

# Autobiographical memories of specific social events for older and younger adults: Context dependency of the Memory Characteristics Questionnaire on recollection of 1970 and 2005 Japan World Expositions<sup>1</sup>

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**Abstract:** To clarify the characteristics of autobiographical memories of personally experienced social events, we examined visitors' long-term memories of the 1970 Japan World Exposition Osaka (Expo 1970) for 47 older adults and of Expo 2005 Aichi Japan (Expo 2005) for 42 older and 40 younger adults using the Memory Characteristics Questionnaire (MCQ). The factor structure of the MCQ was compared with that of a previous study on long-term memories of the graduation ceremonies of junior high-school students, which employed the MCQ and itself was used as a comparative data set ( $N = 1183$ ). Thus, the long-term memory characteristics of four independent groups were considered for comparative analysis: Expo 1970-Older, Expo 2005-Older, Expo 2005-Younger, and Graduation-Younger. The mean scores for each of eight MCQ factors were calculated in each of the four groups. Significant differences of scores between the four independent groups were found on several factors of the MCQ. Based on these data, some issues of the context dependency of MCQ including the influence of retention interval, participant age, and the nature of experience are discussed.

**Key words:** autobiographical memory, Memory Characteristics Questionnaire, aging

Based on many empirical and theoretical studies, it is well recognized that autobiographical memory is a crucial concept in psychological research on human memory (Conway, 2005; Conway & Pleydell-Pearce, 2000). In the widely held sense, autobiographical memory refers to the recollection of experiences from an individual's past life, and takes an important role relating to self, social, and directive functions in

everyday life (Bluck, 2003). The autobiographical memory of social events, as well as personal events, has been a topic of interest in the investigation of everyday memory over the last three decades (Neisser, 1978). Neisser (1978) emphasized the crucial role of remembering one's own situations at the time of the occurrence of historical and social events in the cognitive linkage of private events or the self and the society and

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history in which they have lived. Subsequent studies have elaborated both the structures and functions of autobiographical memory on personal experiences in private or social events, including age-related changes (Alea & Bluck, 2003, 2007; Cohen, 1998; Conway, 2005; Pillemer, 2003; Williams, Conway, & Cohen, 2008). The present study is intended to add new findings to the rich outcomes of research on autobiographical memory.

Studies of episodic and autobiographical long-term memories of naturalistic, nonexperimentally contrived, everyday life events have the capacity to yield interesting insights that have application for enhancing the design of public events or occasions and our understanding of the psychological factors that shape long-term memories (Anderson, Storksdieck, & Spock, 2007). Furthermore, memory research on visitors' experiences at public events like World Expositions is worthwhile for at least two reasons. First, many studies on autobiographical memory, particularly on flashbulb memory (Brown & Kulik, 1977; Luminet & Curci, 2009), frequently take advantage of some social events or activities as cues or contexts of the participants' memories. The long-term impact of visitors' experience in leisure-time setting such as museums, science centers, zoos, aquariums, art galleries, theme parks, and also at one-time events of national and international significance like Olympic Games and World Expositions, is quite interesting in terms of the memories arising from personal experience in such settings. Several key studies have recently begun to pay attention to the nature of visitors' memories of experience in such leisure-time settings (Anderson, 2003; Anderson & Piscitelli, 2002; Anderson & Shimizu, 2007a, 2007b; Fivush, Hudson, & Nelson, 1983; Hudson & Nelson, 1986; Medved, Cupchik, & Oatley, 2004; Medved & Oatley, 2000; Stevenson, 1991).

Second, we should not underestimate the value and importance of understanding the long-term impact of visitors' experiences of events like World Expositions, not only for studying the basic processes of long-term memory in personal experiences, but also for the practical investigation of the different

dimensions or multifaceted characteristics of specific long-term memories. Previous memory research on visitors' experiences on World Exposition has shown that visitors' personal experiences are various, diverse and highly idiosyncratic (Anderson, 2003). However, such variety or diversity in the characteristics of long-term memories may not be infinite or impossible to characterize in terms of its multiple dimensions or aspects. Certainly, it is possible to compare between the memories of visitor's experiences of World Expositions and relatively simple and common events shared by many members within a group (i.e. the memories of the graduation ceremony at junior high school for undergraduate students).

Since 2001, the authors have employed the Memory Characteristics Questionnaire (MCQ), developed by Johnson, Foley, Suengas, and Raye (1988), and the other data collection methods, in a variety of independent studies in their investigations of long-term autobiographical memories of real, nonexperimentally contrived, life events. This is because the MCQ is a useful instrument for examining various qualitative characteristics of autobiographical memories such as sensory, affective, and contextual details inherent in everyday life events. The questionnaire includes 39 items and directs participants to self-assess and self-report the degree to which they currently perceived the specific attributes of the autobiographical event on a 7-point Likert scale.

In reviewing the authors' independent studies, three particular investigations that had employed the MCQ were revisited and collectively analysed to form the focus of attention in this article. In 2001 and 2002, Takahashi and Shimizu used the MCQ to investigate the memories of 1183 younger adults concerning the day of their junior high school graduation ceremony (Takahashi & Shimizu, 2007). In 2004, Anderson and Shimizu interviewed 48 older adults about their memories of visiting the 1970 Japan World Exposition at Osaka (Expo 1970) (Anderson & Shimizu, 2007a,b). As a part of data collection in this study, participants also completed the MCQ about their memories of their visits to this event. Most

recently, Anderson and Shimizu employed the MCQ in their investigation of 82 both older and younger adult memories of the Aichi 2005 World Exposition (Expo 2005). In particular, Anderson and Shimizu (2007a,b) have treated the MCQ as a useful instrument to extensively examine the autobiographical memories of the more generally or widely experienced events such as World Expositions for a variety of participants. These three independent studies together possessed interesting inherent features that permitted and led us to an investigation of the influence of three contextual variables on autobiographical memory characteristics measured by the MCQ. Specifically, the contextual variables considered: (a) the influence of retention interval (chronologically short and long); (b) participant age (older adults and younger adults); and (c) the nature of experience (visiting an Expo and graduation day) on autobiographical memory characteristics. Examination of these contextual variables provide new suggestions and contributions for utility, application, and analytical caveats of the MCQ for future research studies of autobiographical memories.

The present study and analysis is aimed at understanding the influences of the aforementioned contextual variables relating to long-term memories of specific social events or activities by comparing the autobiographical memories in four participants groups of younger and older adults experiencing different social events. Specifically, the comparison groups include: (a) older adults visiting Expo 1970 more than 30 years ago; (b) older adults visiting Expo 2005 several years ago; (c) younger adults visiting Expo 2005 several years ago; and (d) younger adults having memories of the graduation ceremonies of junior high school several years ago. In the case of (d), Takahashi and Shimizu (2007) has previously examined the factor structure of the MCQ for the memories of the graduation ceremonies of junior high school for undergraduate students, from the data of a relatively large sample, and then identified eight factors composing the MCQ: Clarity (10 items), Retrospective Recollection (9 items), Time Information (6 items),

Overall Impression (3 items), Sensory Experiences (3 items), Spatial Information (2 items), Bizarreness (3 items), and Events Before and After (2 items).

### *The examination of contextual variables with this study*

In the memory psychology literature, there exist assumptions about contextual variables such as retention interval, participant age, and the nature of experiences that affect autobiographical memories. Accordingly, in this study, we seek to clarify the differences and/or similarities that exist in each of the MCQ factors observed between groups with distinctly different retention intervals, participant age, and nature of experience with following approaches.

*Retention interval.* It is generally assumed that the longer retention intervals of specific long-term memories, the less accurate or vivid those memories become, because a number of studies have indicated that the stability of memory traces on events or activities is found to be decreased as a function of length of retention intervals (Rubin, 1982). Therefore, it is plausible to predict that the memories of events that occurred several years ago will be more vivid and detailed than the memories of experiences that occurred more than 30 years ago for the case of older participants. However, it is also well known that the retention of autobiographical memories across the lifespan is usually depicted as a particular pattern with more autobiographical memories from the age period of 10–30 years old (i.e. a “reminiscence bump”), using the method of cueing autobiographical memories with words (Rubin, Rahhal, & Poon, 1998). Accordingly, it is of interest to clarify the effect of the retention interval of autobiographical memories on the various dimension or aspects of characteristics of the memories.

In order to avoid the confounding effects of multiple variables in relation to the retention interval, the analysis is restricted to a comparison between the responses of older participants visiting the chronologically distant Expo 1970 (a) and those of older participants visiting the more recent Expo 2005 (b) (Expo 1970-Older

vs. Expo 2005-Older). Although the differences in long-term memories of Expos 1970 and 2005 may be related to other factors beyond retention interval between the memorization and recollection (e.g. the quality or nature of expositions per se, including architecture, exhibits, themes), there seems no comparable counterpart given that both World Expositions were nationally and monumentally staged events on a large scale in Japan.

*Age of participants.* Needless to say, the ages of participants at the time of the encounter with an event and of recollection of that event are both significant for the vividness and the reliability of those memories. Older participants are easily and frequently hypothesized to have poorer or more confused memories compared with younger adult participants (Craik, 2000). An examination of age as a variable influencing autobiographical memory seems highly reasonable to explore, particularly when highly differentiated as part of the research design, that is, a comparison of distinctly different aged groups. In examining the effects of age, we compare the responses of older participants (b) and younger participants (c) for the identical Expo 2005 experience (Expo 2005-Older vs. Expo 2005-Younger).

*Nature of the experiences.* Expos 1970 and 2005 were free-choice visitor experiences (unstructured, nonmandatory, with lots of diverse experiences) in an informal setting which had a combination of wonderment, national significance, and personal frustrations (Anderson & Shimizu, 2007b). In contrast, the graduation ceremony is an event of personal life significance, probably very structured in format and possibly little diversity in personal experiences. Also, it represents the culmination of three years of studies in that school. As such, the extent to which these differences in the nature of the experience would be reflected on the responses of the MCQ is worthy of comparative examination. In examining the effects of nature of the experiences, we compare the responses of younger participants visiting Expo 2005 (c) and those of

younger participants experiencing the graduation ceremony (d) (Expo 2005-Younger vs. Graduation-Younger).

## Method

### *Participants*

The four participant groups were constituted as follows.

*Group (a).* In the summer of 2004, 48 physically and psychologically healthy older Japanese adults, who had visited Expo 1970, participated in the study. The participants were recruited to voluntarily participate in the study by means of advertising posters placed in social clubs in the town of Akashi. Social clubs are centers of social activity in Japanese towns and cities where locals gather for arts and crafts, singing, and other community-based events. The social clubs were seen by the research team as ideal venues through which to recruit participants because they attract a broad cross-section of the population who would likely be willing to volunteer their time to participate in the study. The advertisement cited the objectives of the study and called for participants of a diversity of ages who visited Expo 1970 on at least one occasion. One of the older participants was excluded from the following data analyses because she refused to complete to answer the question because of fatigue. Therefore, the MCQ data of the 47 older participants (16 male and 31 female) were analyzed. Their ages at the time of the data collection ranged from 41 to 88 years ( $M = 67.4$ ,  $SD = 10.85$ ).

*Groups (b) and (c).* In the spring of 2009, a total of 82 physically and psychologically healthy Japanese adults, who had visited Expo 2005, were recruited and voluntarily participated in the study. These participants were composed of two age groups: (b) 42 older adults (20 male and 22 female) aged 60 to 82 years ( $M = 68.2$ ,  $SD = 6.86$ ), and (c) 40 university students (19 male and 21 female) aged 18 to 30 years ( $M = 22.4$ ,  $SD = 2.94$ ). Thirty participants (71.4%) of (b) 42 older participants had

experiences of visiting Expo 1970. This proportion is not so odd or inappropriate, because Expo 1970 attracted a total attendance of more than 64 million (64 218 770) visits as an official record.

**Group (d).** In the autumn of 2001 and winter of 2002, 1214 younger participants, who had experiences of the graduation ceremony at junior high school, were recruited from the following 10 universities: University of the Sacred Heart ( $N=51$ ), Kobe Gakuin University ( $N=265$ ), Kinki Welfare University ( $N=193$ ), Doshisha University ( $N=139$ ), Kyoto Koka Women's University ( $N=150$ ), Kyoto Tachibana Women's University ( $N=256$ ), Tokyo Metropolitan University ( $N=24$ ), Osaka City University ( $N=35$ ), Kyusyu University ( $N=20$ ), and Nihon University ( $N=81$ ). These universities are located in five large cities and one small town in Japan. All the younger participants were native Japanese speakers and volunteered to participate. Of all the participants, 31 were excluded from the following data analyses because they did not completely answer the questionnaire. Accordingly, the participants were 1183 undergraduate students (364 male, 811 female, and 8 unknown). Their ages ( $N=1156$ ) ranged from 18 to 35 years ( $M=19.5$ ,  $SD=1.66$ ).

### Questionnaire

We used the Japanese-translated version of the MCQ (Takahashi & Shimizu, 2007), including the 38 items (Appendix), and excluding Item 39 (i.e. "About when did this event happen?") of the original version of the MCQ (Johnson et al., 1988) because the answer was obvious to the participants. The order in which the questions was asked was identical to that used in the original questionnaire (Johnson et al., 1988).

### Procedure

The older and younger participants visiting Expos were individually asked to answer the 38 question items of the MCQ, in which they self-rated, on a 7-point Likert scale, the

strength of various attributers of their memories of their visit to Expo 1970 or 2005. The completion of the MCQ followed a short semistructured interview on their experiences of Expo 1970 or Expo 2005, producing a qualitative data set that is not dealt with in this article (see Anderson & Shimizu, 2007b for the outcomes of this aspect of the study). The time required to complete all the questions on the MCQ was ranged from approximately 5 to 10 min.

The younger participants, who were part of the study of memories of their junior high school graduation ceremony were given the MCQ and asked to self-assess their memories of their graduation ceremony in either their classroom setting or their home. No time limit was required to complete the MCQ, which typically took less than 10 min.

### Data analysis

The responses for the MCQ questions were measured on the 7-point Likert scale, where 1 corresponded to "little or none" and 7 to "a lot." All the data obtained for the question items were calculated for each of the factors comprising the MCQ. Takahashi and Shimizu (2007) have previously reported that an eight-factor structure was determined based on the present data from the undergraduate students on the memories of the graduation ceremonies of high school (Table 1). Based on the outcome of the factor analysis, a comparison of the means of scores on ratings in each factor among the four participants groups was made: Expo 1970-Older, Expo 2005-Older, Expo 2005-Younger, and Graduation-Younger. The analyses were performed using SPSS for Windows, Version 17.

## Results

A comparison of the mean scores for each MCQ factor among the four participants groups: Expo 1970-Older, Expo 2005-Older, Expo 2005-Younger, and Graduation-Younger is shown in Figure 1. One-way ANOVAs were performed for the ratings of each factor in the

**Table 1** Factor structure for the eight factors with the internal consistency of the subscales (Takahashi & Shimizu, 2007)

Factors	Number of items	Item numbers <sup>a</sup>	Cronbach's $\alpha$
Factor 1: Clarity	10	8, 1, 3, 9, 2, 33, 11, 10, 36, 4	.90
Factor 2: Retrospective recollection	9	37, 26, 25, 32, 38, 29, 30, 27, 31	.89
Factor 3: Time information	6	18, 21, 20, 17, 19, 22	.74
Factor 4: Overall impression	3	28, 23, 24	.74
Factor 5: Sensory experiences	3	5, 7, 6	.82
Factor 6: Spatial information	2	15, 16	.66
Factor 7: Bizarreness	3	12, 13, 14	.48
Factor 8: Events before and after	2	35, 34	.45

Note. <sup>a</sup>The item numbers from the original MCQ in descending order of each factor loading, as obtained by Takahashi and Shimizu (2007).

four groups, and in instances when the effects of the groups were significant, multiple comparisons of the Tukey's HSD method were performed.

The ANOVA tests indicated that the effect of the participants' group was not significant in the instance of Clarity,  $F = 0.358$ , *ns*, but was significant or marginally significant in all the other factors: Retrospective Recollection,  $F = 6.097$ ,  $p < .001$ ; Time Information,  $F = 2.531$ ,  $.05 < p < .10$ ; Overall Impression,  $F = 6.957$ ,  $p < .001$ ; Sensory Experiences,  $F = 22.469$ ,  $p < .001$ ; Spatial Information,  $F = 9.081$ ,  $p < .001$ ; Bizarreness,  $F = 69.490$ ,  $p < .001$ ; Events Before and After,  $F = 5.856$ ,  $p < .001$ ;  $df = 3/1308$  in all cases). The outcomes of the Tukey's HSD tests for ratings of groups to be compared in each factor of the MCQ in relation to the three contextual variables (retention interval, age of participants, and nature of experiences) are shown in Table 2.

**Retention interval of Expo 1970 and Expo 2005.** When we compared the ratings between the old participants visiting Expo 1970 and visiting Expo 2005 to examine the effect of retention intervals of specific memories, visiting Expo 1970 showed lower ratings than visiting Expo 2005 for Sensory Experiences only, and in all other factors there was no significant difference.

**Age of participants.** When we compared the ratings between the older and younger par-

ticipants for Expo 2005 to examine the effect of the age of the participants, the older participants showed higher ratings for Time Information, but lower ratings for Overall Impression than the younger participants, and there was no significant difference between the groups on any of the other factors.

**Nature of experiences.** When we compared the ratings of the younger participants between Expo 2005 and graduation ceremonies to examine the effect of the nature of the experience, the memories of Expo 2005 showed higher ratings for Sensory Experiences, but lower ratings for both Bizarreness and Events Before and After than memories of graduation ceremonies, and there was no significant difference between the groups on any of the other factors.

In summary, these results indicate that: (a) the longer retention intervals of specific memories on Expos leads to poorer recall of sensory experiences such as smell, taste, and touch, but has no influence on other autobiographical memory factors measured by the MCQ; (b) older participants had more detailed recall about time information, but rated their overall impression of their memories of Expo 2005 as lower than younger participants who visited the Expo 2005; and (c) younger participants' memories of Expo 2005 are accompanied by richer sensory experiences but less of a sense of the bizarre nature of the locations and setting of events, and more ambiguity and uncertainty



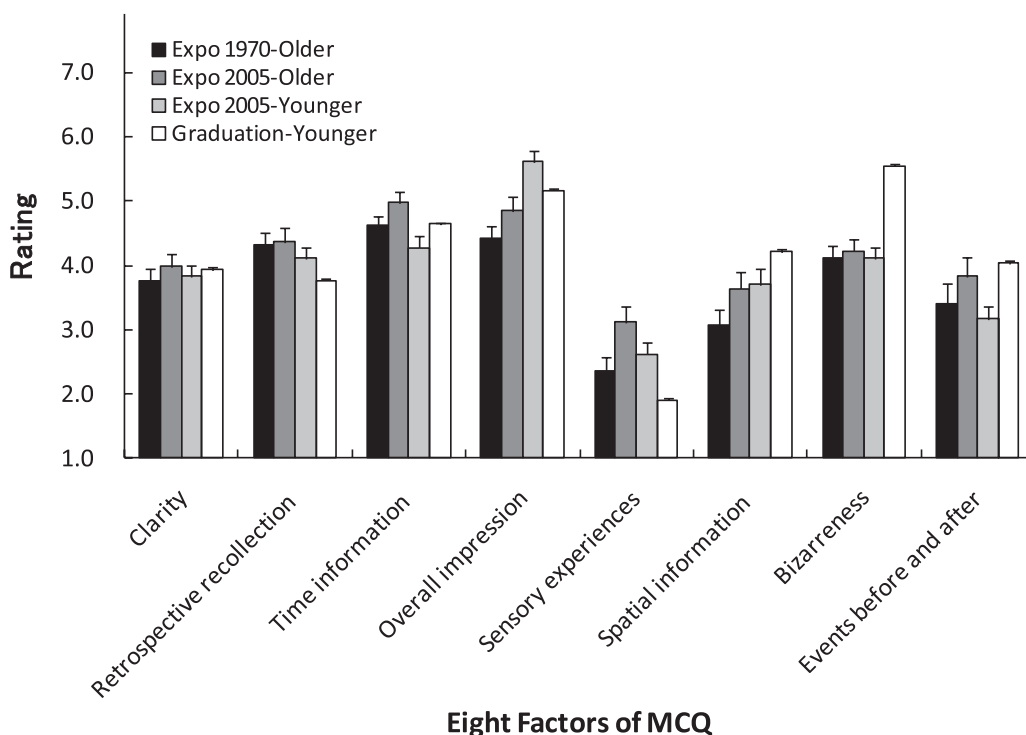
about the events occurring before and after the events, than participants' memories of their graduation ceremony.

## Discussion

This study examined the characteristics of autobiographical memories in relation to three contextual variables: (a) the retention interval of specific social events; (b) the age of the participants; and (c) the nature of the experiences. This was done using the context of Japanese visitors' recollections of Expos 1970 and 2005, in addition to the data of undergraduate students' memories for the day of their graduation ceremony from junior high school. The data from this study demonstrated that the outcomes of the MCQ do vary as a function of the context in which the autobiographical memory originated.

There are three findings of significance that emerged from this study. First, the retention

interval (5 or 34 years) of specific memories of World Expositions for older adults had no influence in any aspects of memories except Sensory Experiences. Second, the effects of age of participants for the memories of a recent World Expositions (Expo 2005) were found in the memory characteristics of Time Information and Overall Impression, but the effects emerged in opposite directions for the two aspects. Third, the nature of the experience of the younger adults' recent social events, whether the World Exposition or the graduation ceremony, may drive a more sensitive reflection around the aspects of Sensory Experiences, Bizarreness, and Events Before and After. Moreover, the intrinsic differences in experiential characteristics of the two events appear to manifest themselves distinctly on these three contextual variables, and as a result have different effects on the aspects of autobiographical memories of specific social events.



**Figure 1** Mean ratings for each factor. Error bars represent one standard error of the mean.

**Table 2** Differences of ratings for to-be-compared groups in each factor of the Memory Characteristics Questionnaire

Factor	Retention interval	Age of participants	Nature of experiences
	Expo 1970-Older (a)	Expo 2005-Older (b)	Expo 2005-Younger (c)
	vs. Expo 2005-Older (b)	vs. Expo 2005-Younger (c)	vs. Graduation-Younger (d)
Clarity	a = b ( <i>ns</i> )	b = c ( <i>ns</i> )	c = d ( <i>ns</i> )
Retrospective recollection	a = b ( <i>ns</i> )	b = c ( <i>ns</i> )	c = d ( <i>ns</i> )
Time information	a = b ( <i>ns</i> )	b > c ( $p < .05$ )	c = d ( <i>ns</i> )
Overall impression	a = b ( <i>ns</i> )	b < c ( $p < .001$ )	c = d ( <i>ns</i> )
Sensory experiences	a < b ( $p < .01$ )	b = c ( <i>ns</i> )	c > d ( $p < .001$ )
Spatial information	a = b ( <i>ns</i> )	b = c ( <i>ns</i> )	c = d ( <i>ns</i> )
Bizarreness	a = b ( <i>ns</i> )	b = c ( <i>ns</i> )	c < d ( $p < .001$ )
Events before and after	a = b ( <i>ns</i> )	b = c ( <i>ns</i> )	c < d ( $p < .01$ )

Note. Descriptions in parentheses indicate the outcomes of Tukey's HSD tests.

**Retention interval of Expos 1970 and 2005.** The differential aspect of memories for older adults between Expo 1970 and Expo 2005 was reflected only on Sensory Experiences, whereby visiting Expo 1970 showed lower ratings than visiting Expo 2005. This is despite the fact that the social impact of Expo 1970 on Japanese society could be argued to be much greater than that of Expo 2005. The more significant social impact of Expo 1970 may be attributed to the fact that it was the first International Exposition to be held in Asia and at that time had the largest attendance of any World Fair since their inception in 1851, and also staged at a time of tremendous national growth for Japan. Hence, the difference reflected in the responses to the MCQ for memories of Expos 1970 and 2005 around Sensory Experiences may be somewhat unexpected. In a similar vein, the finding that all other factors on the MCQ, except for Sensory Experiences, demonstrate no difference between Expo 1970 and 2005 also could be argued to be inconsistent with the conventional wisdom that the memories of events that occurred several years ago will be totally more vivid and detailed than the memories of experiences that occurred more than 30 years ago for older participants. Previous investigations of the retention of autobiographical memories over time and of the distribution of memories across the lifespan have consistently demon-

strated several interesting widely accepted characteristics about this contextual variable. Rubin et al. (1998), for example, integrated the results of a number of studies (Hyland & Ackerman, 1988; Jansari & Parkin, 1996; Rubin & Schulkind, 1997; Rubin, Wetzler, & Nebes, 1986) using the method of word cueing, and reported that the data fitted a retention function with a linear relationship between the log of memory frequency and the log of recency of occurrence. That is, the mean number of memories elicited declined as a function of age. Moreover, there were typically many recent memories and fewer remote ones, with a disproportionate number of memories recalled from the period when people were between 10 and 30 years of age, that is, the reminiscence bump. The reminiscence bump has been shown to emerge in recalling public events, being more prominent for positive experiences than for negative experiences (Rubin & Berntsen, 2003). A reminiscence bump of autobiographical memories has been also shown in Japanese older participants (Conway, Wang, Hanyu, & Haque, 2005; Maki & Naka, 2006). One persuasive explanation is that most of the memories gained during the reminiscence period were likely to be first-time experiences and novel and distinctive, and therefore may receive more elaborate cognitive processing and less interference from memories of previous events (Rubin et al., 1998). However, it has been also shown



that the reminiscence bump consists of relatively fewer novel, emotional, important positive or negative events, based on the data of an internet-based experiment that asked nearly 3500 participants to describe personal life events (Janssen & Murre, 2008).

The present data of memories of Expo 1970 and Expo 2005 for older adults may be explained in terms of a typical decline trend of memories of past events and the reminiscence bump. The older participants visiting Expo 1970 in the present study were mostly 30 to 49 years of age in 1970. Although these periods of ages seem somewhat later than the ordinary periods of the reminiscence bump (it is probable that the reminiscence bump for Japanese adults emerges rather later than for American adults; Benson, Jarvi, Arai, Thielbar, Frye, & McDonald, 1992; but it was not later in Maki & Naka, 2006), the memories of Expo 1970 in older adults may be kept as vivid and detailed as the memories of Expo 2005 for all aspects except Sensory Experiences, owing to the reminiscence bump. In contrast, sensory experiences may be relatively unrelated to the reminiscence bump, because sensory experiences such as smell, taste, and touch may be less likely to be encoded or elaborated verbally, and more subject to proactive or retroactive interference from the other memories. In this sense, the results showing the idiosyncrasy of sensory experiences may have some contribution to the investigation of stability in autobiographical memories using several scales from a constructive view of memory function (Rubin, Schrauf, & Greenberg, 2003, 2004).

*Age of participants.* With regard to the memories of Expo 2005, older participants had more detail about Time Information, but a worse Overall Impression than the younger participants. As mentioned earlier, older participants are often and generally assumed to have poorer or more confused memories compared with the younger participants (Craik, 2000). According to Carstensen's socio-emotional selectivity theory, in which people become increasingly selective, investing

greater resources in emotionally meaningful goals and activities as they aged, aging is assumed to be associated with a relative preference for positive over negative information in memory (Carstensen, 1991). The present data regarding differential effects of participant ages on the ratings for each factor in the MCQ seem to contradict these assumptions.

We speculate that the contradictions can be partly attributed to the difference of mental states or conditions for younger and older participants. All younger participants in the present study were university students and most were either in their last or second-last year of high school at the time of their visit. All participants suggested their current day (at the time of interview and survey by the MCQ) levels of stress and the pressures of being overly busy and somewhat exhausted university students were in addition to similar feelings of living busy lives as high school students 4 years earlier. Visits to Expo 2005 for most of these participants were small breaks or temporary releases from the somewhat stressful and busy life as a student, reflected in higher ratings on Overall Impression than for the older participants. As a general assertion, we found the younger participants were less reflective and less apt to rehearse their memories of the event compared with the older participants. We regard their life stage, and their associated condition of being busy and tired, as being one which was not so conducive to promote active recollection and rehearsal activity of the past in the way older people might. In contrast, at the time of their visit, most the of older participants lived comfortable affluent lives that enabled them to fully enjoy various opportunities of visiting, not only Expo 2005, but also other leisure time and social opportunities, and subsequently recollect these events and the shared social experience. Although this interpretation is just speculative, the present data demonstrating age differences in some aspects of memories of social events, reflected in the ratings for factors of the MCQ, seem to have some implications at least for applied studies on enter-

tainment or leisure-time settings for visitors of distinctly different ages.

*Nature of experienced social event.* In relation to the nature of experienced social events, the results in this study showed that for younger participants, as compared with the memories of the graduation ceremonies, the memories of Expo 2005 were richer in Sensory Experiences, but had less Bizarreness of locations and setting of events, and more ambiguity about the Events [occurring] Before and After. These results can be easily and reasonably explained in terms of situational differences between expos and graduation ceremonies.

As mentioned earlier, while World Expositions provide free-choice visitor experiences, in which unstructured and diverse experiences are included, in an informal setting, the graduation ceremony is an event of personal life significance, usually very structured in format and with less diversity of personal experiences. It is plausible to explain that visitors' memories of Expo 2005 have more sensory experiences such as smell, taste, and touch, in nature, than the memories of graduation ceremonies, because visitors to expos are more likely to have the opportunity to actually eat or drink something uncommon and unfamiliar somewhere at the expo, whereas foods or drinks are rarely provided to students at the graduation ceremonies from junior high school in Japan. Therefore, it is not strange to obtain the results that the memories of Expo 2005 were richer in sensory experiences than those of the graduation ceremony. Also, that the memories of Expo 2005 were less bizarre and more ambiguous about events occurring before and after than those of the graduation ceremonies can be attributed to the differences in the characteristics of the two social events. The graduation ceremonies of junior high school in Japan are usually held at halls or gymnasiums in schools where the students routinely go, on a day in late March every year, so the situations of ceremonies seem unusual, very novel, and quite different from the students' daily school lives. Moreover, the graduation ceremonies are accompanied by some events occurring before and after the cer-

emonies, eliciting some sentiments about the "farewell" experience, which are shared by many classmates. In contrast, although there are many strange or peculiar constructions and architectures on the sites of expos, most of the visitors to expos fully expect to enjoy such fantastic situations as a public event in advance of their visit. These differences may lead to the results in this study in relation to the nature of experienced social events.

On the whole, several MCQ factors vary as a function of contextual variables, including: retention interval, which affected Sensory Experiences; the age of participants, which affected Time Information and Overall Impression; and the nature of experiences, which affected Sensory Experiences, Bizarreness, and Events Before and After. As tentatively compared with the effects of these three contextual variables, the effect of the nature of experiences was most widely exerted on the factors of the MCQ. In other words, these results may suggest that the MCQ is more sensitive to the differences in the nature of experienced social events. At least, it is confirmed that the visitors' autobiographical memories of World Expositions are more various, diverse and highly idiosyncratic than the memories of relatively simple and common events like the graduation ceremony, as previous studies, using qualitative analysis methods, have indicated (Anderson, 2003; Anderson & Shimizu, 2007b).

## Conclusion

This study, using the MCQ, reveals that the three contextual variables (the retention interval of specific social events, the age of the participants, and the nature of the experiences) have different effects on the aspects of autobiographical memories of social events. In other words, the MCQ can be considered as a useful instrument by which to examine similarities and differences in the characteristics of autobiographical memories for specific events. In particular, we compared several aspects of autobiographical memory about relatively distant or recent events (Expo 1970 vs. Expo

2005), for participants with different ages (younger vs. older participants), with different natures of experience (Expo 2005 vs. graduation ceremony at junior high school). From the results of these comparisons, the variability of visitors' autobiographical memories of World Expositions is shown to be relatively higher than the variability of the memories of the graduation ceremony from junior high school for undergraduate students. Moreover, the study demonstrates that contextual variables do have a bearing or influence on autobiographical memory characteristics, discerned through the application of the MCQ. To this end, we appreciate that there exists a context dependency of the MCQ factors, which researchers must consider and appreciate when undertaking investigations of autobiographical memory.

This study revealed three types of context dependency, but there clearly exist other forms which were not examined in this study. The participants in this study were all Japanese younger or older people. This may lead to a consideration that we are not necessarily able to generalize the results to non-Japanese people, as indicated by the cultural differences in the reminiscence bump shown in the aforementioned interpretation of the resulting data on the retention interval of Expos. At the same time, this point provides us a clue about the crucial contextual variables to be examined in the further studies. That is, it is important to clarify the possibility that the cultural differences of the participants, in relation to their cultural or national identity, is one of the critical contextual variables. In conclusion, researchers should carefully consider the potential influence of contextual variables in the research designs of future studies of autobiographical memory using the MCQ or other similar questionnaire type instruments.

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## Appendix

### *The Memory Characteristics Questionnaire (MCQ) used in the present study (English version)*

- 1 My memory for this event is 1 = dim; 7 = sharp/clear
- 2 My memory for this event is 1 = black and white; 7 = entirely color
- 3 My memory for this event involves visual detail 1 = little or none; 7 = a lot
- 4 My memory for this event involves sound 1 = little or none; 7 = a lot
- 5 My memory for this event involves smell 1 = little or none; 7 = a lot
- 6 My memory for this event involves touch 1 = little or none; 7 = a lot
- 7 My memory for this event involves taste 1 = little or none; 7 = a lot
- 8 Overall vividness is 1 = vague; 7 = very vivid
- 9 My memory for the event is 1 = sketchy; 7 = very detailed
- 10 Order of events is 1 = confusing; 7 = comprehensible
- 11 Story line is 1 = simple; 7 = complex
- 12 Story line is 1 = bizarre; 7 = realistic
- 13 My memory for the location where the event takes place is 1 = vague; 7 = clear/distinct
- 14 General setting is 1 = unfamiliar; 7 = familiar
- 15 Relative spatial arrangement of objects in my memory for the event is 1 = vague; 7 = clear/distinct
- 16 Relative spatial arrangement of people in my memory for the event is 1 = vague; 7 = clear/distinct
- 17 My memory for the time when the event takes place is 1 = vague; 7 = clear/distinct
- 18 My memory for the year is 1 = vague; 7 = clear/distinct
- 19 My memory for the season is 1 = vague; 7 = clear/distinct
- 20 My memory for the day is 1 = vague; 7 = clear/distinct
- 21 My memory for the hour is 1 = vague; 7 = clear/distinct
- 22 The event seems 1 = short; 7 = long
- 23 The overall tone of the memory is 1 = negative; 7 = positive
- 24 In this event I was 1 = a spectator; 7 = a participant
- 25 At the time, the event seemed like it would have serious implications: 1 = not at all; 7 = definitely
- 26 Looking back, this event did have serious implications: 1 = not at all; 7 = definitely
- 27 I remember how I felt at the time when the event took place: 1 = not at all; 7 = definitely
- 28 Feelings at the time were 1 = negative; 7 = positive
- 29 Feelings at the time were 1 = not intense; 7 = very intense
- 30 As I am remembering now, my feelings are 1 = not intense; 7 = very intense
- 31 I remember what I thought at the time: 1 = not at all; 7 = clearly
- 32 This memory reveals or says about me: 1 = not much; 7 = a lot
- 33 Overall, I remember this event: 1 = hardly; 7 = very well
- 34 I remember events relating to this memory that took place in advance of the event 1 = not at all; 7 = yes, clearly
- 35 I remember events relating to this memory that took place after the event 1 = not at all; 7 = yes, clearly
- 36 Do you have any doubts about the accuracy of your memory for this event? 1 = a great deal of doubt; 7 = no doubt whatsoever
- 37 Since it happened, I have thought about this event: 1 = not at all; 7 = many times
- 38 Since it happened, I talked about this event: 1 = not at all; 7 = many times