1995; Brunstein, Schultheiss, & Grässmann, 1998; see also Zalewska & Brandstätter, 2001). This effect of motive congruence has been documented as well in cross-cultural studies (for details, see Hofer & Chasiotis, 2003; Hofer, Chasiotis, & Campos, 2006). These findings emphasize the importance of considering both motivational systems to better understand individual behavior and actions (Sorrentino & Higgins, 1986; Winter, 1996).

In the present study, participants' implicit motivation, explicit sociocultural orientation, and their respective effects on autobiographical memory were investigated. As constellations of similar concepts have been shown to interact (e.g., in creating life satisfaction or distress), implications for autobiographical memory emerge as well. It has to be noted, however, that independence and interdependence (cf. Markus & Kitayama, 1991) do not represent explicit goals in the strictest sense but self-construals. Nevertheless, these self-construals are expected to overlap with an individual's explicit goals (again, see Markus & Kitayama, 1991). Therefore, congruence between explicit sociocultural orientations and implicit motivation as a possible factor influencing autobiographical recall was considered in this study.

5. The Present Study

The functions of autobiographical remembering have been conceptualized as serving interpersonal and intrapersonal purposes (e.g., Robinson & Swanson, 1990). More recent theoretical approaches (cf. Bluck, 2003, see Theory, section 2.2) have further distinguished between self, directive, and social functions. Although empirical studies are still few (e.g., Bluck et al., 2005; Hyman & Faries, 1992; Pasupathi et al., 2001), they support of the existence of these functions. Further findings indicate the importance of autobiographical memory functions for successful aging (e.g., Webster, 1993), depression (e.g., Williams & Broadbent, 1986; Williams et al., 2000), and everyday behavior (e.g., Alea, Bluck, & Semegon, 2004; Glück, Bluck, Baron, & McAdams, 2005).

Differences in the style of autobiographical recall are regarded as being rooted in early socialization (e.g., Reese & Fivush, 1993, Reese et al., 1996). In particular, parents' reminiscence style (or memory talk, Neisser, 1988) with their children has been found to predict children's autobiographical memory (e.g., Haden et al., 1997). The parental style of reminiscing may vary across cultures (e.g., Reese & Fivush, 1993) as well as the characteristics of autobiographical recall.

It has been found that a highly elaborative style of parents' reminiscing with their children is more typical for Western (i.e., American) samples, while a low elaborative style is more typical for Asian samples (e.g., Mullen & Yi, 1995; Miller et al., 1997; Wang, 2001a, Wang et al., 2000; Wang & Leichtman, 2000). Some studies indicate that similar cultural differences in autobiographical memory can be found in adults as well. Findings that long, specific, self-oriented, and early memories were more often recalled by Western individuals, and shorter, more general and later memories by Asian individuals were explained by different modes of self-construal (Markus & Kitayama, 1991) in the respective populations. This lead researchers to conceive "*of autobiographical remembering not as a natural and universal process, but as a cultural practice or, more precisely, as an array of practices*" (Wang & Brockmeier, 2002, p.58).

In the following, arguments are outlined that qualitative differences in autobiographical memory may not be a parsimonious explanation for cultural differences in autobiographical recall. Instead, it is proposed that cultural differences can be integrated into a functional approach towards autobiographical remembering and can be explained by contextual as well as individual variables.

5.1. A Functional Approach to Cultural Differences

A functional approach may be suitable to provide a conceptually overarching framework for different modes of autobiographical recall by distinguishing between functions that serve the self (i.e., establishing a unique identity), and functions that address social issues (i.e., maintaining relationships and thus connectedness). The different properties (i.e., specificity, length, self-other ratio, content) of autobiographical recall ascribed to Western and Far-Eastern participants have been repeatedly described as (a) facilitating a differentiation from others to reaffirm the self as an "*autonomous entity*" (Wang, 2004, p.5) and (b) helping individuals "to engage in ongoing relationships", thereby reinforcing "*the self as a relational entity*" (Wang, 2004, p.5). Therefore, descriptions of memory purposes in past research are congruent with the functional definitions of autobiographical memory. Accordingly, different individuals may ascribe different importance to the self or social functions of

autobiographical remembering and may thus engage, more or less, in their respective execution (see also Mullen & Yi, 1995, for a similar conclusion). The finding that some cultures assign no value to their childhood memories (Leichtman, 2001) lead to the conclusion that these individuals' perception of the past was less differentiated (see also Nelson & Fivush, 2004) and can be integrated into the functional perspective. It may not be the past in general which is not differentiated, but in particular, the individual past: asking participants of such a cultural group to report a memory of their individual past (that may differentiate them from others) can lead to the above finding, while asking them for relational memories (which may be valued more) might produce a different picture.

In concluding this argument, it is empirically obvious that cultural differences in autobiographical recall exist but these differences can be integrated into a functional approach to autobiographical memory, which is more general and flexible than traditional approaches (see Theory, section 2). Therefore, this may reconnect current intra-cultural and cross-cultural autobiographical research, because the assumption of self and social functions as structurally universal may offer a comprehensive framework to describe individual and cultural differences in autobiographical memory.

5.2. Early Childhood Context Shapes Autobiographical Memory

Most developmental research so far focused on mother-child dyads (and father-child dyads, see e.g., Haden et al., 1997; Reese et al., 1996). However, one study (Wang et al., 1998) found that only-child Chinese adults were more individually oriented than those with siblings, and provided earlier and more self-focused memories.

An individual's autobiographical recall is primarily shaped in early childhood. Therefore, the notion of cultural differences has to be inspected more closely, because countries like the United States or PR China (as the most frequently studied cultures) encompass numerous, substantially diverse contexts. Such contexts may differ with respect to average age, ethnicity, language, education, and social as well as economic status. Therefore, scrutinizing contextual variables can help identify what exactly constitutes cultural differences (Poortinga, van de Vijver, Joe, & van de Koppel, 1987; van Hemert, 2003). Consequentially, cross-cultural comparisons are comparisons of specific samples in equally specific contexts not comparisons between countries or populations (Keller, 2003; Keller et al., 2004). The utility of such an approach was repeatedly demonstrated in studies of Chasiotis and colleagues (Chasiotis et al., 2003; Chasiotis et al., 2006): Differences in sociocultural orientation (Markus & Kitayama, 1991; Kağitçibaşı, 1996, 2005), that were previously regarded as culture-specific, could partly be reduced to differences in contextual variables in

the investigated samples (i.e., number of siblings, for details see Chasiotis et al., 2003). Siblings constitute an important contextual factor in early socialization, because it has been demonstrated that even young children perform aspects of parenting behavior when younger children are present (Papoušek & Papoušek, 1987; Shatz & Gelman, 1973): they transmit cultural norms and practices (Maynard, 2002), and they exhibit elements of the culture-independent intuitive parenting program (Papoušek & Papoušek, 1987; see also Keller et al., 1992; Keller et al., 1999). Therefore, it is highly likely that not only parents shape the reminiscence style of their children, but also siblings.

5.3. Interindividual Differences

Following the above line of thought, substantial insight can be expected by relating an individual's characteristics of autobiographical recall to individual differences in sociocultural orientation (independent/interdependent) and implicit motivation (agency/communion) to explain cultural (or contextual) variance. Markus and Kitayama (1991) pointed out that "*on average*" (p.226) more individuals in Western countries will hold an independent view of themselves and that "*even in America, there is a strong theme of interdependence that is reflected in the values and activities of many of its subcultures*" (p.228). As distributions between cultures overlap and differences are blurred (see also Matsumoto, 1999), the necessity of an individual assessment becomes more obvious.

Differences in autobiographical memory originate in early socialization, especially in the co-construction of a child's past with its parents. Adults still exhibit the then established styles of recall. Therefore, the question arises what perpetuates an individual's style of autobiographical memory. Repeatedly, the relationship between the self and autobiographical memory has been described as closely intertwined and mutually influencing (Barclay, 1986; Fitzgerald, 1986; Ross, 1989), and implicit motives have been shown to act as a selective instance in encoding and retrieval of autobiographical knowledge (Woike et al., 1999; Woike et al., 2001). In other words, life's events are selectively encoded and retrieved dependent on current themes in life and goals of the self (Conway & Rubin, 1993).

In particular, social information processing has been related to different self-construals (Markus & Kitayama, 1991; see also Hannover & Kühnen, 2002, see Theory, section 5.1). Accordingly, if an individual's sociocultural orientation is primarily interdependent, it can be expected that the structure (which indicates the function) of his personal memories will reflect this orientation. However, only a small number of cross-cultural studies (e.g., Wang, 2004) have empirically assessed the relationship of the structure of autobiographical memories of adults from different cultures and their respective self-construals, finding that

“autobiographical memory and self-description were consistent in orientation even at the individual level” (Wang, 2004, p. 13).

Furthermore, intracultural studies (in the US, Woike et al., 1999; Woike et al., 2001) on the relationship between implicit motives and the structure of autobiographical memory have demonstrated that individuals with a high need for Communion structure their memories in an integrated way, thus rendering it more suitable for social purposes, while individuals with a pronounced agentic motivation make more use of differentiation in their autobiographical narratives, which is more appropriate for the self function of autobiographical recall (see Theory, section 2.2). Such differences in cognitive complexity (i.e., differentiation and integration) have been linked conceptually in a similar way to different modes of self construal (e.g., Woike, 1994b, Tetlock et al., 1993; see also Markus & Kitayama, 1991). Thus, implicit motivation and the mode of self-construal may represent the enduring vehicles through which early styles of reminiscing are transported across the life span.

In summary, it is proposed that cultural differences in the structure of autobiographical recall reflect different weights assigned to the self and social functions of autobiographical memory and can thus be integrated into the functional approach towards autobiographical remembering. Furthermore, differences in the dominance of either self or social function (that thus include cultural variation) can be explained on an individual level by investigating the impact of implicit motivation, sociocultural orientation, and indicators of the developmental context in which an individual’s style of reminiscing was shaped in the first place.

6. Hypotheses

6.1. Cultural Differences in Autobiographical Memory

1. The cultural differences reported in various other studies (see Theory, section 2.4) concerning the age, content, specificity, length and self-other ratio of the memory are expected to be replicable: compared with German participants, Chinese and Cameroonian participants are assumed to have a rather social, unspecific and short as well as later first memory in which they rather include other people than themselves (self-other ratio).

2. General differences in the structure of autobiographical memory (assessed by coding the cognitive complexity) should reflect these differences: Chinese and Cameroonian participants are expected to structure their memories with more cognitive complexity (i.e., a higher proportion of integration) than do German participants.

6.2. Childhood Context as Predictor of Autobiographical Memory

Contextual variables like the number of siblings or birth order have been shown to exert considerable influence on developmental pathways (Keller, 2003; Keller et al., 2004; see also Chasiotis et al., 2003; Chasiotis et al., 2006) and can help in unraveling cultural differences (Poortinga et al., 1987).

1. It is assumed that individuals having more siblings or who generally lived together with more people in their childhood household would exhibit a pronounced social function of autobiographical recall. Their memories are expected to be characterized by a high cognitive complexity (i.e., more integration), of social content, focused on others, rather unspecific (routine) events, a later age they ascribe to their first memory, and brief narratives.

2. Correspondingly, only-child adults are expected to exhibit more indicators of the self function of autobiographical recall (in comparison to adults with siblings). It is expected that their memories will be more differentiated (i.e., a low cognitive complexity), focused on themselves, of individual content, referring to specific events, lengthy, and from very early age.

6.3. Implicit Motives and Sociocultural Orientations as Predictors of Autobiographical Memory

Replicating differences in autobiographical memory across cultures can be considered a first result. However, ‘peeling the onion’ that is called culture (Poortinga et al., 1987) will advance our understanding about the emergence of autobiographical memory. Even though interaction effects across diverse cultural samples have been described as “*infamous*” for their instability (Van de Vijver & Leung, 1997, p.87), specific constellations of implicit motives and sociocultural orientations are assumed to influence autobiographical memory and to account for cultural differences across cultures.

6.3.1 Main Effects of Implicit Motives and Sociocultural Orientation

1. The need for Communion as well an explicitly interdependent sociocultural orientation is assumed to positively relate to a structure that is suitable for the social function of autobiographical remembering. It is therefore expected that individuals high in communion and interdependent sociocultural orientation (compared to those low in these scores) use more integration (i.e., higher cognitive complexity) in their narratives, more frequently report routine events, focus more on others, report their age of earliest memory as being later, and

generally give briefer accounts of their past. In addition, the content of the memory is expected to be of social nature.

2. The reverse is expected for individuals high in the implicit need for Agency or with a pronounced independent sociocultural orientation. Memories whose structure is useful for the self-function of autobiographical memory are expected to feature a lower cognitive complexity (i.e., high differentiation), specific events, earlier first memory, more self-references and lengthier memories. Correspondingly, such memories are expected to be of individual content. Since the need for Agency can be separated into the need for Power and the need for Achievement, it is expected that this effect can be found especially for the need for Power, as it more closely captures social aspects of independent implicit motivation.

6.3.2 Interaction Effects of Implicit Motives and Sociocultural Orientation

1. The interaction between the need for Agency (especially Power) and the need for Communion – in particular, a high need for Agency combined with a low need for Communion – is expected to explain a self-focused structure of autobiographical memory and should thus result in a pronounced use of differentiation (i.e., low cognitive complexity), specific events, an early first memory, more self-references than references to others within the narrative, and lengthy memories. The content of the memory is expected to be focused on the subject her-/himself.

2. By contrast, the above interaction is expected to result in a pronounced socially oriented memory structure, if a high need for Communion is combined with a low need for Agency (especially Power). It is assumed to be characterized by integrative elements (i.e., high cognitive complexity), mainly routine events, the indication of a later age of first memory, more references to others, and being brief. Furthermore, the content of the memory is assumed to be social.

3. A similar pattern should hold true for the interaction between an independent and interdependent sociocultural orientation: the combination of high independent scores of sociocultural orientation with a low interdependent sociocultural orientation should lead to a self-focused structure of autobiographical memory; signified by a high amount of differentiation (i.e., low cognitive complexity), very specific events, an early first memory, a high self-other ratio (i.e., more self-references), and lengthy memories. Accordingly, the content of the memory is expected to be individual in nature.

4. The reversed constellation (low independent sociocultural orientation and high interdependent sociocultural orientation) is expected to predict an interpersonal function of

autobiographical memory, characterized by the use of integration (i.e., high cognitive complexity), routine events, a later first memory, a lower self-other ratio, and shorter memories. Furthermore, a social content of the narrative is expected.

5. A pronounced need for Communion in interaction with a low independent sociocultural orientation should account for a socially oriented memory. Accordingly, it is expected to be characterized by integrated elements (i.e., high cognitive complexity) routine events, a late first memory, a lower self-other ratio, and a generally brief memory. Again, a social memory content is expected.

6. The reverse combination (low need for Communion and a pronounced independent sociocultural orientation) should lead consequentially to a self-focused orientation in autobiographical recall that is characterized by differentiation (i.e., a low cognitive complexity), references to specific events, an early age participants indicate for their first memory, more self references (i.e., a high self-other ratio), and lengthy memories. Correspondingly, the memory content should be focused on the individual her-/himself.

7. A high need for Agency (especially Power) combined with a low interdependent sociocultural orientation should predict a self-focused autobiographical memory. Such a memory is signified by a low cognitive complexity (i.e., differentiation), rather specific events, an early age of first memory, more self references (i.e., a high self-other ratio), and lengthier narratives. In addition, an individual memory content is expected.

8. On the other hand, a low need for Agency (or Power) and a pronounced interdependent sociocultural orientation is expected to predict a social function of autobiographical recall that is characterized by the use of integration (i.e., high cognitive complexity), routine events, a later first memory, a lower self-other ratio (i.e., less self-references), and a brief narrative. Accordingly the memory content is assumed to be social.

In previous studies, the relationship between the structure of autobiographical memory and implicit motives has been mainly investigated without distinguishing between the approach and avoidance components of implicit motivation. Since the Operant Multimotive Test (Kuhl & Scheffer, 1999) offers this opportunity, exploratory analyses were conducted in this study to examine the effects of the avoidance components of the need for Agency (especially Power), and Communion on autobiographical memory.

METHODS

1. Overview

In the following chapter, first the conceptually based selection of cultures is presented. Subsequently, the measures for the dependent variables of autobiographical memory (e.g., the manual for cognitive complexity), and for the independent constructs of implicit motives, and sociocultural orientation, as well as contextual variables (e.g., number of siblings) are described, including their respective computation, aggregation, and translation. The pretest is first outlined and then followed by the procedure of data aggregation and assessment in the respective cultures.

Special attention was given to the investigation and test of the measures for their cross-cultural applicability according to the desired (but too often not met) standards in cross-cultural research. These sections include considerations about construct and method bias, and in particular, the establishment of equivalence across cultures for the self-report scales (confirmatory multi-group factor analysis with AMOS, Arbuckle, 2005) and response bias analyses of the Operant Multimotive Test (OMT, Kuhl & Scheffer, 1999).

1.1. Selection of Cultures

The selection of cultures is crucial for any cross-cultural comparison. The present study was based on the conception of sociocultural orientations that are assumed to draw on different construals of the self (Kağitçibaşı, 1996; see also Markus & Kitayama, 1991, 1994). Sociocultural orientations can be differentiated into the independent dimensions of interpersonal distance (separateness – relatedness) and agency (autonomy – heteronomy; see Kağitçibaşı, 1996). The endpoles of these dimensions define independence as the combination of autonomy and separateness, an adaptive pattern in the Western, urban, educated middle-class. The combination of heteronomy and relatedness forms the prototypical interdependent sociocultural orientation and is regarded as adaptive in rather rural contexts with populations of lower socioeconomic and educational status (cf. Keller et al., 2004). These different contexts are assumed to have different implications for the family structure and thus the immediate context of socialization that is assumed to shape self-construals (Kağitçibaşı, 1996, 2005).

In rural agrarian societies with low levels of affluence, intergenerational interdependence is necessary for the family's livelihood: children often contribute to the family's economy and provide a security net for their aging parents (Kağitçibaşı, 2005). Independence in this context is not functional (and thus not valued), because an independent

child may leave the family and look after her/his own self-interest when she/he is grown. A strong sense of tradition and obedience is dominant in parenting (see also Keller, 2003; Keller et al., 2004; Greenfield, 1994; Greenfield, Keller, Fuligni, Maynard, 2003; Kağitçibaşı, 1996, 2005; Nsamenang, 1992, 1995).

This is contrasted with the prototypical independent context that can be found in affluent, educated, middle-class, nuclear families (typical especially for Western countries; Kağitçibaşı, 1996). With alternatives for old-age support, economic dependence on offsprings is often not considered necessary or even desirable. Children are therefore raised to be independent and self-sufficient, fostering a sense of separateness and uniqueness (Kağitçibaşı, 2005).

Accordingly, samples were selected that can be regarded as prototypical for these two cultural contexts: a German middle-class sample as expressing a prototypical independent context, and samples from Cameroon and PR China as expressing a rather interdependent context.

The general societal indicators are in line with the assumed contextual differences in the three samples as shown by socioeconomic differences (e.g., HDI, see United Nations Development Report, 2005) and value differences (Hofstede, 2000) on the country level. Referring to socio-economical characteristics (United Nations Development Report, 2005), the three investigated contexts differ from each other in life expectancy, education, and economic wellbeing (per capita GDP) which are all considered basic elements of human life (see Nohlen & Nuscheler, 1993). Germany (HDI rank 20) is listed among the countries with high human development (HDI), while PR China (HDI rank 85) and Cameroon (HDI rank 148) are characterized as showing middle and low human development (HDI), respectively. Furthermore, there exist differences in 'individualism' and 'power distance' (Hofstede, 2000) among the different countries. Such differences need not correspond to individual differences but may, nevertheless, provide a general indicator of the investigated context. Because no separate scores for Cameroon were available, scores for West Africa were taken as an indicator. While Germany ranks high in Hofstede's individualism score (50), both PR China (15) and Cameroon (15) are equally low. Differences in power distances refer to the distribution of wealth and power and their acceptance in a society (Hofstede, 2000). Germany (30) exhibits a low power distance, whereas differences in power and status are more readily accepted in Cameroon (75) and PR China (80).

Cross-cultural studies often focus only on the similarities and differences of individuals from Asian and Western countries, which especially applies for cross-cultural

studies on autobiographical memory (e.g., Conway, Wang, Hanyu, & Haque, 2005; Han et al., 1998; Wang et al., 1998). A sample from a suburban context in mainland China was selected to ensure comparability with these studies on autobiographical memory. A sample of the Cameroonian Nso, one of the largest ethnic groups in the North-West province of Cameroon (Anglophone part of Cameroon; see Nsamenang & Lamb, 1994, Yovsi, 2003), was selected to further expand research of cultural models pertaining to autobiographical memory. As the selection of three cultures ensures an enhanced opportunity to generalize similarities across cultures, this procedure was in accordance with the guidelines suggested by Van de Vijver and Leung (1997).

2. Measures

2.1. Autobiographical Memory

2.2. Assessment of Autobiographical Memories

Traditional memory tests focus predominately on the performance in autobiographical memory tasks either in interviews (e.g., the Autobiographical Memory Interview [AMI] Kopelman et al., 1989) or in applying a cueing technique, in which the participant has to respond to cues with an autobiographical memory that should be as specific as possible (e.g., the Autobiographical Memory Test [AMT], Williams & Broadbent, 1986). However, these measurements are confined to assess only performance levels of autobiographical memory (e.g., amount, or specificity of recall) and have not yet been validated for cross-cultural research. Because the focus of attention in this study was on the functional structure of autobiographical memories, a different measure was needed. However, the cross-cultural validity of measures assessing the functions of autobiographical memory had not yet been established.

Instructing participants to provide a particular memory (e.g., a peak experience, see McAdams, 1982, Rubin, 1986) and to write a narrative essay allows for coding these memories and does not restrict participants to the response format of a questionnaire, thus qualifying as a procedure assumed to be more culture-sensitive (Wang, 2004). Especially in cross-cultural research, participants can be expected to have varying experience with typical self-report questionnaires (Van de Vijver & Leung, 1997). Applying an open-ended response format for the assessment of mnemonic structure thus seemed a viable route (see also Woike, 2001), in particular, as similar procedures for the assessment of participants' earliest childhood memories have already been applied cross-culturally (e.g., Wang et al., 1998).

Apart from these methodological considerations, the assessment of the earliest childhood memory had another desirable property: these particular memories are supposed to reflect not only the most salient features of a child's self-construal at the time the memory was formed (Conway, 1996) but are also assumed to reveal current goals and central themes of the adult's self and personality (Ross & Wilson, 2000; Singer & Salovey, 1993).

This study adapted the procedure by Wang and colleagues (1998). Participants were asked to provide their two earliest childhood memories (see Appendix D; see also Han, et al., 1998; Wang, 2004). One of the memories was instructed to be centered on the writer her-/himself: *"Please take some time now to remember your very first childhood memory that is centered on your own person."* The second memory instruction asked participants to report a memory that revolves around others: *"Please take some time now to remember your very first childhood memory, in which interactions with other people were in the forefront."* Two types of memories were included to incorporate a small variety of memory types and to reduce potential cultural bias. Previous findings (e.g., Wang et al., 1998) suggest that Chinese individuals recall autobiographical events of social nature more often than do Western participants.

For each memory, specific guidance was given to clarify the instruction. The categories to which these prompts originally belonged were designed by Waldfoegel (1948) and have previously been used to classify the content of autobiographical memories across cultures (e.g., Wang et al., 1998; Wang, 2001a). Further instructions for the self-focused memory thus read: *"This memory could contain, for example, dreams, successes, nightmares, frustrations, or a different event that is mainly concerned with your own person."*

Supplementary instructions for the other-oriented memory type were: *"This memory could contain, for example, the upbringing by your parents, family activities, playing or arguing with somebody, or a different event that was mainly concerned with other people."*

Finally, in both memory instructions, participants were asked to report only memories that they judged to be their own and not something they saw on a photograph or were told by others. Furthermore, they were asked to be as precise as possible in writing down their memory in complete sentences without the use of catchwords. Immediately after writing down the respective memories, participants were asked to estimate their age at the time the event took place.

2.3. Coding of Autobiographical Memories

Content: Coding for content of an autobiographical memory was carried out following the procedure of Wang and colleagues (1998), who adapted the categorization by Waldfoegel

(1948) of content coding for children's memories. Since the memories asked for in this study still pertain to childhood, coding was conducted along these guidelines but with the restriction of only distinguishing between memories of social (e.g., parental interactions, family activities, interacting with neighbors) and individual content (personal experiences and feelings not related to others).

Specificity: The specificity of an autobiographical narrative was coded as "specific" or "general". Specific memories clearly refer to an event that took place at a particular point in time, while general (or routine) events may have occurred over a longer period of time or on multiple occasions (see also Pillemer, 1998).

Self-other ratio: The number of times participants mentioned themselves as well as other people within their memory story were counted separately to provide an index of their social orientation: the quantity of self-references divided by the overall number of references to people (i.e., the sum of other- and self-references, see Lindzey, 1961). Lower scores therefore indicate a social orientation within the autobiographical memory (for a similar index, see Hyman & Faries, 1992). Occurrences of plural forms (e.g., "them") were always counted as indicating that the writer is referring to two people, since the quantity of "two" represents the lowest limit in the plural. Only if people have been introduced (e.g., their names) prior to the occurrence of the plural form, and are thus abbreviated subsequently, their definite number was scored as indicated by the writer. Accordingly, if plural forms include the writer (e.g., "us"), they were counted as one self-reference and one reference to one other person.

Length: The length of an autobiographical memory was measured by (a) the number of words and (b) the number of propositions of a narrative. Propositions were used to have a second measure to reduce linguistic differences (see Wang, 2001b) and were counted according to the definition of Fivush, Haden, and Adam (1995) as the occurrence of complete subject-verb constructions. For example "I walk." would count as one proposition, "I walk and Eric talks" would count as two propositions, while "I walk and talk" would only count as one.

2.3.1 Coding of Cognitive Complexity

Cognitive complexity (Categories of Complexity: A Scoring Manual, Woike, 1997) encompasses different ways of information processing: on the one hand, the number of different attributes used to describe stimuli, and on the other hand, the connections established among stimuli. This constitutes broader categories like differentiation (perceiving differences) and integration (perceiving connections). Two levels can be distinguished: simple indices of

expressing differentiation (listing separate attributes), integration (establishing links between attributes as in giving examples to clarify an attribute's meaning), and elaborated categories of cognitive complexity. Elaborated differentiation refers to making contrasts, comparisons, and restricting perspectives, thereby expressing the separateness of attributes. Elaborated integration, on the other hand, comprises the perception of relationships and dynamic causalities between attributes, thus exemplifying a connected way of information processing. In sum, four categories emerge: simple differentiation (perceiving attributes), simple integration (simple links between/among stimuli), elaborated differentiation (contrasts, comparisons, and restrictions), and elaborated integration (causal connections and similarities). Even if the manual used in this study (Woike, 1997) builds on prior manuals (Baker-Brown, Ballard, Bluck, deVries, Suedfeld, & Tetlock, 1991; Schroder et al., 1967), it differs from them with regard to several key aspects which will be outlined in the following.

In her manual, Woike (1997) set out to measure differentiation and integration separately, thus preventing any bias about which kind of information processing may represent the higher, and thus more positively connoted, hierarchical level. Several other manuals regarded integrated information processing as dependent on the level of differentiation (Baker-Brown et al., 1991; Schroder et al., 1967; Tetlock, Hannum, & Micheletti, 1984), and none of the prior systems has provided separate scores for differentiation and integration (Woike, 1997). Although ontogenetically differentiation precedes integration (Werner, 1953), in later development (i.e., in adults), information may be structured in an integrated fashion irrespective of the presence of differentiated elements. An equivalent treatment of these two major categories in the manual of Woike (1997) thus minimizes the likelihood of bias when coding individuals from different cultural contexts that can be expected to differ in the weight ascribed to these two main processes (Chasiotis et al., in press; Markus & Kitayama, 1991, Woike, 1994b).

Apart from this important feature of the manual (especially for cross-cultural research), it offers a fine-grained scoring system that allows for substantial variance across cultures. Whereas other manuals (Baker-Brown et al., 1991; Schroder et al., 1967; Tetlock et al., 1984) make use of a 7-point Likert Scale ranging from low differentiation and low integration to high differentiation and high integration – and therefore restricting the range of scores (see Tetlock, 1983; Tetlock & Kim, 1987; Tetlock, Peterson, & Berry, 1993) –, Woike (1997) uses a frequency measure that is open to further aggregation as well as finer analyses.

Finally, Woike's manual (1997) allows for separate analyses of the two levels of cognitive complexity (simple and elaborated) without introducing a weighting procedure for

categories as with other manuals (Crockett, 1965), because it is perceived that there is (up to now) no clear basis to assign such weights (Woike, 1997). The manual thus provides altogether four frequency scores (simple differentiation, simple integration, elaborated differentiation, and elaborated integration). However, in the present study, only the elaborated categories were coded and analyzed, because no considerable increment of insight into information processing was expected with the simple levels (that only comprise one subcategory each, see Woike et al., 1999 for a similar procedure).

Categories used in this study comprise *Restriction of Meaning*, *Relative Comparison*, and *Contrast* for elaborated differentiation, and *Causal Links*, *Similarity Statements* and *Resolutions* for elaborated integration. The category *Matching Characteristics* (a subcategory of elaborated integration) focuses on decisions about job application (see Woike, 1997, p.74 ff.) and, since the memory instructions do not cover this particular context, was not coded.

2. 3. 1. 1 *Categories of Cognitive Complexity: Elaborated Differentiation*

Restriction of meaning encompasses expressions that limit a specific perspective, thereby purporting that the writer of the original text wanted to include more than one point of view. Hereby, a prior written argument is qualified in its meaning. Mere illustrations or expansions of another statement, however, are not coded as a restriction of meaning. Typical expressions that introduce a restriction of meaning include: “in my point of view”, “in my opinion”, “in my mind”. However, their occurrence does not necessarily qualify for a restriction of meaning. Several indicators allow for coding this category: (a) the writer’s own perspective is expressed as clearly separate from that of others, (b) the perspective of others is distinct from the writer’s, (c) the use of a specific perspective or explicitly stated bias or criterion, or (d) an explicit indication that a particular perspective, bias, or criterion is not applied. Examples of such differentiations may qualify for one or more of the above descriptions: “*Based upon my experiences with horses, it did not seem like a safe thing to do.*” (Woike, 1997, p.22). Expressions that represent a repetition of the instruction given to the participant are not scored as restrictions of meaning or as any other of the following variables.

Relative comparison refers to the comparison of two (or more) attributes on a single dimension, thereby differentiating them. Comparisons may be (a) explicit between two targets (or subjects and objects, respectively), (b) implied to a second target (c) a reference to a certain standard with respect to a target, and (d) rankings. Expressions that often appear in a relative comparison are comparative degrees (e.g., “more”, “better”, “less”), superlative degrees (e.g., “most”, “best”, “least”) and rankings (e.g., “winner”). An example would be:

“*Eric is the quicker thinker of the two.*” (Woike, 1997, p. 30). It has to be noted that comparative and superlative degrees referring to temporal sequences are not scored.

A *contrast* is coded when two objects (or individuals) are differentiated as being opposite to each other. A contrast can be established between two or more targets (or subjects and objects, respectively), or within a single target. Aspects that constitute the contrast can be (a) on a bipolar, dichotomous dimension (e.g., “happy”/”sad”), or (b) an aspect contrasted with its negation (e.g., “happy”/”not happy”). Implicit contrasts are also scored when only one contrasting aspect is mentioned while the other can be readily inferred: “*It’s the only red one in the parking lot.*” (Woike, 1997, p. 39). Key words like “but”, “whereas”, or “instead” by themselves are not sufficient to score this category.

The sum score across the above categories (restriction of meaning, relative comparison, and contrast) results in the frequency score for elaborated differentiation.

2. 3. 1. 2 *Categories of Cognitive Complexity: Elaborated integration*

Causal links are statements that express the perception that one target (or subjects and objects, respectively) is dynamically influenced by another. Causal links can occur between or within targets and can also be expressed negatively, i.e., when one subject explicitly does not influence another subject. Explanatory statements (e.g., “*Kim looked good because she had lots of experience.*”, Woike, 1997, p. 56) do not qualify as an active or dynamic influence. Causal links can comprise (a) a target’s behavior causing changes in another person, (b) references to subjects influencing the writer, (c) the inclusion of anticipated outcomes that are explicitly stated and described in a dynamic way, and (d) sharing a common or reciprocal experience (like “*They gave each other space.*”, Woike, 1997, p. 61). Typical key words indicating a causal link are: “affect”, “allow”, “help”, “convince”, and “realize”.

Similarity statements are used to illustrate shared attributes, experiences or analogies between one target (or subject and object, respectively) and another, thereby connecting them explicitly. To code a similarity statement the objects have to be presented first as separate entities, so that the inference of commonality can be interpreted as an active effort of the writer (“*My friends came to visit me*” [not coded] and “*Both of my friends came to visit me*” [coded], Woike, 1997, p.65).

Resolutions express a central theme guiding the text composed by the writer. One type of resolution pertains to integrating one’s point of view in a decision-making task, while the other can be found in personal narratives that unfold as a sequence of events. Only the latter one, which encompasses autobiographical narratives, applies to the present study. In such narratives, resolution is scored when the writer expresses the dominant theme or conclusion of

her/his reported memory (“*The day I came to visit my sister will stick in my mind forever.*” Woike, 1997, p. 83). Resolutions can be found either at the beginning or the end of a narrative (or both) and are often introduced by expressions like: “in summary”, “all in all”, etc.

The added frequency of these three categories constitutes the frequency score for elaborated integration (for a comprehensive overview of all autobiographical memory variables, see Table 1).

Table 1: Overview of Dependent Variables of Autobiographical Memory

<i>Dependent Variables</i>	<i>Description</i>
Cognitive complexity	Proportion of elaborated integration to elaborated differentiation
Elaborated differentiation	Narrative indicators of the perception of differences (contrasts, relative comparisons, restrictions of meaning)
Elaborated integration	Narrative indicators of the perception of connectedness (similarities, causal links, resolutions)
Age of first memory	The age participants indicate for their very first childhood memory
Content	Social versus individual narratives
Specificity	Specific, one-time events versus routine events / multiple events
Self-other ratio	Ratio of self references to the total number of references to people in a narrative
Length	Number of propositions (i.e., subject-verb constructions) in a narrative

2.4. Implicit Motives

Traditionally, implicit motives are assessed by picture-story tests like the Thematic Apperception Test (TAT, Murray, 1943). Participants are instructed to write stories about pictures that allow for the expression of personal fantasies without cueing self-references or restricting responses to actual life-contexts. Accordingly, implicit-motive tests are more appropriate to measure manifestations of unconscious, affective dispositions, which is in particular noteworthy as implicit motives develop in pre-linguistic early childhood. Such motivational dispositions are different from motive-related cognitive values or sociocultural orientations assessed by explicit self-reports (deCharms, et al., 1955, see also McClelland et al., 1989).

For this study, the Operant Multimotive Test (OMT; Kuhl & Scheffer, 1999, for details, see Scheffer, 2005), which represents a modified version of the Thematic

Apperception Test (Murray, 1943), was chosen to assess the need for Power and Achievement (in combination resulting in the need for Agency), and Affiliation (Communion). The OMT is designed to assess an individual's motive strength similarly to the TAT, and features several further properties useful for the present study.

First, participants are presented with pictures and asked to invent a story, but without having to write down this story (unlike in the original TAT). Instead, they are instructed to give their spontaneous associations to the following questions: (1) “*What is important for the person in this situation and what is the person doing?*” (2) “*How does the person feel?*” (3) “*Why does the person feel this way?*” (see Appendix A).

Secondly, the OMT allows for the differentiation of approach and avoidance components of each motive (Power, Achievement, Affiliation), thus providing a more fine grained analysis of the relationship between implicit motives and autobiographical memory. For each motive, four approach components and an avoidance component can be distinguished, drawing conceptually on the approach towards positive and the avoidance of negative affect.

In the manual of the Operant Multimotive Test (OMT; Kuhl & Scheffer, 1999), altogether 15 motive components are distinguished (for an overview, see Table 2). For the need for Affiliation, ‘intimacy’ (sharing and understanding thoughts, love, joyful-intuitive exchange), ‘sociability’ (interest, entertainment, flirt), ‘coping with rejection’ (attempts to restore an attachment [with positive outcome], positive reevaluation of rejections), and ‘avoiding insecurity’ (closeness, being loved) constitute the approach components of the need for Affiliation. As the avoidance component of the need for Affiliation, ‘dependence/loneliness’ is coded (fear of feeling abandoned).

Table 2: Overview of Implicit Motives and Categories of the Operant Multimotive Test

	Need for Communion	Need for Agency	
	<i>Need for Affiliation</i>	<i>Need for Achievement</i>	<i>Need for Power</i>
<i>approach</i>	intimacy	flow	guidance
	sociability	standards of excellence	status
	coping with rejection	coping with failure	self-realization
	avoiding insecurity	pressure to achieve	inhibited power
<i>avoidance</i>	dependence/loneliness	fear of failure	powerlessness

The approach component of the need for Achievement consists of ‘flow’ (learning something, being absorbed, concentrated), ‘standards of excellence’ (doing something well, being proud, focused on results) ‘coping with failure’ (perception of threat associated with active coping), and ‘pressure to achieve’ (social standards, relief after success). The avoidance component of the need for Achievement is coded as ‘fear of failure’ (stressed, helpless). For the need for Power, ‘guidance’ (passing on knowledge, helping others), ‘status’ (prestige and authority, receiving recognition), ‘self-realization’ (asserting wishes, having influence), and ‘inhibited power’ (reluctant use of power, sense of duty) constitute the approach components of the power motive. ‘Powerlessness’ (fear of being helpless, obedience, guilt) represents the avoidance component of the need for Power (for details, refer to Scheffer, 2005).

For the purpose of this study, all five components of the need for Affiliation were computed to form the sum-score of the need for Communion (to ensure comparability of results with previous studies, e.g., Woike et al., 1999; see also Theory, section 3), while only the first four were aggregated to the approach component of the need for Communion. The avoidance component of the need for Affiliation is labeled as the avoidance component of the need for Communion in all following sections. The ten components of the need for Power and Achievement were aggregated to form the sum-score of the Agency motive; correspondingly, the eight approach components of the respective motive categories were computed to constitute the approach component of the need for Agency. The avoidance component of the need for Agency consists of the avoidance categories of the achievement and power motive.

Validity of the OMT is supported by recent findings in a study by Baumann, Kaschel, and Kuhl (2005), indicating that the total OMT achievement score is significantly correlated with Winter’s (1991) TAT achievement scores, thereby supporting its convergent validity. In addition, behavioral correlates further support the external validity of the test (for details see Baumann et al., 2005, and Scheffer, Kuhl, & Eichstaedt, 2003).

Finally, the OMT has been used extensively in previous cross-cultural studies, resulting in a bias-free picture set (see Van de Vijver & Leung, 1997) that proved to be applicable in Germany, Cameroon, and Costa Rica (Chasiotis & Hofer, 2003; Hofer & Chasiotis, 2005; Chasiotis, Hofer, & Campos, 2006), indicating its probable equivalence across cultures for this study as well (see Methods, section 6.5).

2.5. Sociocultural Orientation

Following the study by Hofstede (1980), modern research often focuses on the differences between cultural contexts and the individuals living in them (e.g., Keller et al., 2004). Differentiating between the dimensions of interpersonal distance (separateness –

relatedness) and agency (autonomy – heteronomy; Kağitçibaşı, 1996), with specific emphasis on differences between independence and interdependence (Fiske et al., 1998; Markus & Kitayama, 1991, 1994) has proven to be an extremely useful heuristic in cross-cultural research.

However, many studies merely assume differences between cultures that are then supposed to articulate themselves in cross-cultural differences between individuals without supplying corresponding data about the individual level of analysis (see Matsumoto, 1999). Yet, “*without data, we run the risk of obvious cultural stereotypes playing a large role in the interpretation of evidence*” (Matsumoto, 1999, p.295 f.). Moreover, this increases the likelihood of finding differences (see Van de Vijver & Leung, 1997), albeit a substantial overlap of psychological constructs across cultures, and especially their functional relationship, is assumed: only “*on average*” (Markus & Kitayama, 1991, p.226; see also Schwartz, 1990) Westerners are expected to hold an independent view of themselves, implying that differences between cultures are not clear-cut but blurred (see Matsumoto, 1999).

Still, precision in measurement of independence and interdependence is lacking (see Matsumoto, 1999, for an overview), and the limits of the constructs remain unclear (Kağitçibaşı, 1997). Thus, with no accepted measure available pertaining to the direct assessment of independence and interdependence, two self-report questionnaires of sociocultural orientations were chosen that may capture at least some important indicators of independence and interdependence and thus allow for individual-level analyses of the predicted relationships (see Theory, section 6.3).

2.5.1 Measurement of Independent Sociocultural Orientation

Realo, Koido, Ceulemans, and Allik (2002) have recently proposed a measure of three components of individualism: autonomy, mature self-responsibility, and uniqueness. Individualism, measured on an individual level, is regarded as sharing common ground with the dimensions of independence and interdependence (Realo et al. 2002). Arguing that the constituting element of exhibiting individualism is the belief of being an indivisible entity, and that other properties can be regarded as “*less fundamental*” (Realo et al., 2002, p.167), they propose three different ways in which a person can be ‘indivisible’.

First, *autonomy* refers to a person’s capacity for independent thinking and judgment, and to the priority of her/his own goals compared to collective goals (see also Schwartz, 1994; Triandis, 1993, 1995). Second, the sense of being a causally effective agent, the acceptance of responsibility for one’s actions, and confidence in one’s abilities are termed *mature self-*

responsibility. Finally, a sense of *uniqueness*, of being different from others, being “*the only one of its kind*” (Realo et al., 2002, p.168) is seen as a constituting element of individualism (see also Singelis, Triandis, Bhawuk, & Gelfand, 1995).

Items for three scales were first selected by experts who judged their conceptual equivalence with the desired constructs to form an item pool, which was then administered to Estonian participants. A three-factor solution emerged, with three subscales: autonomy, self-responsibility and uniqueness, each with high internal consistencies (for details, see Realo et al., 2002). Final scales comprised ten items measuring autonomy (e.g., “I usually do what I think is best for me, no matter what others say.”), seven items for self-responsibility (e.g., “I am an enterprising and capable person.”), and seven items assessing uniqueness (e.g., “It is important to me to stand out from others.”). Participants are asked to indicate their agreement to each item by responding on a six-point scale (i.e., strongly disagree, disagree, somewhat disagree, somewhat agree, agree, strongly agree).

To provide indicators of divergent and convergent external validity, relationships with the Horizontal and Vertical Individualism-Collectivism Scale (HCVI; Singelis et al., 1995) and the Portrait Values Questionnaire (PVQ; Schwartz, Melech, Lehmann, Burgess, Harris, & Owens, 2001) were assessed. All three scales (autonomy, self-responsibility, uniqueness) positively related to horizontal and vertical individualism (HCVI, Singelis et al., 1995), and to the higher-order dimension ‘openness to change’ of the PVQ (Schwartz et al., 2001). However, the self-responsibility scale was only modestly related to the higher order dimension ‘self-enhancement’ of the PVQ (Schwartz et al., 2001), thereby indicating a weak convergent validity. All correlations of the components of individualism and horizontal/vertical collectivism (HCVI, Singelis et al., 1995) were near zero. Similarly indicating a divergent validity, “Uniqueness” and “Self-responsibility” correlated negatively with subscales of conservation (a collectivistic scale of the PVQ, Schwartz et al., 2001), and “Autonomy” revealed correlations of zero with the scale ‘Conservation’ (for a cross-cultural application, see also Hofer et al., 2004).

As the definitions of the scales autonomy and uniqueness conceptually relate to the independent poles of interpersonal distance (uniqueness) and agency (autonomy, see Fiske et al., 1998; Kağitçibaşı, 1996; Markus & Kitayama, 1991, 1994) and since self-responsibility shows signs of weak convergent validity, only the autonomy and uniqueness scales were chosen as appropriate indicators of an independent sociocultural orientation in this study (see Appendix B).

2.5.2 Measurement of Interdependent Sociocultural Orientation

To assess interdependent aspects of sociocultural orientation, reference was made to the theory of Schwartz. He proposed, and empirically established (see e.g., Schwartz, 1992), two orthogonal dimensions structuring conflicts and congruities among human values: (1) self-enhancement versus self-transcendence, and (2) openness to change versus conservation.

The Portrait Values Questionnaire (Schwartz et al., 2001) was specifically developed as a bias reduced cross-cultural instrument for the assessment of these values, since previous methods (e.g., the Schwartz Value Survey, SVS, e.g., Schwartz, 1992) required a high level of abstract thought and presented value concepts without any specific contextualization. In contrast, the PVQ is designed to be more concrete, but to measure the same ten value-constructs as the SVS.

The 29 PVQ items consist of short verbal portraits of different people (with pronouns matched to the participant's gender), describing a person's goals, aspirations, and wishes (e.g., "She/he believes that people should do what they are told. She/he thinks that people should follow rules all the time, even if no one is watching."). The scale contains two items each for stimulation, hedonism, and power; three items each for self-direction, achievement, security, conformity, and benevolence; and four items each for tradition and universalism.

For each portrait, individuals answer "How much like you is this person?" on a six-point scale (i.e., very much like me, like me, somewhat like me, a little like me, not like me, not like me at all). These portraits were derived from concepts and previous items of the SVS (for details, see Schwartz et al., 2001). Multitrait-multimethod analyses of the values (measured by the PVQ and the SVS) offer ample support for divergent as well as convergent validity of the PVQ (see Schwartz et al., 2001, p.531), and representative samples from a vast number of diverse cultures corroborate the theoretical framework and the method of assessment.

Conservation values encompass valuing conformity (e.g., "It is important to her/him to fit in and do things the way other people do. She/he thinks she/he should do what others expect of her/him."), security (e.g., "Her/his family's safety is extremely important to her/him. She/he would do anything to make sure her/his family is always safe."), and tradition (e.g., "She/he doesn't like to boast or draw attention to the things she/he does. She/he wants to be modest."). These values conceptually share some common ground with the interdependent pole of interpersonal distance (relatedness, see Kağıtçıbaşı, 1996); in case of valuing conformity, and heteronomy (the dimension of agency), and with respect to valuing tradition

and security. Therefore, the conservation scale of the PVQ (Schwartz et al., 2001; including the subscales conformity, security, and tradition) was chosen to assess a participant's interdependent sociocultural orientation (see Appendix B).

2.6. Contextual and Socio-Demographic Questions

Apart from the above self-report scales, participants were asked to report their gender and age. Furthermore, the level of education was assessed by asking for the number of years a participant spent in formal education (including for example elementary school, college, or university; cf. Appendix C).

As it is expected that autobiographical memory varies across different socialization contexts (see, for example, Nelson & Fivush, 2004; Reese & Fivush, 1993, Reese, 2002, Wang, 2004) participants were to indicate the number of siblings with which they grew up to have a proxy of their quantity of potential interaction partners. To the same end, they were asked to report the number of people that were living in their childhood household (restricted to the age of eight, cf. Wang et al., 1998), albeit the number of siblings is likely to coincide with this number. Participants were also asked to indicate their birth order, as this variable is assumed to exert considerable influence on self-organization and social interaction patterns (Suloway, 1996).

2.7. Translation

While German participants filled out the questionnaires in German, questionnaires for Chinese participants were translated into Chinese (simple characters), and questionnaires for the Cameroonian sample were translated into English, the official language in the region of data assessment.

Special care was given to the translation for Chinese participants. First, the questionnaire was translated by a bilingual native speaker of Chinese, who – being a psychologist – was instructed about the purpose of the different questionnaire sections, to ensure not only an adequate translation (which could be achieved by literal translation) but also an equivalence of meaning for the Chinese translation.

Similarly, insensitive translations disregarding cultural peculiarities with respect to question content may endanger the willingness for co-operation of participants (Van de Vijver & Leung, 1997). In discussion with the local expert (who was the translator), material was checked for potential offensive and/or culture-insensitive content.

With the first translation complete, a freelance translator retranslated the questionnaire into English. Deviations from the English version were minimal and the questionnaire was

again discussed with a local expert (the first translator) and judged to be applicable. In conclusion, this translation-backtranslation procedure mirrors the suggested standard in cross-cultural research (see Van de Vijver & Leung, 1997; Werner & Campbell, 1970). The translation procedure for the English questionnaire (for Cameroon) mirrors the above procedure.

Only for the Chinese sample, participants' responses were translated (into English), while German and Cameroonian responses were processed in the language in which the participant gave them. The freelance translator (who also retranslated the questionnaire), translated the responses of Chinese participants (for a similar procedure, see Han et al., 1998; Mullen & Yi, 1995; Wang, 2001b, Wang et al., 2000). Focus of attention was both on responses to the Operant Multimotive Test (Kuhl & Scheffer, 1999) as well as on the two childhood memories participants had reported, because these two measures were to be coded afterwards according to their respective manuals. At the beginning of this process, ten Chinese questionnaires were discussed in person with the translator to ensure the applicability of the respective manuals to the translated passages. As especially the manual for coding cognitive complexity (Woike, 1997) depends on the narrative structure, special attention was given to the structure of the translations.

3. Pretest

An initial pretest was conducted to investigate the applicability of the measures across cultures. Due to economic constraints, samples from Cameroon, Germany and China represent only convenience samples (i.e., mainly students). 83 Cameroonian participants, 58 German participants, and 19 participants from China (Hong Kong, see Table 3 for details) completed a preliminary version of the questionnaire to evaluate two main issues and explore potential problems. Participants were assured of the completely anonymous treatment of their data and filled out pretest versions of the questionnaire during course time in all three samples, receiving course credit (Hong Kong, Germany) or a small compensation of 500 CFA-Francs (~\$1; Cameroon). Questionnaires were administrated by local experimenters, except for Cameroon, where an experienced Western experimenter conducted the study.

Table 3: Sample Characteristics of the Pretest

	China (Hong Kong)	Cameroon	Germany
Gender (m = male, f = female)	8m 11f	33m 50f	28m 30f
Age			
range	19.81 - 23.21	17.78 - 24.24	19.77 - 60.08
mean (SD)	21 (.79)	19.82 (1.87)	29.59 (10.33)
Education			
range	13	7-13	12-13
mean (SD)	13 (.00)	12.60 (1.17)	12.76 (.43)

First, since autobiographical memories and implicit motives are assumed to potentially influence each other (cf. Woike et al., 1999; Woike et al., 2001), it was necessary to rule out order effects before carrying out the main study. Therefore, two different versions of the pilot questionnaire were constructed in which the order of the OMT (Kuhl & Scheffer, 1999) and the earliest childhood memory had been permuted. Separate analyses of variance for the three cultures (Germany, China, Cameroon) with the order of OMT and autobiographical memory as factor were carried out for proportional complexity scores, for the 15 subcategories of motive realization of the OMT and the aggregated scores of the motive realizations indicating the motive strength (for the three motives, respectively; see Methods, section 2.4). No order effects were found.

The second reason to conduct the pretest was to assess the internal consistency of the self-report scales across and within cultures. As sample sizes did not allow for bias analyses or structural equation modeling, Cronbachs alphas were calculated. Reliability for the interdependent sociocultural orientation scale (conservation) across all participants was high ($\alpha = .75$). The first independent sociocultural orientation scale (uniqueness) scale was moderately reliable ($\alpha = .64$), after excluding one item (“I don’t differ from thousands of other people”), as well as the second independent sociocultural orientation scale (autonomy; $\alpha = .56$, after excluding “I am disturbed if anyone tries to intervene in my life”). These two items were excluded from the main study. In sum, reliabilities across cultures of the scales ranged from a moderate alpha of .56 to a high alpha of .75, and from .51 to .70 within cultures (for details see Table 4) which seemed – considering the restricted sample size – sufficient for the main study (cf. Nunnally, 1978).

Table 4: Pretest Reliabilities of the Self-report Scales

<i>Scale</i>	<i>Culture</i>			<i>Across Cultures</i>
	China (Hong Kong)	Cameroon	Germany	
Uniqueness	.51	.62	.64	.64
Autonomy	.51	.46	.70	.56
Conservation	.59	.69	.74	.75

Furthermore, experimenters were instructed to be specifically watchful concerning items or passages with which participants appeared to have problems. To the same end, ample space was provided for the participants to write comments at the end of the questionnaire. It was found that problems surfaced only for specific individuals, not revealing any systematic cultural distortions. However, as some participants (across cultures, revealing no systematic bias towards a specific culture) recalled memories that lay well out of early childhood boundaries (> 10 years, see Wang et al., 1998), the instructions in the main study were slightly changed to stress the importance of recalling the ‘very’ first childhood memory.

4. Procedure

PR China: Data assessment in the People’s Republic of China took place in November and December of 2004, in the Southeastern province Guangdong. Because this region is economically thriving, it was avoided to recruit an urban sample, because such a Chinese urban middle class context might be too similar to a German urban middle class context. Since a rural sample was difficult to obtain, a suburban sample was recruited. Contact was established with a local (textile) factory in Panyu, a moderately rural area with a considerable amount of agriculture but still an official city district of Guangzhou, the capital of Guangdong, and about two hours from the center of Guangzhou. The factory employed about 100 people. The purpose of the study was explained in detail to the factory manager, who agreed to support the study after consulting the political representatives in the factory. Factory workers were informed that participation in the study was completely voluntary, and they were assured that their responses would be treated completely anonymously. Data assessment took place in the quiet rooms of the factory that were used for workspace (e.g., lunch) and was carried out with the assistance of a native speaker who was also fluent in English. Participants completed the (Chinese) questionnaire on by themselves but simultaneously with others in the same areas. Each was provided with a plain envelope for the questionnaire to ensure anonymity. Afterwards, each participant received a symbolic gift of 10 Yuan (~\$1)

wrapped in a traditional Chinese red-and-gold envelope as a sign of the author's appreciation for their help.

Cameroon: The data assessment in Cameroon took place in March 2005 in the North West Province of Cameroon, in the vicinity of the cities Bamenda and Kumbo. Participants had a rural (i.e., agricultural) or suburban background and were recruited by an experienced German experimenter with the help of local assistants, who have previously worked together in this region. Participants were assured that their data would be treated completely anonymously and completed an English version of the questionnaire in small groups (English is the official language in this part of Cameroon). Afterwards they received a small compensation of 500 CFA-Francs (~\$1; Communauté Financière Africaine, or African Financial Community) as a sign of appreciation for their help.

Germany: Data assessment in Germany took place from April to October 2005 in Osnabrück, a city in the northwestern state of Lower Saxony. As a student sample was to be avoided, most participants were recruited by word-of-mouth recommendation among students' relatives and acquaintances. Participants from Osnabrück and surroundings were assured that their data would be treated completely anonymously and completed the (German) questionnaires in small groups in one of the rooms of the University of Osnabrück. Afterwards, they received a symbolic compensation of 5€ (~\$6) as sign of the author's appreciation for their help.

5. Sample Characteristics

The age of participants was restricted to the range of 20 years to 40 years, with an effort to include non-student participants. Since this study is focused on adult's autobiographical memories, all participants below 20 years of age were excluded from the analysis. The low sample size of participants in the age group below 20 years excludes any possibility of statistical analyses (Germany $n = 2$, PR China $n = 3$, Cameroon $n = 40$). The same holds true for participants older than 40 years (Germany $n = 12$, PR China $n = 1$, Cameroon $n = 12$).

After excluding those participants, the sample totaled 245 participants (for an overview, see Table 5) ranging from 20.03 years to 40.17 years ($M = 27.9$ years; $SD = 5.19$). German participants ($N = 100$) age ranged from 20.06 years to 40 years ($M = 28.43$ years; $SD = 5.3$). Participants from the People's Republic of China ($N = 77$) ranged from 20.5 years to 38.87 years ($M = 28.04$ years; $SD = 4.76$). Cameroonian participants ($N = 68$) age range was between 20.03 years and 40.17 years ($M = 26.69$ years; $SD = 5.38$). Analysis of variances did

not reveal significant differences between the three cultures with respect to the age of the participants ($F_{(2, 242)} = 2.74$).

Of the 245 participants, 137 were female and 108 male. No culture related differences could be found for the distribution of the genders (cross tabs, $\chi^2_{(2, 245)} = 3.85$). Cultures differed with respect to the number of years spent in formal education ($F_{(2, 245)} = 6.64$; $p < 0.01$), and post hoc Bonferroni tests revealed that Cameroonian participants ($M = 11.84$ years; $SD = 2.20$) had spent less time in educational institutions than both Chinese ($M = 12.72$ years; $SD = 1.75$;) and German participants ($M = 12.50$ years; $SD = 1.82$), while the Chinese and German samples did not differ with respect to education.

The three samples differed with respect to the number of siblings participants indicated ($F_{(2, 242)} = 130.43$; $p < .001$), with Cameroonian participants ($M = 4.60$; $SD = 2.15$) reporting more siblings than both German ($M = .88$; $SD = 1.12$) and Chinese individuals ($M = 1.87$; $SD = 1.64$), while Chinese participants indicated having more siblings than German participants (post-hoc Bonferroni tests).

Table 5: Sample Characteristics

	PR China	Cameroon	Germany	Total
Gender (m = male, f = female)	27m 50f	34m 34f	47m 53f	108m 137f
Age				
range	20.50-38.87	20.03-40.17	20.06-40	20.03-40.17
mean (SD)	28.40 (4.77)	26.70 (5.38)	28.43 (5.30)	27.94 (5.20)
School years				
range	7-18	7-13	7-18	7-18
mean (SD)	12.72 (1.55)	11.84 (2.20)	12.80 (1.60)	12.50 (1.82)
Birth Order (%)				
only child	9.09	2.99	27.27	14.81
firstborns	29.87	26.87	31.31	29.63
middleborns	27.27	53.73	9.09	27.16
lastborns	33.77	16.42	32.32	28.40
Number of Siblings				
range	0-6	0-9	0-5	0-9
mean (SD)	1.87 (1.14)	4.6 (2.15)	.88 (1.12)	2.22 (2.13)

6. Preparation of Data Analysis

6.1. Equivalence of Measures

In cross-cultural research, equivalence of measures plays a central role, in particular as many constructs are derived from Western psychological theories and their application can result in biased interpretations. Therefore, in the following sections special attention is paid to procedures and methods devised to test and ensure the comparability of the concepts and measures used in this study.

6.1.1 Methodological Considerations

Different results in statistical analyses between samples from different cultural backgrounds do not necessarily imply valid cultural differences. Validity of such differences should not be regarded as an inherent characteristic of a test (Cronbach, 1971; Wainer & Braun, 1988) – in particular of tests that were originally developed to assess Western individuals and to measure constructs that originated from Western theories. Therefore, it is indispensable to evaluate the appropriateness of psychological methods used to gather data from different cultural groups. With regard to this, the key issues in cross-cultural research are the equivalence of measurements and test bias (e.g., Allen & Walsh, 2000; Poortinga, 1989; Welkenhuysen-Gybels & Billiet, 2002).

Within this approach, three levels of equivalence can be identified: construct or conceptual equivalence, measurement unit equivalence, and scalar equivalence (e.g., Allen & Walsh, 2000; Van de Vijver & Leung, 1997; see also Brislin, 1993). To establish whether or not cross-cultural equivalence is given for a particular test, the presence or absence of bias has to be identified for each of these levels. The notion “bias” is inseparably linked to the term equivalence, as the presence of bias undermines the equivalence of measurements across cultural groups. Generally, three major types of bias can be distinguished (Van de Vijver and Leung, 1997; Van de Vijver & Poortinga, 1997): construct bias, method bias, and item bias.

Construct bias is present when the construct measured is not identical across cultural groups, i.e., culture-bound varieties in the meaning of a construct lead to different responses (e.g., conceptions of intelligence). Method bias is related to the mode of test administration and is – reflecting the origin of the bias – subdivided into administration bias: different administration conditions and/or ambiguous test instructions, instrument bias: differences in familiarity with the test settings and the assessment procedures, and sample bias: different sampling procedures in the subgroups with respect to test-relevant background characteristics. Finally, item bias is based on characteristics of single items when content or wording is not

equivalent. An item is considered to be biased when subjects with the same underlying, latent psychological construct from different (cultural) groups react differently to a given item, which could then produce biased statistical results if not recognized.

While construct bias and method bias globally affect the meaningfulness of data from cross-cultural studies, item bias locally influences test scores (Hofer & Chasiotis, 2004; Hofer et al., 2005; Van de Vijver & Leung, 1997). The different kinds of bias, especially item bias, are often studied for objective instruments (as in this study as well) but almost neglected for projective measurements. Such studies are needed in order to examine psychometrical adequacy and relevance of projective measurements in cross-cultural research (Hofer & Chasiotis, 2004; Hofer et al., 2005; Van de Vijver, 2000).

Bias in cross-cultural research can be avoided by developing culture-specific tests (for examples see Van de Vijver & Leung, 1997), i.e., assembling items specifically for the cultural subgroups in a study. Development of such test batteries, however, renders it difficult to compare scores across cultures as the items are necessarily different for the cultural samples. This approach can only be useful if it can be assumed that the meaning of constructs differs substantially across cultures. With regard to this study and its key constructs (autobiographical memory, implicit motives, and sociocultural orientation) there are reasons to expect that these represent rather universal psychological features, and that a decentered approach would not be adequate.

There is considerable agreement that motives constitute a universal base of human psyche (Weinberger & McClelland, 1990). The theoretical approach of implicit motives points to universal features, and culture-specific instruments cannot detect such common features. Therefore, the aim of this study is to combine universal and culture-specific components of implicit motives into a single theoretical and empirical framework (Hofer & Chasiotis, 2004).

Furthermore, there is some evidence in Western literature that autobiographical memory may represent such a universal psychological feature. Especially in the last 10 years, its functions in everyday life (Alea & Bluck, 2003; Alea, Bluck, & Semegon, 2004; Bluck, 2003; Bluck & Glück, 2004; Glück et al., 2005) stress its important role for many other concepts. Evidence from cross-cultural studies (e.g., Wang, 2001b; Wang et al., 1998), with special regard to the differences between Asian and Western individuals, consistently illustrates different ways of remembering autobiographical instances. Although present research focuses on the differences between cultural groups with respect to autobiographical remembering, current (cf. Bluck et al. 2005) as well as more traditional theoretical approaches

(Robinson & Swanson, 1990) allow for an integration of these differences by distinguishing between rather self-focused (intrapersonal) autobiographical memories and other-focused memories (interpersonal, see also Theory, section 2.2). The different memory styles of Western and Asian participants (see Theory, section 2.4) may thus represent different realizations of the same underlying construct.

With regard to the sociocultural orientation of an individual (cf. Theory, section 4) as, for example, represented in the notions of independence and interdependence, Hallowell (1955) stated that people everywhere are likely to develop an understanding of themselves as physically distinct and separable from others. Beyond such an ecological sense of the self (Neisser, 1988), each person is assumed to have an internal awareness of her-/himself (Markus & Kitayama, 1991). An existence of these internal processes that distinguish an individual from others may – to some extent – be universal, whereas the further weighting of the sociocultural orientation may fluctuate (Markus & Kitayama, 1991). Because the distributions of people holding an independent or interdependent view of their self may overlap across cultures (Markus & Kitayama, 1991, p.226), an instrument is needed that allows for direct comparison between the cultures, which would not be possible with a decentered approach for scale construction (Van de Vijver & Leung, 1997) but not precluding the possible occurrence of bias in such an instrument.

6.1.2 Dealing with Bias in Cross-Cultural Research

6.1.2.1 *Construct bias*

Even given that motives represent a universal human feature, the conceptual equivalence of definitions of motives across cultures has to be elaborated, because significant aspects of the motive genesis are shaped by learning experiences during early socialization processes that might differ across cultures (Kornadt et al., 1980; McClelland, 1961; see also Keller & Greenfield, 2000; Markus & Kitayama, 1991). For example, cross-cultural studies on the achievement motive indicate that the definition of the construct might have to be adapted for studies in non-Western cultures (e.g., De Vos, 1968; Doi, 1982; Kagan & Knight, 1981; Yu, 1996).

Various statistical procedures to determine the level of equivalence of cross-cultural findings are discussed in literature, e.g., to examine the structure underlying an instrument using confirmatory factor analysis, structural equation models, and cluster analysis (see Espe, 1985; Hagger, Biddle, Chow, Stambulova, & Kavussanu, 2003; Steenkamp & Baumgartner, 1981). Such techniques are not applicable for projective methods and may even not always be

able to detect the occurrence of construct bias (Van de Vijver & Leung, 1997). Important information on the construct under investigation (e.g., culture-specific characteristics, behavioral correlates) should therefore be gained by collaboration with local experts, by interviews with cultural informants as well as by findings from pretests. These latter methods were applied in this study.

The presence of an autobiographical memory can be regarded as universal, and it is likely that it serves self-focused as well as social-focused functions for individuals on an everyday basis (Bluck, 2003). However, this does not preclude shifts or differences in the importance of functions across cultures, because early parent-child interactions (memory talk, cf. Neisser, 1988) shape the way individuals reminisce (Chasiotis et al., in press; Nelson & Fivush, 2004). These differences are well documented (see Theory, section 2.3) and can be integrated into the existing functional approach to autobiographical memory (see Theory, section 6): it can be assumed that every individual uses intrapersonal and interpersonal functions of autobiographical memory, albeit to varying degrees (see Woike, 1997). Instructions of the memory tasks were discussed with local experts and collaborators to ensure construct equivalence.

6. 1. 2. 2 *Method bias*

Method bias can only be partly tested by statistical procedures (see Van de Vijver & Leung, 1997). It is therefore advisable to adhere to existing guidelines (e.g., Van de Vijver & Leung, 1997) in order to prevent possible sources of method bias when developing a proper design for cross-cultural studies. There are several recommendations to prevent the occurrence of method bias in cross-cultural studies, such as standardized administration, detailed instructions, and use of fixed scoring rules (e.g., Smith, Feld, & Franz, 1992; Van de Vijver, 2000; Veroff, 1992). Furthermore, the assessment of test-relevant background characteristics (individual and context variables; e.g., gender and age) is important to rule out alternative interpretations for cross-cultural and intracultural differences in test-scores (Van de Vijver, 2000).

6. 1. 2. 3 *Item bias*

Two main approaches have been established to detect biased items: the judgmental approach and the statistical approach. The judgmental approach has been used only by a small number of studies to identify inappropriate items (e.g., Van Leest, 1997), presumably due to its time consuming screening process by cultural experts. Depending on the measurement level of items, number of cultural groups, or sample size, different statistical methods are used

by the majority of studies (see Van de Vijver & Leung, 1997). In these procedures, uniform item bias (effect of bias is constant across all levels of an underlying trait) and non-uniform item bias (bias depends on the level of the underlying trait) are distinguished (Welkenhuysen-Gybels & Billiet, 2002). Because results from judgmental and statistical approaches do not necessarily overlap (Engelhard, Hansche, & Rutledge, 1990; Plake, 1980), items/pictures were discussed with local experts in the pretest (thus including aspects of the judgmental approach) and statistical bias analyses were carried out (see the following section).

6.1.3 Confirmatory Factor Analysis of Sociocultural Orientation Scales

To evaluate the comparability of measurements across cultural samples, confirmatory factor analyses (CFA) by the use of AMOS 5 (Arbuckle, 2005) were carried out. A model was chosen that comprised the items of the independent sociocultural orientation scales ‘uniqueness’ and ‘autonomy’ as well as the PVQ scale ‘conservation’, consisting of the further subscales ‘conformity’, ‘security’, and ‘tradition’. Due to the restricted sample size, the proportion of parameters to be estimated and data points did not allow for testing the complete factorial structure of each scale. Analyses were thus limited to the higher order factor of each scale (conservation/interdependence and individualism/independence).

To enhance the equivalence of measures for the model, items were eliminated from the item pool due to non-significant item loadings or highly diverse loadings across the investigated samples. After exclusion of an item, analyses were repeated until an adequate fit was obtained for all three cultures. For the interdependent sociocultural orientation scale, three items were eliminated (“She/he thinks it is important to do things the way she/he learned from her/his family. She/he wants to follow their customs and traditions.”; “She/he thinks it's important not to ask for more than what you have. She/he believes that people should be satisfied with what they have.”; “Being religious is important to her/him. She/he tries hard to follow her/his religious beliefs.”). For the independent sociocultural orientation scale, three items of the former subscale autonomy had to be excluded (“When making decisions, I primarily follow my own needs.”; “My interests and goals are most important to me.”; “I want to decide myself about things related to my life.”), as they were not found to be equivalent across the observed cultural samples. Additionally, a number of items of the former subscale uniqueness had to be eliminated (“I have always wanted to somehow differ from others.”; “I have qualities other people are not aware of.”; “I like being distinguished from the crowd.”; “All in all, I don't represent anyone except myself.”; “It is important to me to stand out from others.”)

After exclusion, analyses revealed an adequate fit across the three cultural groups (see Table 6). The ratio $\chi^2/\text{degrees of freedom}$ fell below the critical value of 2; the Goodness of Fit Index (*GFI*) was close to .90 and the Root Mean Square Error of Approximation (*RMSEA*) fell below .05. Additionally, the Akaike Information Criterion (*AIC*) and Expected Cross Validation Index (*ECVI*) of the default model lay below their respective parameters for the saturated model. Furthermore, it was shown by the Chi-square Difference Test that the model with factor loadings being constrained to be equal across cultural groups (metric invariance model) did not result in a significant increment of the χ^2 statistic compared to the unconstrained model ($\Delta\chi^2_{(24, 229)} = 34.09; p > .08$). When structural covariances were additionally held invariant, no significant increase of the χ^2 statistic compared to the measurement model was found as well ($\Delta\chi^2_{(6, 229)} = 9.07; p > .17$). Only when keeping the measurement residuals invariant, was a significant increase in the χ^2 statistic found in comparison to the structural covariance model ($\Delta\chi^2_{(28, 229)} = 147.84; p < .001$). Thus, the model allows for testing mean differences across the observed cultures between the two scales (conservation, autonomy/uniqueness).

The regression weights of the items of this model ranged from .23 to .68 (Germany), .17 to .65 (PR China), and .15 to .67 (Cameroon).¹

Table 6: Confirmatory Factor Analyses: Fit Indices of Self-report Scales.

Measurement	χ^2 (<i>p</i> -level)	<i>df</i>	χ^2 / df	<i>GFI</i>	<i>RMSEA</i>	<i>AIC</i> (saturated)	<i>ECVI</i> (saturated)
Independent (autonomy/uniqueness) and interdependent (conservation) sociocultural orientation	311.05 (.000)	228	1.36	.84	.04	485.05 (630.00)	2.20 (3.54)

6.2. Outliers

After having established the independent and interdependent sociocultural orientation scales with confirmatory factor analysis (see previous section), univariate outliers were excluded from further data analysis to prevent statistical distortions in further analyses.

¹ It has to be noted that the regression weights of the items were higher in prior calculated models consisting of the separate factorial structures of the independent and interdependent sociocultural orientation scales, respectively. However, due to increased Heywood cases (Chen, Bollen, Paxton, Curran, & Kirby, 2001), these models could not be fitted to the data and are therefore not described in detail.

Separately for each of the three cultures, exploratory data analyses (with box-and-whiskers-plots, see Hoaglin, Mosteller & Tukey, 1983; Tabachnik & Fidell, 1996) were conducted for the two scale means of each participant. One German participant's score in the independent sociocultural orientation scale was excluded, as well as the score of a participant from PR China. For the independent sociocultural orientation scale, only one participant's score from Cameroon was eliminated from further analyses. All these scores were identified as extreme outliers in the "outer fences" of the box plot (i.e., more than three times the quartile deviation, see Diehl & Staufenbiehl, 1997, p. 717 ff.).

6.3. Correction for Response Tendencies

Additionally, the resulting independent and interdependent sociocultural orientation scales were adjusted separately for each individual to the general response tendency of that individual. For this purpose, the mean score of a participant in one of the scales was deducted from her/his responses on item-level in that scale (see also Schwartz, 1992). Originally inverted items were transformed prior to the process and retransformed afterwards.

6.4. Analyses of Distributions

Kolmogorov-Smirnoff tests were carried out (separately for cultures) in order to assess whether data within each culture and for each of the scales were normally distributed. Analyses were done for the scales that had been adjusted for response tendencies. Differences from a Gaussian distribution were non-significant for the interdependent sociocultural orientation scale (conservation) in Germany but significant in PR China ($z = .11$; $p < .05$) and in Cameroon ($z = .13$; $p < .05$). For the independent sociocultural orientation scale (comprising autonomy and uniqueness), results did not indicate a deviation from the Gaussian distribution in Germany, PR China, or Cameroon.

Exploratory data analysis revealed a positive skewness of the interdependent sociocultural orientation scale in PR China (*skewness* = 1.10; *se* = .28). To account for this, a square root transformation was performed (see Tabachnik & Fidell, 1996, p. 80 ff.) after adding a constant to each score to ensure that the smallest score would be larger than zero to allow for this transformation. Afterwards, the scores of Chinese participants were z-transformed to retain comparability among the cultures. For Cameroon, exploratory data analysis indicated a substantial negative skewness (*skewness* = -.52; *se* = .30). Therefore, the distribution was reflected by subtracting each score from a constant larger than the largest score in the distribution. Afterwards a logarithmical transformation was applied to establish a Gaussian distribution (see Tabachnik & Fidell, 1996, p. 80 ff.). To simplify interpretation, the

scores were re-reflected, followed by a z-transformation of this scale for Cameroon to maintain comparability between the cultures.

6.5. Response Bias Analysis of Implicit Motive Assessment

6.5.1 Stimulus Pull

In a first step, pictures (see Appendix A) were examined with respect to their stimulus pull for each of the three motives (affiliation, achievement, power). Those pictures that elicited motive indicators from less than 5% of the participants (thus qualifying as an extremely low stimulus pull for the given motive) were excluded from the analyses of response bias for this specific motive but were subsequently included again for the investigation of the other motives.

For affiliation, pictures 5 (2.4%), 6 (2.4 %), 7 (3.8 %), 8 (3.3%), and 12 (4.3%) were excluded from response bias analysis for the affiliation motive. Pictures 1 (0.5%), 2 (4.3%), 9 (2.9%), and 11 (4.8%) were excluded from response bias analysis for the achievement motive. To each picture more than 5% of the participants responded with power themes, indicating a sufficient stimulus pull for all of them, so they all were retained in the item bias analysis.

Only the bias free picture sets resulting from the following item bias analyses are used for further analyses of implicit motivation.

6.5.2 Picture Set for the Need for Affiliation

Referring to nAffiliation, five of the remaining seven pictures showed uniform bias in the first step of the analysis: picture 3 ($\chi^2_{(6, 210)} = 12.85$; $p < .05$), picture 4 ($\chi^2_{(6, 210)} = 13.17$; $p < .05$), picture 9 ($\chi^2_{(6, 210)} = 16.17$; $p < .01$), picture 10 ($\chi^2_{(6, 210)} = 13.91$; $p < .01$), and picture 11 ($\chi^2_{(6, 210)} = 15.25$; $p < .01$). Additionally, test statistics indicate non-uniform bias for picture 9 ($\chi^2_{(4, 210)} = 8.61$; $p < .05$), picture 10 ($\chi^2_{(4, 210)} = 8.68$; $p < .05$), and picture 11 ($\chi^2_{(4, 210)} = 11.1$; $p < .01$).

In the next step, the picture set was reduced by the most biased item (highest chi-square, picture 11) and the analysis was repeated, revealing uniform bias for picture 3 ($\chi^2_{(6, 210)} = 16.35$; $p < .01$) and picture 4 ($\chi^2_{(6, 210)} = 14.69$; $p < .01$) without evidence for non-uniform bias.

Thus, in the next step, picture 3 was excluded from the picture set for nAffiliation being the most biased item of the two, and the analysis was repeated.

In the third step, picture 3 was excluded before repeating the analysis, and test statistics still indicated a uniform (but no non-uniform) bias for picture 4 ($\chi^2_{(6, 210)} = 14.69$; $p < .01$). After excluding picture 4, none of the remaining pictures exhibited bias (uniform and

non-uniform) in the final analysis. Thus item bias analysis for nAffiliation resulted in a picture set of four pictures (1, 2, 9, 10, see also Appendix A).

6.5.3 Picture Set for the Need for Achievement

The same procedure was repeated for nAchievement. Test statistics indicated uniform bias for four pictures: picture 3 ($\chi^2_{(6, 210)} = 11.615$; $p < .05$), picture 4 ($\chi^2_{(6, 210)} = 22.58$; $p < .001$), picture 6 ($\chi^2_{(6, 210)} = 24.52$; $p < .001$), and picture 12 ($\chi^2_{(6, 210)} = 15.71$; $p < .01$), with only picture 12 revealing a non-uniform bias ($\chi^2_{(4, 210)} = 10.78$; $p < .01$). In step 2 the most biased item (picture 6) was excluded, and analyses were repeated. Only picture 3 ($\chi^2_{(6, 210)} = 10.37$; $p < .05$) and picture 4 ($\chi^2_{(6, 210)} = 22.15$; $p < .001$) showed uniform bias, and none of the pictures showed non-uniform bias. Exclusion of picture 4 in the third step led to an unbiased picture set, without uniform or non-uniform bias. In all following analyses the picture set assessing nAchievement comprised pictures 3, 5, 7, 8, 10, and 12 (see also Appendix A).

6.5.4 Picture Set for the Need for Power

Again applying the same procedure for nPower, test statistics indicated uniform bias for picture 5 ($\chi^2_{(6, 210)} = 13.09$; $p < .05$) and picture 12 ($\chi^2_{(6, 210)} = 28.49$; $p < .001$) without evidence for non-uniform bias for any of the pictures. After excluding picture 12 as the most biased item, further analyses revealed picture 5 being still biased (uniform bias, $\chi^2_{(6, 210)} = 12.39$; $p < .05$).

After eliminating picture 5, analyses in the final step confirmed a picture set for nPower without uniform or non-uniform item bias (pictures 1, 2, 3, 4, 6, 7, 8, 9, 10, and 11, see also Appendix A).

6.6. **Computation of Scores and Reliabilities**

6.6.1 Autobiographical Memory

6.6.1.1 *Computation and Aggregation of Memories*

Two measures were used to assess the length of the memories: the number of words, and the number of propositions (see Reese et al., 1993; Fivush, 1995). For further analyses, only propositions were used as an indicator of narrative length, as the number of words and propositions were highly correlated across and within cultures ($r > .87$). Preference was given to the use of propositions as they reflect the established standard procedure (Fivush, 1995). Narrative length was used to weight the occurrence of the coding units of cognitive complexity (coding unit divided by number of propositions), thus effectively preventing

individuals who write more from receiving a higher score in elaborated differentiation and integration.

Participants in this study were asked to report two earliest childhood memories; one that was centered on themselves while the other should be focused on others (for instructions, see Appendix D or Methods, section 2.1). Following the procedure by Wang (2004), memories were aggregated to form one score per dependent variable for further analyses: Wang (2004) asked participants to provide a memory about a time the participating child was scolded by her/his parents (which qualifies as an instruction rather focused on others), and to provide a memory in which the participant did something “*that was really special and fun*” (Wang, 2004, p.6; which represents a rather self-focused instruction).

Therefore, variables were aggregated across the two memories. To calculate a composite score of cognitive complexity for each, the mean integration score was divided by the sum of the mean differentiation and integration score, resulting in the percentage of integration within the cognitive complexity (see also Woike et al., 1999) of an individual across the two memories.

Length: For the variable length (number of propositions), the mean score of the two memories was calculated and used for further analyses.

Self-other ratio: The overall ratio of self-references in relation to the references to other people (self-other ratio) within each autobiographical memory was calculated by first summing the self-references and the references to others across the two memories, and then dividing the number of self-references by the total number of references (i.e., self-references plus references to others).

Content: To provide an overall measure for the content (social vs. individual) of the memories a further category was introduced. If both original memories were coded as social in content, the aggregated score was ‘social’, and if both were individual, the aggregated score was ‘individual’. In case that one memory was coded ‘social’, and the other ‘individual’, the category ‘mixed’ was added.

Specificity: Similarly, the final score for the specificity of a memory was computed: if both memories were specific or routine events, the aggregated score remained ‘specific’ or ‘routine’; if memories differed in specificity, the category ‘mixed’ was applied.

6. 6. 1. 2 *Reliabilities*

Two coders have been trained in the scoring of autobiographical memories with the Categories of Complexity Scoring Manual (Woike, 1997), achieving consistently an inter-coder agreement of above 90% with the training material across all subcategories of cognitive

complexity. All translated (see Methods, section 2.5) memories (two of each participant) were then coded independently by these two coders, resulting in an average inter-coder agreement across subcategories of cognitive complexity of 85.71% for German memories, 88.89% for Chinese memories, and 88.64% for Cameroonian memories. Any disagreements were resolved by discussion. The summary statistics of the average frequencies for each of the complexity categories per culture can be found in Table 7.

Table 7: Range of Cognitive Complexity Scores across and within Cultures.

Category	Culture						Total	
	PR China		Cameroon		Germany		range	mean (SD)
	range	mean (SD)	range	mean (SD)	range	mean (SD)		
Elaborated Differentiation	0-7	1.54 (1.62)	0-11	2.88 (2.46)	0-8	1.44 (1.74)	0-11	1.91 (2.06)
Restriction of Meaning	0-1	0.02 (0.14)	0-1	0.12 (0.33)	0-1	0.05 (0.22)	0-1	0.07 (0.25)
Relative Comparison	0-4	0.54 (0.91)	0-9	1.03 (1.65)	0-2	0.24 (0.54)	0-9	0.56 (1.13)
Contrast	0-4	0.98 (1.08)	0-6	1.73 (1.47)	0-7	1.15 (1.48)	0-7	1.29 (1.42)
Elaborated Integration	0-9	3.04 (2.13)	0-13	6.32 (2.76)	0-9	1.93 (1.96)	0-13	3.56 (2.96)
Similarity	0-2	0.58 (0.73)	0-4	0.76 (0.99)	0-4	0.49 (0.88)	0-4	0.59 (0.89)
Causal Link	0-8	1.84 (1.75)	0-11	4.86 (2.28)	0-7	1.28 (1.30)	0-11	2.53 (2.36)
Resolution	0-2	0.62 (0.73)	0-3	0.70 (0.72)	0-2	0.16 (0.42)	0-3	0.43 (0.65)

The same two coders rated the specificity (specific vs. general) and content (individual vs. social) of each autobiographical memory, resulting in an inter-coder reliability of well above 95% for each culture with respect to specificity, and an inter-coder reliability consistently higher than 91% for each culture regarding the content of a memory. Rare cases of disagreement were resolved in discussion.

6.6.2 Sociocultural Orientation

Next, scales were composed and reliabilities were computed within and across cultures. They ranged from a modest internal consistency of $\alpha = .56$ for the interdependent sociocultural orientation scale (conservation) in Cameroon to an acceptable Cronbachs alpha of $.77$ for the independent sociocultural orientation scale (autonomy/uniqueness) in Germany (see Table 8 for details). The overall internal consistency of $\alpha = .66$ for the interdependent sociocultural orientation scale, and $\alpha = .66$ for the independent sociocultural orientation scale indicates a moderate reliability (cf. Nunnally, 1978), presumably due to a reduced number of items of each scale after establishing cultural equivalence.

Table 8: Reliabilities across Cultures and Scales

<i>scale</i>	<i>culture</i>			<i>across cultures</i>
	PR China	Cameroon	Germany	
Interdependent sociocultural orientation (conservation)	.71	.56	.70	.66
Independent sociocultural orientation (uniqueness/autonomy)	.59	.59	.77	.66

6.6.3 Implicit Motives

6.6.3.1 *Computation*

Scores for the need for Agency (comprising power and achievement) and Communion (Affiliation) were computed by summing the categories (cf. Methods, section 2.4) for each motive, but only across those pictures that proved to be bias free (cf. Methods, section 6.5).

For the sum score of agency, all categories of power and achievement were added, for communion all affiliation categories were added. Correspondingly, the approach component of agency consisted of an individual's occurrences of approach components of power and achievement, while the approach component of communion comprised all codes of the approach component of affiliation. Likewise, the avoidance component of agency consisted of the avoidance components of power and achievement, while the avoidance component of communion is equivalent to the avoidance component of affiliation.

6.6.3.2 *Reliabilities*

Coding was carried out by one experienced coder, except for 10% of all Operant Multimotive Tests (OMT; Kuhl & Scheffer, 1999; equaling 10 per investigated culture) that were used to establish inter-coder reliability with another experienced coder. Disagreements were resolved by discussion. Reliabilities of the OMT were calculated per category of motive realization (i.e., 15, five per motive). If no motive was judged to be present in a participant's responses, the absence of any motive was treated as a further coding category, equaling a grand total of 16 coding categories. Both coders have to correspond in their particular code for a particular picture to score an agreement. Reliabilities were calculated separately for each culture.

Inter-coder reliability for Chinese OMTs across all categories equaled 76.94%, ranging from 60% (coping with failure) to 87.88% (powerlessness). An agreement of 95.70% was reached when the absence of any motive was coded. A similarly high inter-coder reliability of 77.03% was found for OMTs from Cameroon, ranging from 0% (flow; which was only coded once) to 91.67% (inhibited power), with an agreement of 85.71% for the absence of any motive. Reliabilities for OMTs from Germany were equally high with 79.14%, ranging from no agreement (0%) for the category coping with failure (which was coded only once) to an agreement of 91.67% for the category sociability. The agreement on the absence of any motive amounted to 86.67% (see Table 9 for an overview).

Table 9: Inter-coder Reliabilities of the Operant Multimotive Test

	PR China	Cameroon	Germany
Inter-coder agreement for motive categories (%)	76.94	77.03	79.14
Inter-coder agreement for absence of motives (%)	95.70	85.71	86.67

RESULTS

Analyses of variance were computed to (a) replicate prior findings of cross-cultural studies on autobiographical memory and to (b) extend these findings with respect to cognitive complexity. Further analyses were designed to investigate the impact of childhood variables on autobiographical memory in order to relate cultural differences to contextual variables. Finally, regression analyses for the influence of the constellations of implicit motives and sociocultural orientation on autobiographical memory (see Theory, section 6) were computed to investigate the effects of individual, psychological mechanisms on autobiographical memory across and within cultures.

1. Covariates

Before differences among the cultural samples are described, the effects of demographic variables (age, gender, and education of participant) on autobiographical memory were examined in analyses of variances.

For age of participants and educational background no effects on autobiographical memory were observed across and within cultures. In contrast, the gender of participants has to be controlled with respect to age of first memory, as females reported a later first memory ($M = 6.03$ yrs; $SD = 2.31$) than males ($M = 5.32$ yrs; $SD = 1.80$; $F = 5.37$; $p = .02$) across cultures. While this analysis, carried out separately for the three cultures, reveals no differences between male and female participants in Germany and in PR China, in Cameroon female participants reported a significantly ($F = 5.11$; $p = .03$) later first memory ($M = 6.97$ yrs; $SD = 1.83$) than their male counterparts ($M = 6.10$ yrs; $SD = 1.06$; post hoc Bonferroni tests). Differences for Germany (females: $M = 7.82$ yrs; $SD = 1.99$; males: $M = 7.41$ yrs; $SD = 1.79$) and PR China (females: $M = 4.42$ yrs; $SD = 1.55$; $M = 4.17$ yrs; $SD = 1.35$) lie directionally similar to the Cameroonian sample. In further analyses, gender of participant was included as covariate or the residual of age of first memory was computed, thereby excluding the effect of gender on autobiographical memory.

2. Cultural Differences

2.1. Autobiographical Memory

Next, an analysis of variance was conducted to investigate cultural differences in autobiographical memory in PR China, Cameroon and Germany, followed by post-hoc Bonferroni tests.

Cognitive Complexity: Analyses revealed significant differences across cultural groups in cognitive complexity ($F = 4.23; p < .05$). These differences were in the expected direction: German participants used less cognitive complexity and were thus more differentiated ($M = .58; SD = .34$) in their autobiographical memories than Cameroonian participants ($M = .71; SD = .28$). Although Chinese participants were – as expected – close to the Cameroonian participants ($M = .68; SD = .25$), they did not differ significantly from German participants. This result indicates that German individuals' information processing in autobiographical memories is more appropriate for self-focused functions of autobiographical recall.

Elaborated integration: Differences in elaborated integration (one of the two elements constituting cognitive complexity) substantiate this finding ($F = 16.75; p < .001$): Chinese and Cameroonian participants were not significantly different from each other ($M = .21; SD = .16; M = .23; SD = .08$, respectively), but both used significantly more elaborated integration to structure their autobiographical memories than did the German participants ($M = .13; SD = .11$). In other words, the structure of both Chinese and Cameroonian individuals' autobiographical memories were more apt to serve social functions.

Elaborated differentiation: No significant cultural differences regarding elaborated differentiation could be found.

Age of first memory: In accordance with previous studies (see Mullen, 1994; Conway et al., 2005) significant cultural differences for the age of participants' earliest memory could be confirmed ($F = 74.15; p < .001$). As expected, German participants have the earliest autobiographical recollection ($M = 3.57$ years; $SD = 1.41$), with both Cameroonian and Chinese participants denoting their first memory at a significantly later age ($M = 5.57$ years; $SD = 1.56; M = 6.71$ years; $SD = 1.97$, respectively). However, Chinese participants reported an even later age of their first memory than Cameroonian participants. As an earlier age of first memory is associated with a higher self-orientation, this finding indicates that German individuals' memories are more suitable for the self function of autobiographical recall than Cameroonian or Chinese individuals' memories.

Specificity: Participants from PR China, Cameroon and Germany also differed concerning the specificity of their reported autobiographical memories ($F = 20.87; p < .001$). While German participants' memories ($M = 1.40; SD = .79$) were more specific than memories of Cameroonian participants, thereby indicating a more self-focused use of autobiographical recall ($M = .77; SD = .76; p < .001$), memories of Chinese individuals ($M = 1.58; SD = .57$) did not differ from German participants and were even significantly more

specific than Cameroonian memories which, unexpectedly, indicates a self-serving use of autobiographical memories for Chinese participants.

Content: No cultural differences with respect to the content of the reported memories could be determined.

Length: Interestingly, concerning the cultural differences in number of propositions per memory ($F = 62.15$; $p < .001$), Cameroonian individuals wrote significantly longer memories (thereby exhibiting a more ego-oriented function of autobiographical memory; $M = 28.77$; $SD = 9.74$) than either the German participants ($M = 13.42$; $SD = 8.43$) or the Chinese participants ($M = 15.86$; $SD = 8.63$), who did not differ significantly from each other.

Self-other ratio: Cultural differences in the self-other ratio were also found ($F = 4.87$). Surprisingly, Cameroonian participants referred to themselves (in relation to references to others) more often ($M = .58$; $SD = .13$) than did German participants ($M = .49$; $SD = .19$), while the results of Chinese participants were between the two ($M = .54$; $SD = .17$). This points at a higher self-function of autobiographical recall in Cameroonian participants.

In conclusion, it is particularly noteworthy that cultural differences in cognitive complexity turned out as predicted and fall in line with other autobiographical variables from previous cross-cultural studies. For these latter variables, expectations of cross-cultural differences were confirmed as well: despite some deviations (i.e., length of memory, self-other ratio), they were in accordance with the existing body of cross-cultural research on autobiographical memory.

2.2. Sociocultural Orientations and Implicit Motives

Furthermore, an analysis of variance was conducted to investigate cultural differences in implicit motives and sociocultural orientation autobiographical memory in PR China, Cameroon and Germany and again followed by post-hoc Bonferroni tests.

Sociocultural orientation: Unexpectedly, individuals tested in this study did not differ significantly in an analysis of variances with respect to their sociocultural orientations. Surprisingly only one difference was found ($F = 3.90$; $p < .05$): Chinese participants reported a less interdependent sociocultural orientation ($M = .01$; $SD = .70$) than German participants ($M = .29$; $SD = .78$), which does not support the assumption that the investigated Chinese context is more interdependently oriented.

Implicit motives: No differences in the need for Communion or Agency (as well as its approach and avoidance component) were found. However, differences regarding the approach component of the need for Power were as expected ($F = 3.828$; $p < .05$): German participants ($M = 3.26$; $SD = 1.77$) held higher scores than both Chinese ($M = 2.54$;

$SD = 1.80$) and Cameroonian participants ($M = 2.79$; $SD = 1.64$). Differences in the sum score of the need for Power revealed similar differences ($F = 4.48$; $p < .05$), with Germans ($M = 5.10$; $SD = 2.11$) being implicitly more motivated for Power than Chinese ($M = 4.26$; $SD = 2.32$). Interestingly, Cameroonians did not differ from German participants but achieved higher scores in the need for Power than Chinese individuals ($M = 5.24$; $SD = 2.16$). Yet, analyses ($F = 5.60$; $p < .01$) of the avoidance component of the need for Power (which is incorporated in the sum score of the need for Power) revealed that Cameroonians ($M = 1.18$; $SD = 1.08$) exhibit higher scores than both Chinese ($M = .77$; $SD = .92$) and German participants ($M = .71$; $SD = .83$). Thus, differences between Cameroonian and Chinese participants with respect to implicit power motivation were unexpected but could be accounted for by findings concerning the avoidance component of the need for Power. In line with the expectations, German participants exhibited higher scores in agentic, self-focused implicit motives than either the Cameroonian or the Chinese participants.

3. Impact of Childhood Context on Cultural Differences

Early socialization is assumed to shape the properties of autobiographical recall (see Theory, sections 2.3 & 2.4). Especially variables from an individual's childhood context (number of siblings, birth order, and number of people in childhood household) are expected to account for cultural differences in the mode of autobiographical recall.

Number of people in childhood household: Correlational analyses, and analyses of variance did not indicate effects of the number of people that were present in the household during childhood (i.e., the first eight years of life; see Wang et al., 1998) on autobiographical memory variables.

Number of siblings: To investigate the relationship of the number of siblings with the dependent variables that vary across cultures, correlations across cultures were computed. Number of siblings correlated highly with those autobiographical variables that showed cultural variation (see Table 10).

Table 10: Correlation between Childhood Context and Autobiographical Memory

$N = 194$	Cognitive Complexity	Elaborated Integration	Age	Specificity	Length	Self-Other Ratio
Number of Siblings	.18*	.31***	.27***	-.33***	.45***	ns

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

With number of siblings as well as culture related to the manner of autobiographical recall, it is necessary to ascertain their respective amount of explained variance.

Therefore, in the next step, the effect size of the contextual variable (number of siblings) on cultural differences reported for autobiographical memory was evaluated by applying the following procedure. First, the effect size of culture on the dependent autobiographical memory variable was computed in a univariate analysis. Then, using linear regression analyses, the effect of the childhood context variable on the dependent variable was extracted, and the residual effect of culture on the particular dependent variable was computed. Finally, univariate analyses were carried out with the cultural residual as the predictor of the dependent variable to compute its adjusted effect size (cf. Poortinga et al., 1987; van Hemert, 2003; see also Chasiotis, Hofer, & Campos, 2006).

The proportion of culture explained by childhood context variables ranges from 10.37% by “number of siblings” for the dependent variable “age of first memory” to an enormous 74.10% by “number of siblings” for the specificity of autobiographical memory (see Table 11 for details).

Table 11: Explained Effect Size of Number of Siblings on Autobiographical Memory

	Cognitive Complexity	Elaborated Integration	Age	Specificity	Length
η of culture	.042	.138	.405	.166	.370
η of cultural residual w/o number of siblings	.015	.061	.363	.046	.100
percentage explained by number of siblings	64.29%	55.79%	10.37%	72.29%	72.97%

Analyses within cultures did not yield significant correlation between the number of siblings and those autobiographical memory variables that showed cultural variation. Nevertheless, Fisher’s r-to-z transformation revealed no significant differences between the correlation coefficients in the respective samples. Coefficients ranged from .04 (Cameroon) to .17 (PR China) for cognitive complexity, from .09 (PR China) to .17 (Germany) for elaborated integration, from -.05 (PR China) to .11 (Cameroon) for the age of the first memory, from -.13 (Cameroon) to -.06 (PR China) for specificity; from -.07 (Cameroon) to

.09 (Germany) for the length of memories, and from -.18 (PR China) to .00 (Germany) for self-other ratio (which was non-significant across cultures).

Birth order: Analyses of variance of birth order (with post-hoc Bonferroni tests) in Cameroon, that middleborns ($M = .96$; $SD = .79$) have less specific autobiographical memories than only children ($M = 1.06$; $SD = .84$; $F_{(3, 206)} = 5.56$; $p < .001$). After entering number of siblings as a covariate in a univariate analysis on the effect of birth order on specificity in autobiographical memories, this difference prevailed ($F_{(1, 205)} = 5.14$; $p < .01$), thereby indicating that not only having more siblings is associated with less specific (and thus more social-oriented) autobiographical memories but also birth order: middleborns in Cameroon are thus found to be more socially oriented than only children, as indicated by their lower specificity of autobiographical recall. Finding that birth order influences autobiographical memory (in Cameroon) suggests that differences in number of siblings and their effect on autobiographical memory does not represent a mere sample artifact but the effect of a childhood context variable. This can be regarded as indicating an influence of the number of siblings on autobiographical across the investigated cultural contexts.

Further effects of birth order in analyses of variances disappeared after controlling for numbers of siblings in univariate analyses and are therefore not reported.

4. Predicting Autobiographical Memory with Implicit Motives and Explicit Sociocultural Orientation

Linear Regressions were computed to identify the expected effects of implicit motives, sociocultural orientation and the interaction effects of their combination on autobiographical memory variables across and within cultures (cf. Theory, section 6). Independent variables were standardized within cultures (Van de Vijver & Leung, 1997). As suggested by Van de Vijver and Leung (1997), dummy variables were computed for all regressions across cultures. Since three cultures were investigated, two dummy variables were needed (Cohen & Cohen, 1975). Dummy variables enable the identification of the effect of culture in the regression, and by this the test of the null hypothesis for equal regression coefficients for each culture is integrated into the analysis.

Two different types of regression were performed: regression of independent variables on autobiographical memory across cultures and within cultures. For regression across cultures aimed at identifying potential universal effects independent of culture, the culture dummy variables were entered as covariates into the first block of the regression (cf. Poortinga & Van de Vijver, 1987). In the third block of the regression, the interaction effect

of the independent variables was entered (e.g., agency*communion). The final block of the regression consisted of the interaction of culture dummy variables with (a) independent variables (e.g., culture dummy variable * agency) and with (b) the interaction of independent variables (e.g., culture dummy variable * agency * communion). The second type of regression was carried out within cultures when regression analyses across cultures indicated a culture dependent relationship. Regression within cultures consisted only of block two (independent variables) and three (interaction of independent variables) of the previously outlined regression model across cultures.

Neither of the reported regression results showed tendencies of collinearity. Therefore, collinearity coefficients are not reported separately. In case of significant interaction effects between independent variables, slope tests were computed, following the procedure by O'Connor (1998, see also Cohen, Cohen, West, & Aiken, 2003). All reported post-hoc tests were Bonferroni tests.

4.1. Cognitive Complexity

Regression analyses with cognitive complexity as dependent variable did not indicate any main or interaction effects of the independent variables.

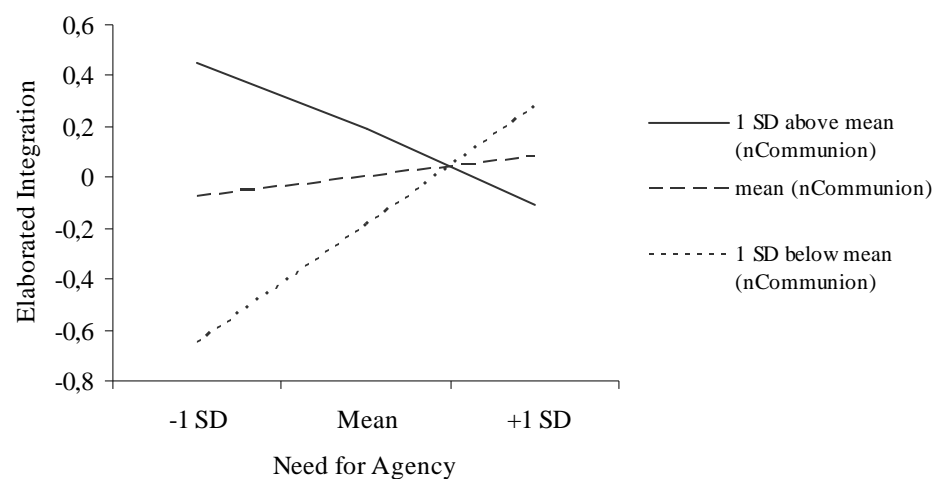
4.1.1 Elaborated Integration

In a linear regression analysis across cultures (including dummy variables of culture), a significant interaction effect between the need for Agency and the need for Communion on elaborated integration in autobiographical memory was found ($\beta = -.269$; $p = .048$). However, this effect did not account for a significant part of the variance (change in $R^2 = .00$, $F_{(1, 206)} = .14$, $p = .71$), and the effect was found to interact with one of the culture dummy variables, thereby revealing its culture-dependent character ($\beta = .269$; $p < .05$).

To investigate this effect, separate linear regression analyses were computed for participants from PR China, Cameroon and Germany, revealing a significant interaction between the need for Agency and the need for Communion on elaborated integration only in Cameroon ($\beta = -.376$; $p = .007$), with a significant increment in explained variance (change in $R^2 = .11$, $F_{(1, 62)} = 7.71$, $p < .01$). To clarify the nature of the significant interaction term, Agency and Communion scores were calculated at values one standard deviation below the mean, the mean, and one standard deviation above the mean (see Cohen et al., 2003). Figure 1 depicts the relationship of Cameroonian participants' need for Agency, Communion and their elaborated integration in autobiographical memories. Simple slope tests were computed to identify the direction of this interaction effect (see Cohen et al., 2003; O'Connor, 1998),

revealing that slopes corresponding to a low implicit Communion motive ($t = 2.12; p < .05$) differ significantly from zero. In contrast, no differences with regard to elaborated integration were found for individuals with medium or high need for Communion. Surprisingly, it indicates that Cameroonian individuals characterized by a low implicit communion motive showed higher levels of elaborated integration in their autobiographical memories the higher their need for agency was. For Cameroonians this means that having a highly agentic, self-oriented implicit motivation and at the same time a very low communal implicit motivation leads to a more integrated structure of autobiographical recall that allows for a higher social function of autobiographical memory – which is contradictory to expectations (see Theory, section 6).

Figure 1: Interaction Effect of Need for Communion and Agency on Elaborated Integration (Cameroon)



To further examine this unexpected effect, this linear regression analysis was repeated for the Cameroonian participants with respect to the influence of the interaction of the approach component of the need for Agency and the approach component of the need for Communion on elaborated integration. The pattern remained the same, indicating a significant interaction effect (only for Cameroonian participants; $\beta = -.339; p = .022$; change in $R^2 = .08$, $F_{(1, 62)} = 5.50, p < .05$). As the resulting figure mirrors the relationship depicted in Figure 1, it is not included. Again, simple slope tests were computed indicating that slopes corresponding to a low (but not medium or high) approach component of the implicit Communion motive ($t = 2.21; p < .05$) differ significantly from zero (see Cohen et al., 2003; O'Connor, 1998). Corresponding with the previous result, individuals characterized by a low approach

component of the need for Communion showed higher levels of elaborated integration in their autobiographical memories the higher their approach component of the need for Agency was.

As a last step of examination this interaction, linear regressions were carried out for the interaction between the approach component of the need for Power and Communion for Cameroonian participants. Again, a significant interaction effect was obtained ($\beta = -.315$; $p = .034$; change in $R^2 = .07$, $F_{(1, 206)} = 4.84$, $p < .05$). The Figure (for its computation, see Cohen et al., 2003) depicts a similar relationship as Figure 1. Simple slope tests reveal that those slopes indicating a low (but not medium or high) approach component of the need for Communion ($t = 2.04$; $p < .05$) are significantly different from zero (see Cohen et al., 2003; O'Connor, 1998). Corresponding with the previous result, individuals characterized by a low approach component of the need for Communion showed higher levels of elaborated integration in their autobiographical memories the higher their approach component of the need for Power was. Therefore, for Cameroonian participants, the findings remain the same: not corresponding to expectations, an ego-oriented constellation of the need for Agency and Communion leads to a more social structure in autobiographical memories.

Regression analyses were then computed for the remaining constellations of independent variables (cf. Theory, section 6), but did not reveal further significant main or interaction effects across or within cultures on elaborated integration in autobiographical memories.

4.1.2 Elaborated Differentiation

Linear regression analyses did not yield significant main or interaction effects of the independent variables on elaborated differentiation — neither across nor within cultures.

4.2. **Age of First Memory**

No effect of the independent variables' hypothesized main and interaction effects were significant in linear regression analyses across or within cultures.

However, linear regression for the avoidance component of the need for Communion produced a significant main effect across cultures ($\beta = -.260$; $p = .033$). This effect did not account for a significant change in the amount of explained variance (change in $R^2 = .00$, $F_{(1, 217)} = 1.46$, $p = .23$), and the interaction between one of the culture dummies and the main effect approached significance ($\beta = .212$; $p < .08$), and thus indicates a culture dependent nature of the main effect.

Accordingly, separate linear regression analyses were computed for the Chinese, Cameroonian and German samples, revealing a significant main effect of the avoidance

component of the need for Communion on the age of the first memory in Cameroon ($\beta = -.284$; $p = .027$; change in $R^2 = .07$, $F_{(1, 65)} = 4.84$, $p < .05$). For Cameroonian participants, a high avoidance component of the need for Communion leads to reporting their first memory as being earlier in life, i.e., being implicitly motivated by the fear of loneliness produces a retrieval of earlier, and thus more self-oriented, autobiographical memories.

4.3. Content of Memory

Regression analyses across and within cultures revealed no main or interaction effects of independent variables on the content of autobiographical memory.

4.4. Specificity of memory

Linear regression analyses revealed a significant main effect of the need for Communion on the specificity of autobiographical memory across cultures ($\beta = .383$; $p = .001$; change in $R^2 = .02$, $F_{(1, 204)} = 4.67$, $p < .05$). However, the interaction of one of the culture dummies with the need for Communion shows that the effect is culture dependent ($\beta = -.247$; $p < .05$).

Separate regression analyses were conducted for each culture, revealing that the main effect of the need for Communion holds true for Cameroonian participants ($\beta = -.373$; $p = .001$; change in $R^2 = .21$, $F_{(1, 62)} = 16.28$, $p < .001$). Surprisingly, this finding suggests that, in this context, a high need for Communion results in a specific autobiographical memory.

A further regression analysis across cultures with interdependent sociocultural orientation and the approach component of the need for Communion revealed no significant interaction effect but separate main effects of the independent variables. Interdependent sociocultural orientation exhibits a significant effect on the specificity of autobiographical recall ($\beta = -.357$; $p = .001$) but does not increase the amount of explained variance (change in $R^2 = .00$, $F_{(1, 203)} = .77$, $p = .38$). Interaction with one of the culture dummies ($\beta = .336$; $p < .01$) points out the cultural dependence of the effect.

Similarly, the effect of the approach component of the need for Communion on the specificity of autobiographical recall is significant across cultures ($\beta = .218$; $p = .048$) but not accompanied by an increment in explained variance (change in $R^2 = .01$, $F_{(1, 204)} = 1.34$, $p = .25$); closer analysis of the interaction of the independent variable and culture dummies reveal one of them approaching significance ($\beta = -.154$; $p = .11$).

Following these analyses across cultures, separate regression analyses for the approach component of the need for Communion and the interdependent sociocultural orientation were

carried out for each culture. Both effects could be found in the regression analysis with Cameroonian participants. The main effect of the interdependent sociocultural orientation ($\beta = -.408$; $p = .001$; change in $R^2 = .16$, $F_{(1, 61)} = 13.18$, $p < .001$) illustrated for Cameroonian participants that a low interdependent sociocultural orientation leads to a specific autobiographical recall, which is in accordance with the expected relationships. This is in line with the predicted direction: being explicitly more oriented towards others (i.e., interdependent) leads to a less specific and thus more social oriented autobiographical recall.

In contrast to the expected direction, the significant main effect of the approach component of the need for Communion ($\beta = .241$; $p = .037$; change in $R^2 = .08$, $F_{(1, 62)} = 5.43$, $p < .05$) signifies that, for the Cameroonian sample, a high approach component of the need for Communion leads to a specific memory, too. This would indicate that for Cameroonian participants, a communal, other-oriented, implicit approach motivation causes a very self-oriented, specific structure of autobiographical recall. Besides these effects of interdependent sociocultural orientation, i.e., the need for Communion and its approach component, no other independent variables or their interaction predicted the specificity of autobiographical memory in linear regression analysis.

To account for the above result concerning the unexpected effect of implicit communal approach motivation on the specificity of autobiographical recall, two further regression analyses of the same design were carried out for Cameroonian participants. These compared participants recalling memories of social content with those participants whose memories were of individual content. It is conceivable that communally motivated individuals may want to enhance the social function of their autobiographical memory for example by including specific elements into their memory structure to be more believable in their effort of maintaining or establishing a relationship. Nevertheless, regression analysis revealed the same effect as before: the need for Communion (as well as its approach component) leads to a more specific memory in Cameroonian participants irrespective of memory content.

However, regression analysis of the avoidance component of the need for Communion revealed a significant main effect on the specificity of autobiographical memory across cultures ($\beta = .320$; $p = .022$) but without a significant increment of explained variance (change in $R^2 = .00$, $F_{(1, 204)} = 1.10$, $p = .30$). The interaction of one of the culture dummies with the avoidance component of the need for Communion revealed the culture dependent nature of the effect on the specificity of autobiographical memories ($\beta = -.297$; $p < .05$). Therefore, additional regression analyses were conducted separately for each culture. For the

Cameroonian sample, the outlined main effect could be found ($\beta = .274$; $p = .017$; change in $R^2 = .09$, $F_{(1, 62)} = 6.05$, $p < .001$) A pronounced avoidance component of the need for Communion leads to a more specific autobiographical recall for Cameroonian participants: being implicitly motivated by the fear of loneliness produces a more specific and self-serving autobiographical recall. This may partly account for the unanticipated effect of the need for Communion on the specificity of autobiographical memory but not for the same effect found for the approach component of the need for Communion.

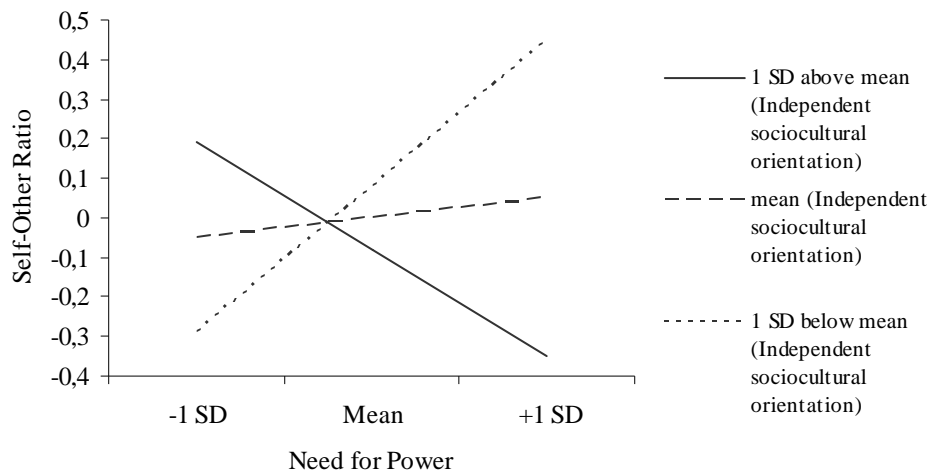
4.5. Self-Other Ratio

Apart from the following interaction effects, neither of the predicted constellations of independent variables was found to be predicting the self-other ratio in autobiographical memories in linear regression analysis. Analyses reveal a significant interaction effect (but no main effects) across cultures between the independent sociocultural orientation and the need for Power on the self-other ratio in autobiographical memories ($\beta = -.256$; $p = .048$) but no significant increase in explained variance (change in $R^2 = .005$, $F_{(1, 204)} = 1.33$, $p = .25$). The interaction of one of the culture dummies with the interaction term of the independent variables ($\beta = .287$; $p < .01$) indicated a need for further regression analyses within cultures.

These linear regression analyses reveal a significant interaction effect only for Cameroonian individuals ($\beta = -.318$; $p = .012$; change in $R^2 = .10$, $F_{(1, 59)} = 6.70$, $p < .05$). Figure 2 (for its computation see Results, section 4.1.1, and Cohen et al., 2003) depicts the relationship of Cameroonian participants' need for Power, independent sociocultural orientation and the self-other ratio in autobiographical memories. Simple slope tests were computed to identify the direction of this interaction effect (see Cohen et al., 2003; O'Connor, 1998) revealing that slopes corresponding to a low (but not medium or high) implicit Power motive ($t = 2.03$; $p < .05$) differ significantly from zero. Surprisingly, it indicates that Cameroonian individuals characterized by a high independent sociocultural orientation showed a higher self-other ratio in their autobiographical memories the lower their need for Power was. In other words, they make more self-references (in comparison with references to other people) the lower their (supposedly independent) need for Power is, given that they are explicitly oriented more towards themselves. While the latter part of the interaction (high independent sociocultural) was expected, the first (low need for Power) was not.

Apart from these findings, neither of the predicted constellations of independent variables was found to be predicting the self-other ratio in autobiographical memories in linear regression analysis. This includes the interaction of the approach component of the need for Power and an independent sociocultural orientation.

Figure 2: Interaction Effect of Need for Power and Independent Sociocultural Orientation on Self-Other Ratio (Cameroon)

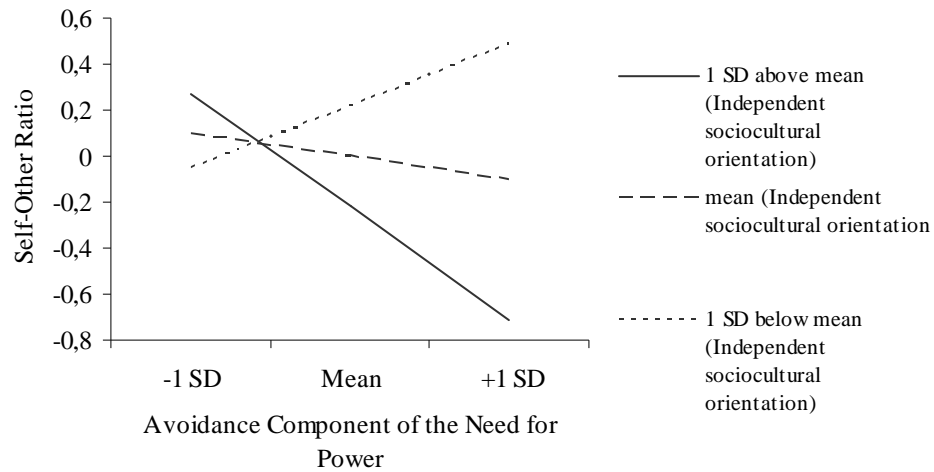


Analysis of the avoidance component may account for the above interaction effect. A linear regression across cultures reveals a significant interaction effect of independent sociocultural orientation on the self-other ratio in autobiographical memories ($\beta = -.249$; $p = .031$) but with no change in the amount of explained variance (change in $R^2 = .00$, $F_{(6, 196)} = 1.25$, $p = .60$) The significant interaction of one of the culture dummies with the interaction term of the independent variables suggests a culture-dependent nature of the interaction effect ($\beta = .196$; $p < .05$). Therefore, regression analysis of the interaction effect was repeated within each culture, indicating a significant interaction effect of the independent sociocultural orientation with the avoidance component of the need for Power for the Cameroonian sample ($\beta = -.393$; $p = .006$; change in $R^2 = .12$, $F_{(1, 59)} = 8.27$, $p < .01$).

Figure 3 (for its computation see Results, section 4.1.1, and Cohen et al., 2003) clarifies the relationship of Cameroonian participants' avoidance component for the need for Power, independent sociocultural orientation and the self-other ratio in autobiographical memories. Simple slope tests were computed to identify the nature of this effect (see Cohen et al., 2003; O'Connor, 1998), revealing that slopes corresponding to a low (but not medium or high) implicit avoidance component of the need for Power motive ($t = 2.03$; $p < .05$) differ significantly from zero. Slope tests reveal that Cameroonian individuals characterized by a high independent sociocultural orientation showed higher levels of elaborated integration in their autobiographical memories the lower their avoidance component of the need for Power was. This may account for the unpredicted prior finding that these individuals make more self-references (compared to references to others) the lower their implicit need for Power is,

while they are explicitly more self-oriented. Analyses of the avoidance component of the need for Power reveal that the self-other ratio increases only when the combination of a high independent sociocultural orientation and a decreasing implicit motive of powerlessness is given.

Figure 3: Interaction Effect of the Avoidance Component of Need for Power and Independent Sociocultural Orientation on Self-Other Ratio (Cameroon)



4.6. Length of Memory

No main effects or interaction effects of independent variables on the length of a participants' autobiographical memory (as outlined in Theory, section 6) were found to be significant in linear regression analysis either across or within cultures.

DISCUSSION

In the following three sections, findings are summarized and discussed for each of the three blocks of hypotheses (i.e., cultural differences, childhood context, interindividual differences). Subsequently, general methodological limitations of the present study are outlined. Finally, a conclusion will be drawn and a future perspective on the investigation of autobiographical memory across cultures will be outlined.

1. Cultural Differences in Autobiographical Memory

In line with previous studies, cultural differences in many autobiographical memory variables could be confirmed. Participants from Germany reported an earlier age of first memory than Cameroonian or Chinese participants, and they had more specific memories than Cameroonian participants.

For the first time, cognitive complexity (Woike, 1997) has been applied cross-culturally to assess the functions of autobiographical memory in adults (for children, see Chasiotis et al., in press). Therefore, it is noteworthy that the differences obtained in cognitive complexity are in line with more traditional measures of autobiographical recall in cross-cultural research. Both Chinese and Cameroonian individuals used significantly more elaborated integration to structure their memories which results in an overall higher complexity. An integrated structure is more apt to serve social purposes of recall, because it features more causal links, similarities and resolutions. Such elements are assumed to enable an individual to make use of her/his memories to stay connected with others (cf. Woike, 1994; Woike et al., 1999).

However, there were some unexpected results. Chinese participants indicated an earlier age of first memory and had more specific memories than Cameroonian participants. As well, Cameroonian individuals were not expected to write lengthier memories than both Chinese and German participants. Cameroonians also referred to themselves more often (in comparison with references to others) than did German participants. Especially for the last two findings, previous studies may have suggested exactly the reverse.

For some of these findings, the characteristics of the investigated samples may provide possible interpretations. In previous studies, Chinese participants have been generally considered to be prototypically interdependent (e.g., Wang et al., 1998). In the present study, samples were selected based on the conceptualizations of Kağıtçıbaşı (1996, 2005) to represent prototypically independent (i.e., the German sample) and prototypically interdependent contexts (i.e., the Chinese and Cameroonian samples).

However, Chinese participants did not differ from German participants with respect to their level of formal education, and both samples were on average more educated than the Cameroonian sample. This contextual indicator suggests that the Chinese sample may have represented a less interdependent cultural context than the Cameroonian sample (cf. Kağıtçıbaşı, 1996, 2005). An increased opportunity for education and the option for corresponding economic advancement may lead to psychological changes in the social environment of Chinese individuals that may foster a rather independent sociocultural orientation (cf. Kağıtçıbaşı, 1996, 2005). Particularly with an increasingly urban, affluent life style, material dependences between generations are diminishing, because with alternatives to old age support, children do not have to look after their aging parents. Such economical changes often unfold faster than psychological changes. However, “*psychological interdependence, as closely-knit selves, continues, since it is ingrained in the culture of relatedness*” (Kağıtçıbaşı, 2005, p.11). Accordingly, such a context represents a mixture of independent factors (economic independence) and interdependent factors (psychological relatedness). The Chinese sample in the present study may therefore be regarded as taking a middle position between the prototypically interdependent Cameroonian and the prototypically independent German sample and best be described as relational-autonomous (cf. Kağıtçıbaşı, 2005). This reevaluation is considered in the following sections when results of the present study are discussed.

Age of First Memory: Differences in the age of first memory are as predicted, although at first glance the average age seems later than in previous studies (e.g., Wang, 2001b; see also Conway et al., 2005; Mullen, 1994; Wang et al., 1998). German participant’s average age for their first memory was 3.6 years – which is in perfect correspondence with Wang’s (2001b) finding that Euro-Americans (also representing an independent context) indicated their age of earliest memory at 3.5. The age Chinese participants indicated (5.6 years) seems comparatively late, because Chinese participants in other studies indicated an age of earliest memory of 4 years (Wang, 2001b). Nevertheless, this finding does not represent an outlier, because Pillemer and White (1989) report a considerable range from 2 years to 8 years for such earliest memories even in Western samples.

This deviation may result from the specific samples that were investigated. Previous studies investigated mainly Chinese from Beijing (northeastern China), while this study assessed individuals from the province of Guangdong (i.e., southwestern China). While samples comprising students of a renowned university in Beijing (Wang et al., 1998)

represent a very independent sample (highly educated, affluent middle-class participants), samples from Panyu (present study) represent a more interdependent context (suburban, poor, but educated) and may be classified as relational-autonomous (cf. Kağıtçıbaşı, 1996, 2005, see above). The specific investigated context and not the larger cultural group (or the country) to which an individual belongs is of importance for autobiographical memory characteristics. This is substantiated by findings that participants from urban areas have earlier first memories than participants from rural areas (Wang et al., 1998).

Urban and rural areas can be differentiated in particular with respect to the prevalent family structure (cf. Kağıtçıbaşı, 1996, 2005). Participants from urban areas are more likely to live in a nuclear (Western) family structure, while participants from rural areas more often live in extended families. Such differential family constellations are assumed to foster different developmental pathways (cf. Kağıtçıbaşı, 1996, 2005, Keller et al., 2004). In extended families (rural, agricultural contexts) autonomy of the child is discouraged, as parents depend on their offspring for old age support. In contrast, in urban nuclear families that are more affluent, dependence on children is not valued or even desirable. Adults that have grown up in rural contexts in an extended family may therefore have been discouraged to ascribe too much weight to their first memory and thus indicate a later age for such memories than adults who have grown up in urban nuclear families that may even foster the independence of their child. Having a personal memory of “one’s own” may be regarded as a sign of such separateness, and may explain why such individuals ascribe an earlier date to their personal memories to set themselves apart from others. In conclusion, it is in accordance with the investigated contexts that in the present study Chinese participants (presumably from a relational autonomous context) recall their memories earlier than Cameroonians (from a prototypically interdependent context).

Content: No cultural differences in the content of autobiographical memories were obtained in this study. This is unexpected as previous studies, using a similar procedure (e.g., Han et al., 1998; Wang, 2004) replicated quite robust differences in autobiographical content across cultures. However, such studies (Han et al., 1998; Wang, 2004) assessed children’s autobiographical narratives. In the present study, adults were asked to report two memories; one that is centered on others and the other focused on themselves (cf. Methods, section 2.2 & 2.3, see also Appendix D). It is possible, that adults may stick more to the instruction than children, thereby restricting the variance of memories. Asking for a memory that revolves around others may thus always produce a social content irrespective of cultural group, while

asking for a self-focused memory may result in an individual content. However, this was not the case across cultures: of the aggregated memories, 67.9% were of social content, 30.2% were of mixed content, and only 1.9% were of individual content (cf. Methods, section 6.6.1). This pattern is the same for Germany (social: 65.6%; mixed: 31.3%; individual: 3.1%), PR China (social: 60%; mixed: 38%; individual: 2%), and Cameroon (social: 77.3%; mixed: 22.7%; individual: 0%). Accordingly, the presumed demand characteristics of the instruction cannot account for the absence of cultural differences, as most memories were of social or at least mixed content. On the other hand, it may be possible that two categories for the content of an autobiographical memory represented an oversimplified approach to content coding of personal memories. It could be that restricting the range of scores may have resulted in a ceiling effect of coding social memories for each cultural context. Accordingly, it is advisable to control for such effects in future studies.

Length: Previous studies suggested that reporting brief, skeletal memories is associated with an interdependent self-construal (e.g., Wang et al., 1998). However, Cameroonians from an interdependent context were found to report the lengthiest memories among the three investigated cultural contexts. Analyses of length and content reveal, that especially social (or mixed) memories were longer ($t = 3.20$; $p < .01$) across the cultural contexts. Analyses within cultural contexts revealed no significant results but were considerably close to significance for German participants ($t = 1.87$; $p = .065$) and those from Cameroon ($t = 1.60$; $p = .11$). In addition, this is not the first time that inconclusive results concerning the length of a memory were obtained in cross-cultural studies on autobiographical memory — Han and colleagues (Han et al., 1998) reported that the length of Chinese and American children's speech was roughly equivalent. Furthermore, Wang and colleagues (Wang et al., 1998) found that participants from rural areas reported lengthier earliest memories than those from urban areas. The latter finding implies that participants from interdependent (i.e., rural) contexts report lengthier memories than participants from independent (i.e., urban) contexts. It is likely that such individuals from interdependent contexts also report more memories that can be considered social in nature than individuals from independent contexts.

The combination of results from the present study and previous findings renders it doubtful whether accounts of one's past have to be short to fulfill a social purpose. In particular, it is possible that individuals who want to maintain their social bonds may recall lengthy memories of social events to remind their interaction partners of shared past

experiences in order to elicit empathic responses as well as to be more believable, and trustworthy (cf. Pillemer, 1992). The above findings may therefore imply that lengthy memories may serve a twofold purpose – to set oneself apart from others by providing long instances about one’s uniqueness and/or to recall and share lengthy communal experiences with others to reestablish social relationships.

Specificity: It is unexpected that Chinese participants’ memories were more specific than those of Cameroonian participants. As these two samples were assumed to be from a prototypical interdependent context (cf. Methods, section 1.1), they were both expected to have less specific memories than German individuals from a prototypical independent context. However, since Chinese participants may be more accurately described as having a relational-autonomous background (see above), they may have been less oriented towards others than Cameroonian participants (from a prototypically interdependent context) and may thus have recalled memories that are specific to set themselves apart from others.

To investigate this effect further, it was controlled whether the content of memories may have influenced the specificity of recall. It was suspected that specific memories may be related to social purposes, because caring for connectedness could also be achieved by sharing specific instances of the past (cf. Pillemer, 1992). In a similar way as it is possible that lengthy memories may also serve social purposes (see above). But neither across nor within cultures did the content of a narrative influence its specificity. Therefore, differentiating Chinese participants (relational-autonomous context) from Cameroonian participants (interdependent context) explains best why Chinese individuals recall more specific memories than Cameroonian individuals.

Self-other ratio: Unexpectedly, Cameroonian individuals referred to themselves (in comparison to others) more often than German participants. This would suggest that their memories are more suitable for the self-function of autobiographical recall. However, another possible explanation can be found in the computation of the score itself and the observation that Cameroonian participants in this study indicated having the most siblings.

In particular, references to multiple people, like “they”, were counted only as the occurrence of two distinct individuals. However, it could be possible that plural forms have different connotations in different contexts: In contexts where interaction partners are limited, a plural form may actually represent fewer people (e.g., “two”) than in a context in which interaction partners are numerous (e.g., “four”). Because Cameroonian participants indicated

having more siblings than both the Chinese and German participants, it is highly likely that more people may occur in their first childhood memories. Treating plural forms as indicating only two people may thus have led to the finding that Cameroonians have a higher self-other ratio. In future, it is therefore advisable to include survey questions in pretests to let participants specify the mean number of people associated with plural forms. Results could then be used as indicators for plural forms separately for each culture. For example, if German individuals conceive of the plural “they” as generally indicating two people, while Chinese and Cameroonian individuals conceive of it as indicating (on average) three people, separate indicators for plural forms for the investigated contexts would be gained. Such a procedure in future studies could exclude the over- or underestimation of plural forms.

In addition, the present finding does not represent the first inconclusive finding regarding self-other ratio. Wang and colleagues (Wang et al., 1998) found that European/American children introduced more people in their memories than do Chinese children. Likewise, Mullen and Yi (1995) reported that Caucasian participants were more likely than Asian participants to talk about their own thoughts and feelings, and they were more likely to talk about others’ thoughts and feelings. It is possible that the potential number of interaction partners in childhood influences the ratio of self- and other-references. As most Chinese children were only-children, while most American children had siblings, Chinese children may thus experience a more independent socialization context (cf. Wang, 2004). It could be that similar indices in such studies have treated plural forms in a biased way like the present study. Nevertheless, this again highlights the importance of an investigation of specific cultural context factors.

Cognitive Complexity: The assessment of cognitive complexity was newly applied in cross-cultural research on adults. Results for elaborated integration are in perfect correspondence with previous findings on the structure of autobiographical memory. In contrast, no cultural differences in elaborated differentiation could be confirmed. This is surprising considering that many researchers have foreshadowed a “*less differentiated autobiographical self*” (Nelson & Fivush, 2004, p.576) in interdependent contexts. The first interpretation would be to assume that individuals – irrespective of cultural context and sociocultural orientation – make use of elaborated differentiation to the same extent and that cultural differences arise through differences in elaborated integration.

However, exploratory correlations between the coding units and categories of cognitive complexity revealed an unexpected relationship between the occurrences of relative

comparisons and elaborate differentiation. Across cultures, relative comparison is (besides being significantly related to elaborate differentiation) significantly related to elaborated integration. In the German sample, the occurrence of relative comparisons is correlated with the occurrence of resolutions ($r = .31; p < .01$), while in the Chinese sample it is related with causal links ($r = .31; p < .05$). Only with respect to Cameroon are relative comparisons not related to coding units of elaborate integration. This reveals that the use of comparisons, which are conceptualized as elements suitable to differentiate an individual from others, is related to elements that are appropriate to establish connectedness with others.

Therefore, it may be fruitful to reevaluate the meaning of relative comparisons. It could be possible to think of relative comparisons as serving two purposes. On the one hand, relative comparisons, as described by Woike (1997), are useful to set oneself apart from others and therefore constitute an important element of differentiation. On the other hand, individuals who are oriented towards others and – for example – want to fulfill expectations of their social context to better fit into their social role (Markus & Kitayama, 1991) may as well use relative comparisons to evaluate and communicate their success in doing so. Although clearly more substantiation of such an interpretation is needed, it may represent a viable route to enhance cross-cultural applicability of cognitive complexity as an indicator of the functions of autobiographical memory (see also Discussion, section 5).

In conclusion, cognitive complexity has proved to be valuable in replicating cultural differences in autobiographical memory. Applying cognitive complexity offered the first opportunity to systematically assess the functions of autobiographical memory across cultures. However, some categories yielded unexpected findings (e.g., relative comparison). The traditional measures of autobiographical memory are diverse ranging from content to more structural indices and have proven to be valuable in past studies (cf. Theory, section 2.4). However, first indicators suggest that the length of an autobiographical memory could serve multiple purposes. Therefore, not only a theoretically driven sample selection is needed (cf. Kağitçibaşı, 1996, 2005) but also an individual assessment of sociocultural orientation, because distributions between cultural contexts with respect to dominant self-construal are regarded as overlapping (Markus & Kitayama, 1991). This is further discussed in section 3 (this chapter).

2. Effects of Childhood Context

Traditionally, differences in parent-child interactions have been investigated as a major source for individual differences in reminiscence style and their influence is widely documented (e.g., Fivush, 1998; Fivush et al., 2000; Reese & Fivush, 1993, Reese et al.,

1996). However, it has been repeatedly noted that siblings play a substantial role for the development of other siblings (see Theory, sections 2.3 & 2.4): they engage in parental behavior directed at younger siblings, they teach other siblings important cultural norms, and they exhibit behavioral aspects of the intuitive parenting program. Accordingly, it has been proposed in the present study that siblings – as well as parents – may engage in activities that instantiate the reminiscence style of their siblings. In the present study, the number of siblings as a childhood contextual variable was related to autobiographical memories to provide a first indicator of such a relationship between siblings. And indeed, autobiographical memory could be related to the number of siblings of an individual (see Table 10). The proportion of explained effect sizes for autobiographical variables ranges from roughly 10% (age of first memory) to an astonishingly 73% (length of memory). Participants that grew up with many siblings use more elaborated integration in their memories (resulting in a higher cognitive complexity), report later ages of first memories, and are less specific in their accounts of the past than those growing up as only-children or only with a few siblings.

Although the correlations of childhood contextual variables (i.e., number of siblings) and autobiographical memories could not be confirmed within cultures, Fishers *r*-to-*z* transformation indicated that coefficients are not significantly different from and in the same direction as the correlations observed across cultures. This could be taken as a first indicator that these effects may be replicable also within cultures. This is especially plausible as non-significance may be due to low sample sizes, and sample differences with regard to the distributions of only-children, firstborns, middleborns and lastborns (see Table 5). Moreover, effects of birth order on the specificity of memory could be confirmed within the Cameroonian context: middleborn participants reported significantly less specific memories than only children. This substantiates that relationships are highly unlikely to represent only a methodological artifact of comparing only Cameroonian participants who have siblings (and are more social-oriented in their autobiographical recall) with all others who do not have siblings (and may be more self-focused).²

The impact of siblings on the mode of autobiographical recall could be manifold. First, it is possible that siblings partly engage in memory talk (Neisser, 1988) just like their parents (for cultural teaching in general, see Maynard, 2002) thereby instantiating general reminiscence practices in other children. Which particular reminiscence style they may

² Moreover, studies in progress by Gardner and colleagues (W. Gardner, personal communication, June 14, 2006) indicate that an increased family size fosters the development of an interdependent self-construal, which further highlights the importance of contextual variables like number of siblings.

enhance may depend on the cultural context. However, assuming such a general effect may be shortsighted and leads to the second possible interpretation: numerous siblings are more typical for contexts that are considered interdependent (rural, less affluent, cf. Kağıtçıbaşı, 1996, 2005), in which feelings of connectedness are encouraged (partly as a means for securing parental old age support). Growing up with many potential social interaction partners and with little encouragement to separate oneself from them, the emergence of an interdependent self-construal becomes more likely. This may be facilitated by multiple individuals (parents and siblings) that engage in a lowly elaborative reminiscence style and may ultimately result in a more social-oriented use of autobiographical memories in adults. The third interpretation is more pragmatic: if multiple children are present, it is highly improbable that parents have sufficient time to engage with each child in a highly elaborative memory talk. In such a scenario, it is more likely that parents will reminisce with their children in a normative style, i.e., focus on repeating questions until the expected response has been provided by the child (cf. Theory, section 2.3). A decision which of these scenarios may apply best to explain effects of siblings on autobiographical remembering can not be reached on the basis of the present study. However, it became apparent that the presence or absence of siblings in the childhood context substantially influences the mode of autobiographical recall of adults.

Moreover, this effect contributes to the understanding of cultural differences in the length of autobiographical recall. Participants with many siblings reported lengthier narratives than only-children or participants with few siblings. This finding further challenges the notion that brief memories are a general indicator of a social structure of autobiographical memories. It may be more plausible that the length of memory may serve a social function as well as a self function and which of these may depend on the content of the memory (see section 1, this chapter).

In sum, the examination of childhood contextual variables offers an avenue to explain differences in autobiographical recall between cultural samples and to thereby identify what exactly constitutes them (for similar empirical approaches, see Keller et al., 2004; and Chasiotis et al., 2003; Chasiotis et al., 2006).

3. Implicit Motives and Sociocultural Orientation as Predictors of Autobiographical Memory

It has been argued that psychological variables vary across as well as within different cultures and that cultural contexts and distributions should not be considered clear cut (cf.

Markus & Kitayama, 1991). The present study therefore attempts to explain cross-cultural and contextual differences in autobiographical memory by identifying them as interindividual differences in the constellation (and interaction) of implicit motives and sociocultural orientation. For this purpose, highly specific relationships about the interaction effect of motivation and sociocultural orientation were predicted. Such interactions are known for their instability across diverse cultural groups (Van de Vijver & Leung, 1997). And indeed, the greater part of predicted constellations could not be confirmed due to general methodological constraints (which are further discussed in section 4, this chapter), but some results may be regarded as first indicators of the usefulness of such an approach.

3.1. Elaborated Integration

Unexpectedly, elaborated integration within autobiographical memories could not be predicted across cultures by constellations of implicit motives and sociocultural orientations. Only one effect could be confirmed for the Cameroonian sample: the lower the need for Communion of an individual combined with a high need for Agency, the more elaborated integration is used in autobiographical narratives. In other words, a very ego-oriented constellation of motives leads to a pronounced social function of autobiographical memory in Cameroonian individuals. Exactly the opposite was predicted, but this interaction effect held true for an investigation of the approach components of the respective motives as well.

It is difficult to reconcile this finding with previous (intracultural) studies on the relationship between autobiographical memory and implicit motivation (cf. Woike et al., 1999; Woike et al., 2001). The first possibility is to take this effect at face value – as representing valid influences of implicit motives on the structure of autobiographical recall. This may be appropriate because no previous studies have investigated autobiographical memory or the effects of implicit motives on autobiographical recall in a Cameroonian sample. Therefore, this finding may be specific to individuals in Cameroon only. However, this does not represent a satisfying account. More general methodological considerations about the measures used in this study may be more appropriate to address this issue (cf. Discussion, section 4).

3.2. Age of First Memory

Ascribing an earlier age to one's very first "own" autobiographical memory can be a tool to separate oneself from others. It was found that a high avoidance component of the need for Communion results in an earlier indication of the earliest childhood memory for Cameroonian participants. At first glance, it is unexpected that a communal motive category

leads to a specific — and thus self-serving — recall of autobiographical memory. However, in previous studies (Chasiotis & Hofer, 2003; Chasiotis et al., in press) the avoidance component of the need for Communion has been found in particular for German participants from prototypically independent contexts and has therefore been associated with an independent mode of communal motive realization. Being motivated by a fear of loneliness may lead an individual to recall more specific memories. This corresponds to the theoretical conceptualization by Kuhl (2001). Negatively affectively toned realizations of implicit motives renders an individual more sensitive to discrepancies. The perception of such discrepancies then leads to more specific and detailed memories (cf. Kuhl, 2001). Therefore, fear of loneliness may represent a rather independent motive category, and thus its effect on specific autobiographical memories is in line with the expected direction.

3.3. Specificity of Memory

Traditionally, specific memories that are focused on single events are considered appropriate for differentiation from others. Regression analyses revealed a significant main effect of interdependent sociocultural orientation on the specificity of autobiographical recall in the Cameroonian sample: the lower their interdependent sociocultural orientation, the more specific were their autobiographical narratives. This finding is in line with expectations. Being explicitly less oriented towards others makes it more likely to structure one's memories for self-purposes.

Furthermore, it was found that a high need for Communion (and its approach component) led Cameroonians to recount specific events, which is in contrast to the predicted direction. However, this effect occurs also when investigating the avoidance component of the need for Communion. Being implicitly motivated by a fear of loneliness leads them to report memories that are more specific. Since the avoidance component of the need for Communion may be regarded as an independent mode of realizing the communion motive (cf. Chasiotis & Hofer, 2003; Chasiotis et al., in press; see previous section), its effect on specificity of autobiographical recall can partly account for the effect of the sum score. Nevertheless, the effect of the approach component on the specificity remains unaccounted for. As this represents the second unpredicted effect of the need for Communion (see Discussion, section 3.1), further general interpretations will be discussed in section 4 (this chapter).

3.4. Self-Other Ratio

To assess the social orientation within a narrative, the ratio of self references and references to other people was computed (cf. Methods, section 2.3). Regression analyses

revealed predictive effects of implicit motives and sociocultural orientation for the self-other ratio in autobiographical memories only in the Cameroonian cultural context. An interaction effect between a low need for Power and a highly independent sociocultural orientation was confirmed. Participants from Cameroon made more self-references (in comparison to references to others), the lower their need for Power was, given a highly independent sociocultural orientation.

Originally, it had been expected that a high need for Power and a highly independent sociocultural orientation would lead to a higher self-other ratio. This finding, however, is clarified when investigating the approach and the avoidance component of the need for Power with regard to this interaction effect. While the interaction effect with independent sociocultural orientation is non-significant for the approach component of the power motive, it is significant for the avoidance component of the need for Power. In other words, only an implicit motivation for powerlessness and dependence (the avoidance component of the need for Power) leads, in combination with a high independent sociocultural orientation, to a higher self-other ratio in autobiographical memories.

The avoidance component of the power motive has repeatedly been found to be more prominent in Cameroonian participants (see also the complementary finding for the avoidance component of Communion, section 3.2, this chapter) and has therefore been considered a motive realization of the need for Power more typical for interdependent individuals (Chasiotis & Hofer, 2003; Chasiotis et al., in press). In light of these results, the above interaction effect may be clarified: the lower an individual's interdependent way of realizing the power motive — given a highly independent sociocultural orientation — the more self-references (in comparison to references to others) are made within an autobiographical narrative. In other words, if the constellation of implicit motives and sociocultural orientation is independent, individuals in Cameroon make more use of the self-function of autobiographical recall, which is congruent with expectations.

4. Limitations

The main limitation of this study concerns the analyses of interindividual differences. It is striking that in regression analyses only a few of the effects of the constellation of implicit motives and sociocultural orientations could be obtained – and only for the Cameroonian sample. On the one hand, this could imply that there is an influence of implicit motivation and sociocultural orientation on autobiographical memory only in the Cameroonian cultural context. On the other hand, there are several methodological issues that deserve further consideration as explanatory factors for this pattern of results. Especially in

cross-cultural research, cultural differences are always open for multiple interpretations (Van de Vijver & Leung, 1997) even when adhering to suggested procedures and guidelines. In the following, the applied measures, and the procedures to ensure equivalence of these measures will be discussed to identify possible areas of methodological improvement for further cross-cultural studies on autobiographical memory.

4.1. Implicit Motives

A possible explanation why effects could be confirmed only for the Cameroonian sample may be derived from previous studies. These have repeatedly observed that German participants' implicit motivation shows fewer relationships with other psychological variables and is less associated with behavioral outcomes (see Chasiotis & Hofer, 2003; Chasiotis et al., 2006). It has been argued that the level of formal education may obscure the effect of implicit motivation on other psychological constructs, because individuals with higher education may tend to rationalize their decisions and actions in a more elaborated way — especially in a questionnaire situation (cf. Chasiotis & Hofer, 2003; Chasiotis et al., 2006). This interpretation may explain why no effects of implicit motives on autobiographical memory were obtained in the Chinese and German samples. Effects could only be confirmed in the Cameroonian sample, which was significantly less educated.

A further possibility to explain the absence of predicted effects of implicit motivation on autobiographical memory may be found in the samples of previous intracultural studies on the relationship of implicit motives and autobiographical memory. In studies of Woike and colleagues (e.g., Woike et al., 1999; Woike et al., 2001), participants were pre-selected to consist only of individuals featuring either a high need for Communion (and simultaneously a low need for Agency) or a high need for Agency (and a simultaneously low need for Communion). It is possible that such individuals differ from the investigated individuals in the present study. Therefore, such individuals in the present samples were identified, but sample sizes were too small to carry out analyses.

A further explanation for the absence of effects of implicit motivation on autobiographical memory in the present study is associated with the Operant Multimotive Test (Kuhl & Scheffer, 1999). Previous, intracultural studies have applied picture-type story tests similar to the Thematic Apperception Test (TAT, Murray, 1943) to assess an individual's implicit motivation, while in this study the Operant Multimotive Tests was employed. Both are designed to assess an individual's motive strength, but the OMT also allows for the differentiation of approach and avoidance components of a motive (cf. Methods, section 2.4)., Although convergent validity concerning the motive strength has been established (cf.

Baumann et al., 2005; Scheffer et al., 2003), it is possible that the focus of these measures may be different. While the TAT traditionally assesses the strength of a given motive, the OMT may be more apt to tap into the different modes of motive realization. In the OMT, it is possible to score one motive per picture, while in many TAT manuals (e.g., Winter, 1991) complete stories can be scored sentence by sentence, resulting in a larger number of codes that may be better suited to assess an individual's motive strength. In addition, multiple codes can be scored per coding unit (e.g., a sentence can be scored as an indicator for both achievement and affiliation).

These differences may have even increased after pictures of the OMT have been analyzed for their equivalence across cultural contexts. An investigation of the stimulus pull and the subsequent response bias analysis of the OMT-pictures reduced the number of pictures (and thus the variance of codes). While for nPower ten pictures could be identified as equivalent across cultural contexts, only four pictures for nAffiliation and six pictures for nAchievement could be retained after response bias analysis (cf. Methods, section 6.5). Accordingly, this may have resulted in a less accurate assessment of the motive strength of the need for Communion (i.e., nAffiliation) than anticipated. With fewer items and restricted variance it is questionable whether some of the effects of the need for Communion obtained in regression analyses can be considered meaningful. In particular, this may account (among other explanations) for inconclusive findings concerning the effects of the need for Communion on elaborated integration, age of first memory, specificity of recall, and self-other ratio (cf. Discussion, section 3). Moreover, this sheds light on the absence of cultural differences in the need for Communion and Agency: only for the need for Power could cultural differences be obtained — presumably as it could be assessed with a sufficient number of pictures.

Finally, Woike and colleagues intraculturally investigated the differential effects of implicit and explicit motivation on different levels of autobiographical memory (i.e., event-specific knowledge vs. general events; see Woike et al., 2003). The investigation of such differential effects might prove useful in clarifying results. However, sociocultural orientations can be assumed to overlap with explicit, self-attributed motives and yielded only a few significant results in the present study (see next section).

In conclusion, even if the present study could draw on previous findings with a similar bias-free picture sets (cf. Chasiotis & Hofer, 2003; Chasiotis et al., 2006; Hofer & Chasiotis, 2005), the selection of picture stimuli has to be investigated more thoroughly in future studies,

because it is connected to the structural validity of implicit motives (for a similar argument, see Van de Vijver & Leung, 1997).

4.2. Equivalence of Measures

Generally, identification and subsequent elimination of biased items does not guarantee valid data, because there are more threats to the validity of group comparisons in cross-cultural research (Holland & Wainer, 1993; Van de Vijver, 1994). It has been shown that the removal of biased items itself may invalidate the latent trait's estimator (Hofer et al., 2004), and it is possible that this was the case for the assessment of the need for Communion (see previous section.)

This may apply as well for the self-report scales on sociocultural orientation. An individual's sociocultural orientation was assessed to relate individual differences in autobiographical memory to individual differences in the dominant self-construal of an individual. In confirmatory factor analyses using AMOS (Arbuckle, 2005) a model of these self-report scales could be established that was equivalent across the cultural contexts and allowed for comparisons of mean differences (see Methods, section 6.1.3). But establishment of equivalence necessitated the elimination of eight items of the independent sociocultural orientation scale and three items of the interdependent sociocultural orientation scale. This resulted in a lower reliability of these scales than anticipated (cf. Table 8) and may also have had implications for validity. With this number of items excluded, it is doubtful whether the scales still assessed that for which they were originally designed. This may then account for the limited number of effects of sociocultural orientation on autobiographical memory. In addition, the predicted interaction effects of implicit motivation and sociocultural orientation have been very precise and highly specific. It is extremely difficult to obtain such interaction effects in cross-cultural research as they are "*infamous*" (Van de Vijver & Leung, 1997, p.87) for their instability across cultural samples.

Nevertheless, biased items may reveal something about idiosyncrasies of the cultural contexts in the present study. But eliminated items did not belong to a particular subscale of one of the two self-report scales. This renders such an examination less fruitful, especially since explanations of why items may be biased remain unsatisfying because, as Bond puts it, "*theories about why items behave differently across groups can be described only as primitive*" (Bond, 1993, p.278).

It is possible that techniques for bias detection different from those employed in the present study might have produced different results (see for example Tuerlinckx, De Boeck, & Lens, 2002). However, the stability of statistical item bias reducing techniques in general

seems to be poor, both in test-retest studies as well as in cross-validations (Van de Vijver & Leung, 1997). This lack of convergence may be explicable by the typically low effect sizes of item bias. Apart from that, very heterogeneous statistical procedures are used to identify item bias, and this implies that identical results cannot be expected. Moreover, there is little agreement between statistical procedures that identify item bias and the extent to which experts identify items as biased (Van de Vijver & Leung, 1997, Plake, 1980). Such details clearly outline the need for further methodological advancement in item bias techniques. With more studies applying these techniques, more insight can be expected to refine methodological procedures. However, the only alternative to the current procedures to minimize item bias would resemble flying blind, because there would be virtually no possibility of discriminating between valid cultural differences and methodological artifacts.

4.3. Procedure

In this study, the questionnaires were administered in each cultural context by an experienced Western experimenter (for economic reasons), which may qualify as a potential source of bias. The administration procedure was in every other aspect the same across cultures (including the presence of a Western experimenter), so that only differential demand characteristics in the cultural contexts may have played a role. However, the size of such effects is considered to be small and inconsistent (Van de Vijver & Leung, 1997).

A further concern may be the construction and equivalence of the different questionnaire translations in the cultural contexts and the translation of Chinese participants' responses into English. This may be especially important, because autobiographical narratives and OMT-responses had to be coded afterwards. However, the translation and backtranslation procedure follows the guidelines for cross-cultural research (see Van de Vijver & Leung, 1997; Werner & Campbell, 1970), and the translation of participants' responses has been applied successfully in previous cross-cultural studies on autobiographical memory (see Han et al., 1998; Mullen & Yi, 1995; Wang, 2001b, Wang et al., 2000). As far as economic constraints allowed, local experts from Cameroon and China have been consulted to monitor each of the stages in the present study. Nevertheless, it would of course be desirable to expand on such procedures to eliminate further sources of potential distortion (Van de Vijver & Leung, 1997).

5. Conclusions and Future Perspective

The present study is innovative for the field of cross-cultural research on autobiographical memory in a number of key aspects: (1) it represents the first study to

introduce current methodological techniques for the identification and elimination of bias, and (2) it proposes that hitherto ‘cultural’ differences in autobiographical memory may be better understood in terms of contextual and interindividual variation across and within cultures. Such variation may be more compatible with (3) a comprehensive functional approach towards differences in autobiographical memory. Furthermore, this study (4) for the first time attempts to empirically relate interindividual differences in implicit motivation and sociocultural orientation to differences in the functions autobiographical memory, that (5) were assessed for the first time cross-culturally with cognitive complexity.

Previous cultural differences could be replicated: In general, participants from a Cameroonian and Chinese context make more use of the social function of autobiographical memory (i.e., integrated, late, and routine memories) than individuals from a German context. Moreover, these differences could be related to differences in childhood contextual factors. Having more siblings – and thus more interaction partners in early childhood — leads to a pronounced social function of autobiographical recall (i.e., more integrated, later and less specific memories) and can account for cultural differences in autobiographical recall. The amount of explained variance of autobiographical variables ranges from 10% (age of first memory) to an impressive 73% (specificity). These relationships should not be considered a methodological artifact (as a mere placeholder for cultural group membership), because they are substantiated by the intracultural finding that Cameroonian middleborns have less specific memories than Cameroonian only-children (see section 2, this chapter). Therefore, it may direct further attention to specific contextual and developmental differences as the origin for cultural differences in autobiographical memory. Several interpretations may be considered to explain the influence of having numerous siblings on autobiographical memory. It has been proposed that they (a) could engage in memory talk as co-constructors of their siblings’ style of reminiscence, and/or they (b) may provide a general context that fosters an interdependent self-construal and thus a social-oriented reminiscence style, or they (c) may restrict parental time resources to interact with every child in an elaborative style, thereby again fostering a social orientation of autobiographical recall. However, previous findings on other psychological variables indicate that the role of siblings may be more complicated. On the one hand, having numerous siblings leads to a lower performance in theory of mind tasks (Chasiotis et al., in press). High performance in such tasks has been associated with an independent self-construal and a self function of autobiographical memory (cf. Chasiotis, Kiessling, Hofer, & Campos, 2006; Chasiotis et al., in press). But on the other hand, the presence of older siblings has been found to foster the performance in theory of mind tasks

(Perner, Ruffman, & Leekam, 1994; Ruffman, Perner, Naito, Parkin & Clements, 1998). Accordingly, such differential effects of siblings have to be more closely investigated in future studies, because they represent an important — yet too often neglected — influence on psychological variables (see also Chasiotis et al., 2006; and Theory, section 2.3 & 2.4, and Discussion, section 2).

Furthermore, an investigation of such contextual variables may shed light on the phenomenon of “Westernization” in rapidly developing countries. Developmental factors like number of siblings and family size may play a crucial role for the accompanying changes and transitions in self-construal and related psychological concepts like the functions of autobiographical memory (cf. Kağıtçıbaşı, 1996, 2005; Keller, 2003, Keller et al., 2004). In particular in PR China, the institution of the one-child policy (cf. Lee, 1992, Wang et al., 1998) and the exceptional economic growth may result in psychological changes concerning the dimensions of relatedness and agency (cf. Kağıtçıbaşı, 2005, see also Discussion, section 2), that may ultimately result in a shift from a traditionally interdependent context to a relational-autonomous or independent context within only a few generations.

In the present study, individual motivation and sociocultural orientation were proposed as predictors of cultural differences in autobiographical recall. Yet, empirical results concerning such influences are sparse. Nevertheless, the applied techniques to investigate and subsequent eliminate potential sources of bias were identified as (a) having restricted the variance of the OMT picture-set assessing the need for Communion, and (b) having partly altered the meaning of the self-report scales assessing the independent and interdependent sociocultural orientation of an individual. The finding, that measures can be biased and should therefore be reconsidered for future studies, should be regarded as a first step in advancing cross-cultural research on autobiographical memory methodologically. Without an elimination of bias, this study presumably would have produced more significant results, but there was no possibility to distinguish between valid cultural differences and methodological artifacts.

Accordingly, future studies should be very careful in selecting picture-stimuli for the assessment of implicit motives. An alternative would be to use sentences instead of pictures. A subsequent study (Bender, Hofer, Ming, & Chasiotis, 2006) follows this line of thought to ensure a less biased set of stimuli. Furthermore, an experimental design could be applied to demonstrate priming effects of implicit motivation on autobiographical memory cross-culturally (this was as well incorporated; see Bender et al., 2006). In addition, priming with either individual-oriented or other-oriented vignettes would be close to intracultural studies on

the relationship between implicit motives and autobiographical memory and would ensure comparability (e.g., Woike et al., 1999). Moreover, experimental variations have proven especially useful in cross cultural research (for general examples, see Morris, Leung, & Sethi, 1995; Cohen, Nisbett, Bowdle, Schwarz, 1996). A further option would be to pre-select individuals featuring only specific motive constellations (cf. Woike, et al., 1999; Woike et al., 2001). However, this can be considered economically costly and time consuming – both important considerations for cross-cultural studies with several samples. It would also be desirable to make use of both a TAT-type projective measure (with a corresponding manual, e.g., Winter, 1991, see also Woike et al., 2001) and the OMT (Kuhl & Scheffer, 1999) to assess implicit motivation. While the one may be more appropriate to assess an individual's motive strength, the other may provide further insight into the different modes of motive realizations (e.g., approach and avoidance), which have proven useful in the present study as well.

It is more difficult to outline a viable route to improve the assessment of sociocultural orientation (or self-construals). Measures like the Twenty Statements Test have been used in previous studies (cf. Chasiotis et al., in press) but do not directly pertain to the dimensions of interpersonal distance and agency (Kağitçibaşı, 1996, 2005). Still, no measure has been developed to empirically assess an individual's self construal according to the definitions of Markus and Kitayama, (1991, see also Fiske et al., 1998) or Kağitçibaşı (1996, 2005). There may be two options: either to develop such a measure or to empirically address this issue by applying scales that share some common ground with key aspects of interpersonal distance and agency (e.g., Singelis et al., 1995).

Cognitive complexity (see Woike, 1997) has proved to be a useful indicator of the functions of autobiographical recall with one limitation: no cultural differences were found with respect to elaborated differentiation. This may not represent a conceptual inadequacy but may result from its cross-cultural application. Analyses revealed that the coding unit 'relative comparisons' was associated with elaborated differentiation (as expected) but also with elaborated integration (see Discussion, section 1) and has therefore been interpreted in the present study as serving two purposes: (a) to differentiate oneself from others and (b) to identify the success in fulfilling social expectations. Such an interpretation methodologically implies the presence of bias in this category. It may also be considered fruitful conceptually to investigate its differential use in cultural contexts.

The coding unit 'similarity statement' (an element of elaborated integration) may feature a further problematic aspect for future cross-cultural applications of cognitive

complexity. Statements of similarity are only coded when two people who are perceived to share a common attribute, are separated first (e.g., when they have been introduced in a prior sentence, see Woike, 1997). It seems presumable that individuals from interdependent contexts may not feel the need to first perceive of other people as separate entities before establishing a commonality between them. One of the major advantages of the manual by Woike (1997) in comparison with traditional manuals of coding cognitive complexity (Baker-Brown et al., 1991; Tetlock et al., 1984; Schroder et al., 1967) is the independence of integration and differentiation and the possibility to report separate scores in which integration does not depend on prior differentiation. However, if – as in the case of similarity statements – prior differentiation is needed before a category of integration can be scored, this would undermine this major advantage.

It could also be considered to attempt coding cognitive complexity in the participants' first language. Even though training of coders might be time consuming, it offers the opportunity to compare codes for translated narratives and non-translated narratives (i.e., in the native language of the participant). On this basis it could be investigated whether codes in translated transcripts deviate from codes in the native language and could thus reveal important implications for future studies.

As there are only few studies on the functions of autobiographical memory, and only a handful of empirical measures to assess these functions, it is necessary to investigate their overlap in order to make findings comparable. A first step could include an intracultural monotrait-multimethod approach for cognitive complexity and the self-report questionnaire TALE (Bluck et al., 2005). It is expected that in such a triangulation (Van de Vijver & Leung, 1997) convergent results with these different measures can be obtained. A finding like that would advance the assessment of the functions of autobiographical recall. In particular, because the shared method variance can be considered small: on the one hand structural indicators within an autobiographical narrative are coded according to the manual for cognitive complexity, while on the other hand participants report the use of their memories in a classic questionnaire by responding to a five-point-scale (cf. TALE, Bluck et al., 2005).

Providing an internal consistency for codes of cognitive complexity is difficult. Simple correlations within the coding units or categories (e.g., correlations between the occurrence of units of the conceptually same type as contrasts, relative comparisons and restrictions of meaning) are not an apt indicator of its internal consistency, since it is presumable (and in accordance with the rules for coding cognitive complexity) that an individual may use only one of these units to structure her/his reported memory. In contrast, the TALE questionnaire

offers the opportunity to analyze its factorial structure (cf. Bluck et al., 2005). Therefore, differences in factorial structure can be compared in multigroup confirmatory factor analyses (AMOS, Arbuckle, 2005) to investigate the cross-cultural validity of the scales, and further the understanding of the functions of autobiographical memory.

In sum, the methodological pitfalls in research on autobiographical memory have been outlined and a functional approach has been proposed to integrate results on autobiographical memory. This study further highlighted the need for a close investigation of cultural samples and particularly their contextual, developmental characteristics that shape autobiographical memory. We are what we remember (Schacter, 1996), but we may better understand what and why we remember, and therefore who we are, when we take a closer look at the cultural context in which we grew up, the themes that guide our life and our explicit goals we wish to fulfill.

SUMMARY

In this study, the relationship of autobiographical memory, implicit motivation, sociocultural orientation, and childhood variables was investigated for the first time cross-culturally. For this purpose, a German sample with an urban, educated, middle-class background was selected, reflecting a prototypical independent cultural context. Altogether 100 participants from Osnabrück and its surroundings (Lower Saxony) were assessed. A Chinese and a Cameroonian sample were selected to account for a prototypical interdependent cultural context that is characterized as rather rural, less educated and of low socioeconomic status. Sixty-eight participants from Bamenda and Kumbo (North Western Province, Cameroon) participated in this study, and 77 participants from Panyu (Guangdong Province, PR China). This study represents the first to include a Cameroonian sample in research on autobiographical memory, while previous studies focused only on comparisons between Western (typically US-American) and Asian countries.

Participants were asked to report two of their earliest childhood memories, to answer socio-demographic questions, to complete a picture-type story test (the Operant Multimotive Test) as a measure of their implicit motivation, and to complete two self-report scales to indicate their sociocultural orientation. Throughout the stages of this study (e.g., translation, data assessment, data preparation, etc.) special attention was given to considerations of methodological equivalence across cultures.

To ensure comparability across cultural contexts, construct, method, and item bias were considered in this study as potential sources of distortion. Equivalence of measures was established for the self-report scales with confirmatory factor analyses (using AMOS) and by investigating the stimulus pull of pictures in the Operant Multimotive Test and by applying a subsequent response bias analysis to these pictures.

It was expected that (1) Chinese and Cameroonian participants from predominantly rural, moderate socioeconomic contexts generally recall more oriented towards others than do participants from an urban, high socioeconomic context in Germany, and that (2) individuals from a social-oriented childhood context make more use of the social function of autobiographical recall, and finally that (3) the constellation of implicit motivation and sociocultural orientation predicts interindividual differences in autobiographical memory across cultures.

Results indicate that Cameroonian and Chinese participants generally make more use of the social function of autobiographical memory than do German participants, which is in accordance with previous studies. Furthermore, childhood contextual variables were found to

influence the style of autobiographical recall. The more siblings an individual has, the more she/he makes use of the social function of autobiographical recall. This finding is substantiated by the comparisons of only-children and middleborns in Cameroon: middleborns report less specific memories than only-children, thereby indicating a memory structure that is appropriate to serve the social function of autobiographical recall. These findings highlight the need for further studies on the relationship of contextual variables and autobiographical recall.

A general pattern of effects of implicit motivation and sociocultural orientation on interindividual differences in autobiographical memory could not be confirmed. This is accounted for by methodological constraints of the measures applied in this study. Nevertheless, the question remains how differences in autobiographical recall that are instantiated early in life are perpetuated across the lifespan. It is proposed that implicit motives and sociocultural orientation may represent the vehicles that fulfill this function.

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APPENDIX A – OPERANT MULTIMOTIVE TEST

Instruction:

In the following you will see a number of pictures. Each situation describes an everyday situation in life.

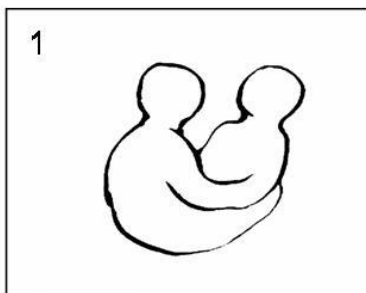
Please, have a close look at the picture and try to consider a short story or scene which describes the depicted situation. Feel free to write whatever story is suggested; there are no right or wrong stories. Give rein to your imagination; the originality of the story is no object.

Please, mark one of the depicted people who plays the leading part in your story with a cross. There is no need to write down a complete story. You are only asked to answer the three questions which are printed next to each picture and which are referring to your main person.

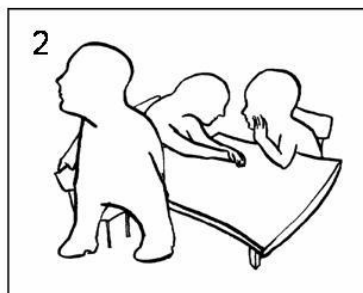
Please, start with picture 1 and work according to the order of presentation.

Pictures:

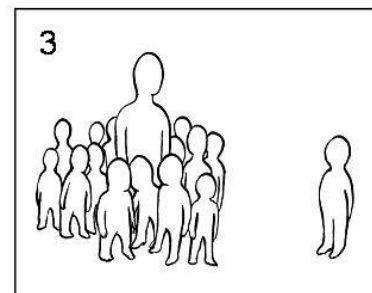
Pictures are indicated for the motive they assess (cf. Methods, section 6.5)



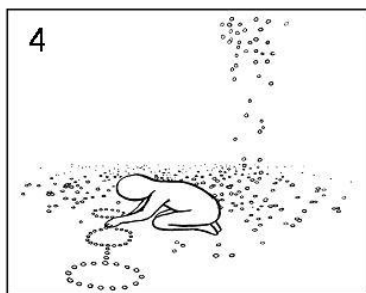
nAffiliation, nPower



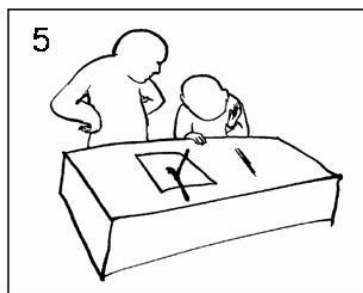
nAffiliation, nPower



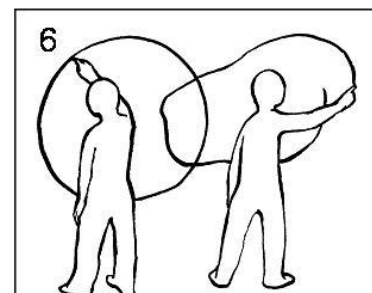
nAchievement, nPower



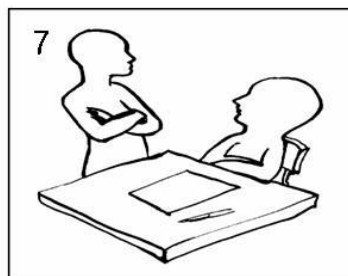
nPower



nAchievement



nPower



nAchievement, nPower



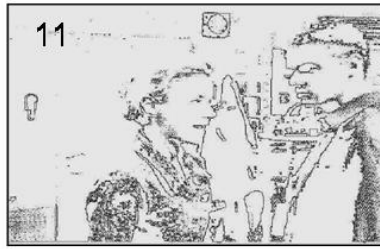
nPower



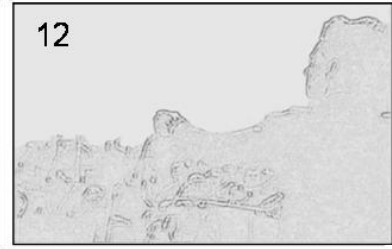
nAffiliation, nPower



nAffiliation, nPower

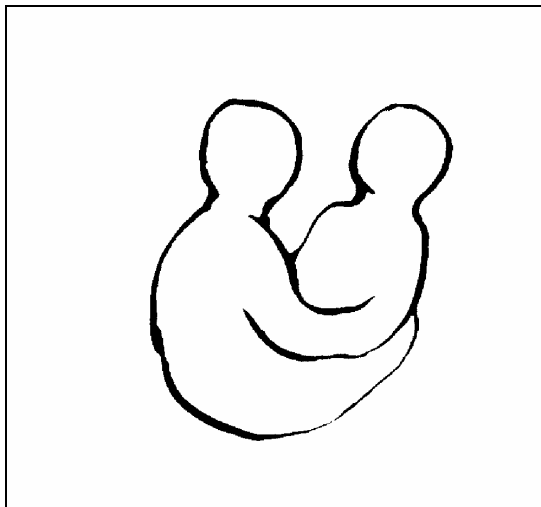


nPower



nAchievement

Response Format:



What is important for the person in this situation and what is she/he doing?

What are the person's feelings?

Why does the person feel this way?

APPENDIX B – SELF-REPORT SCALES

Independent Sociocultural Orientation (Realo et al., 2002)

Instruction:

Below you will find a list of statements that refer to feelings and behaviours in various situations. Read every sentence and indicate to what extent the statements apply to you personally.

Response Format:

1 = strongly disagree
 2 = disagree
 3 = somewhat disagree
 4 = somewhat agree
 5 = agree
 6 = strongly agree

Items [subscale]:

1. I have always wanted to somehow differ from others. [*uniqueness*]
2. When making decisions, I primarily follow my own needs. [*autonomy*]
3. I have qualities other people are not aware of. [*uniqueness*]
4. My interests and goals are most important to me. [*autonomy*]
5. I like being distinguished from the crowd. [*uniqueness*]
6. I want to decide myself about things related to my life. [*autonomy*]
7. **I am not like other people.** [*uniqueness*]
8. **I usually do as I think is right to do.** [*autonomy*]
9. All in all, I don't represent anyone except myself. [*uniqueness*]
10. **My life is determined by my own decisions and choices.** [*autonomy*]
11. It is important to me to stand out from others. [*uniqueness*]
12. **I don't let others change me.** [*autonomy*]
13. **I place personal freedom above all other values.** [*autonomy*]
14. **By my character, I think I am a distinct person.** [*uniqueness*]
15. **I usually do what I feel is best for me, no matter what others say.** [*autonomy*]

Items used for analyses (cf. Methods, section 6.1.3) are in bold type.

Interdependent Sociocultural Orientation (female version ; Schwartz et al., 2001)*Instruction:*

Here we briefly describe some people. Please read each description and think about how much each person is or is not like you. Mark the number with a cross that shows how much the person in the description is like you.

Response Format:

1 = not at all like me
 2 = not like me
 3 = a little like me
 4 = somewhat like me
 5 = like me
 6 = very much like me

Items [subscale]:

1. **It is important to her to be polite to other people all the time. She believes she should always show respect to her parents and to older people.** [*conformity*]
2. She thinks it is important to do things the way she learned from her family. She wants to follow their customs and traditions. [*tradition*]
3. **The safety of her country is very important to her. She wants her country to be safe from its enemies.** [*security*]
4. **She thinks it's important not to ask for more than what you have. She believes that people should be satisfied with what they have.** [*tradition*]
5. **It's important to her that everything is clean and in order. She really doesn't want to things to be a mess.** [*security*]
6. **She believes that people should do what they're told. She thinks people should follow rules at all times, even when no-one is watching.** [*conformity*]
7. **Her family's safety is extremely important to her. She would do anything to make sure her family is always safe.** [*security*]
8. **She doesn't like to boast or draw attention to the things she does. She wants to be modest.** [*tradition*]
9. It is important to her to fit in and do things the way other people do. She thinks she should do what others expect of her. [*conformity*]
10. Being religious is important to her. She tries hard to follow her religious beliefs. [*tradition*]

Items used for analyses (cf. Methods, section 6.1.3) are in bold type.

APPENDIX C – SOCIO-DEMOGRAPHIC QUESTIONS

1. Please indicate your date of birth. (year / month / day)
2. Please indicate your gender.
3. Please indicate your highest school education in years.
4. How many siblings do you have? Please indicate the date of birth of your siblings and whether they are your brothers or your sisters.
5. Please describe the household in which you grew up during the first 8 years of your life: who was living with you in the same place (preferably with date of birth and profession of each person)?

APPENDIX D – AUTOBIOGRAPHICAL MEMORY

Instruction First Memory:

Please take some time now to remember **your very first childhood memory** that is centred on **your own person**.

This memory could contain, for example, dreams, successes, nightmares, frustrations, or a different **event** that is mainly concerned with your own person.

- Please write this memory down as precisely as possible.
- Please make use of complete sentences not catchwords.
- It has to really be your own memory and not something that you have been told, or that you have seen on a picture.

Indication of Age(after Narrative):

How old were you at the time of this event (your age in years and months)?

Instruction Second Memory:

Please take some time now to remember **your very first childhood memory** in which interactions with **other people** were in the forefront.

This memory could contain, for example, the upbringing by your parents, family activities, playing or arguing with somebody, or a different **event** that was mainly concerned with other people.

- Please write this memory down as precisely as possible.
- Please make use of complete sentences not catchwords.
- It has to really be your own memory and not something that you have been told, or that you have seen on a picture.

Indication of Age (after Narrative):

How old were you at the time of this event (your age in years and months)?