Personal implications of specific long-term memories on social events: Retrospective and current memory of older Japanese adults’ experiences of visiting world expositions

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This study explored the retrospective and current memory implications of older Japanese adults’ experiences of visiting World Expositions, concerning their own personal implications and significance of the specific long-term memories of these kinds of social events. Two independent data sets of older Japanese visitors’ long-term memories of two different Japanese World Expositions (Osaka 1970 and Aichi 2005), based on responses to specific relating items in the Memory Characteristics Questionnaire (MCQ) instrument, were analyzed. The visiting experiences were encountered at two very different stages of the participants’ lives: Visiting Expo 1970 was encountered while they were young adults and Expo 2005 while they were at the life stage of retirees. The study revealed a relationship between retrospective and current memory implications, and evidence that personal memories of these specific social events with a long retention interval had greater implications than those memories with a short interval.

Keywords: retrospective memory, current memory, implications, adult memories, social events, autobiographical memories

Introduction

It is widely recognized that the construction of autobiographical memories is strongly influenced both by how one recalls the past (retrospective) and by the present (current) self (Erikson, 1980). The present analysis focuses on the intersection of personal implications of autobiographical memories of the self in both retrospective and current frames of older adults memories of specific social events. Conway and Pleydell-Pearce (2000) proposed the Self-Memory System, a conceptual framework used to explain the relationship between memory and the self. According to this framework, autobiographical reasoning, a thinking process of creating relations between different parts of individual’s past, present, and even future life, has a crucial role in the development of self-identity (and implications for the self) especially for older adults (Bluck & Habermas, 2000, 2001; Habermas, 2011; Habermas & Bluck, 2000; Pasupathi & Mansour 2006; McLean & Fournier, 2007; Singer & Bluck, 2001).

It is generally considered that the longer the retention intervals of long-term memories, the less accurate or vivid those memories become, since a number of studies indicate that the stability of memory traces decreases with longer retention intervals (Janssen, Rubin, & St. Jacques, 2011; Rubin, 1982). Therefore, it is conceivable to assume that the memories of events that occurred several years ago might hold greater personal implication for the self than the memories of experiences that occurred much earlier in life for older adults (recency effect). On the other hand, it is well known that the retention of autobiographical memories across the lifespan is usually marked by more autobiographical memories from early adulthood (i.e., reminiscence bump). This reminiscence bump is confirmed by using the method of cueing autobiographical memories with words (Rubin, Wetzler, & Nebes, 1986). Scholars have also investigated the qualitative richness of memories centering on the reminiscence bump for older adults (cf. Tung & Ritchie, 2011).

Previous studies by authors have investigated the autobiographical memories of social events of older adults using a variety of methodological techniques. For example, Anderson and Shimizu (2007a, b) demonstrated the significant contribution of rehearsal on memory vividness of autobiographical memories.
memories of Expo 70 using researcher-rated assessments of 112 independent memories. Anderson and Shimizu (2012) demonstrated that visitors’ autobiographical memories of Expo 2005, as measured by factors of the Memory Characteristics Questionnaire (MCQ), varied differentially by the interaction of age (older and younger adults) and their and community identity (Kansai and Aichi). Finally, Shimizu, Anderson, and Takahashi (2012) further investigated context dependency of MCQ factors with data collected from participant memories of Expo 1970, Expo 2005, and high school graduation, and showed that three contextual variables (retention interval of specific social events, age of the participants, and the nature of the experiences) had different effects on autobiographical memories of social events. Retention intervals for older adults proved not to be significant except for one of eight MCQ factors—Sensory Experience—where older visitors to Expo 2005 had heightened memories of physical senses compared with older visitors to Expo 1970, which can be accounted for in terms of recency effects.

Based on the aforementioned theoretical views, together with the trajectory of the authors work, we investigated the differences that may exist between retrospective and current implications of autobiographical memories for distant and close social events as perceived by older adults. Hence, we sought to clarify the effect of retention intervals of autobiographical memories, that is, the chronological distance of autobiographical memories, on the level of personal implications for the self.

Psychological studies of autobiographical memory have employed a variety of questionnaire instruments in order to study various aspects of memory phenomena (Johnson, Foley, Suengas, & Raye, 1988; Rubin, Schrauf, & Greenberg, 2003; Sutin & Robins, 2007). Johnson and colleagues have used the Memory Characteristics Questionnaire (MCQ) to examine the qualitative characteristics of autobiographical memories (Johnson et al., 1988; Suengas & Johnson, 1988). Originally developed by Johnson et al. (1988) to explore differences between real and imagined events, the questionnaire comprised items with which participants rate the extent to which they experience a particular attribute of memory in a specific autobiographical event, using 7-point scales. In particular, three items, relate to the personal implications of autobiographical memories of events in respect of the current self, retrospective self, and self-identity which are highly pertinent to this study of older adults’ long-term autobiographical memories. Hence, the question items of the MCQ are useful to investigate qualitative attributes of autobiographical memory, particularly in consideration of older adult participants.

**Research Question**

Given the issues that frame the aforementioned discussion of current and retrospective personal implications of autobiographical memories, the research question that framed this study is as follows: What self-assessed differences exist between older Japanese adults’ retrospective and current long-term autobiographical memory implications of very similar social events that occurred in Japan at two highly differentiated life stages? In particular, what differences exist between retrospective and current autobiographical memory perspectives for older Japanese adults who visited the 1970 Japan World Exposition, Osaka (Expo 1970) while they were at the life stage of young adults (19–45 years), compared with older adults who visited the Aichi 2005 World Exposition (Expo 2005) while they were at the life stage of retirees (56–78 years)?

**Method**

The analysis reported in this article is based on a comparison of two independent samples of older Japanese adults’ memories of their visit to an Exposition drawn from previously completed research studies by Anderson and Shimizu (2007a, b, 2012) and Shimizu, Anderson, and Takahashi (2012).

As such, this analysis is not derived from a research design in the traditional fashion of most psychology research studies of memory, in that we deliberately and intentionally looked at the data from two past studies with a new research question which drove the re-interrogation of the data sets. Thus, the analysis reported here is based on a re-visitation of two independent data sets, collected at different times with identical data gathering approaches and the same data collection instrument, but now are re-analysed to explore the question of current and retrospective personal implications of autobiographical memories of participants at two different life stages.

**Participants**

The first independent data set was collected in the summer of 2004, and comprised a total of forty-eight physically and psychologically healthy Japanese adults, who had visited Expo 1970. One of the older participants was excluded from the data analyses because she refused to complete the MCQ due to fatigue, and eight others visited the exposition as children or teenagers and were excluded from this analysis because of their
young life-stage (Shimizu, Anderson, & Takahashi, 2012). Hence, the data corresponding to 38 older adult participants (14 males and 24 females) were considered for this analysis. Their ages at the time of data collection ranged from 53 to 79 years ($M = 69.1, SD = 7.06$), while their age at the time of their visit to Expo 1970 ranged from 19 to 45 years ($M = 35.1, SD = 7.06$).

The participants were recruited to voluntarily participate in the study by means of advertising posters placed in the Social Clubs in the town of Akashi. Social Clubs are centres 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 to recruit participants because they attract a broad cross-section of the populace 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 who visited Expo 1970 on at least one occasion.

The second independent data set was collected in the spring of 2009, and comprised a total of 82 physically and psychologically healthy Japanese adults who had visited Expo 2005. Of these participants, 40 were university students who experienced Expo 2005 as teenagers and were excluded from this analysis because of their young life stage. Hence, the data of 42 older adult participants (20 males and 22 females) were considered for this analysis, and were also interviewed at Social Clubs. Their ages at the time of the data collection ranged from 60 to 82 years ($M = 68.2, SD = 6.86$), while their ages at the time of their visit to Expo 2005 ranged from 56 to 78 years ($M = 64.2, SD = 6.86$). The participants were recruited to voluntarily participate in the study through contacts at local community and sporting groups and through networks associated with Nagoya University and Kobe Gakuin University, and were also interviewed at Social Clubs. Thirty participants (71.4%) out of these 42 older participants had visited Expo 1970. This proportion is not odd or surprising, because Expo 1970 attracted a total attendance of over 64 million visitors as an official record. Only one participant, an elderly female adult, participated in both independent studies, and was able to clearly differentiate her memories of the two social events. In addition, there was no statistical difference in age between the two group of participants based on independent samples $t$-test; $t(78) = .574, p = .568$.

Given the periods of data collection for these two independent data sets, the analysis provided an ideal opportunity for the investigation of effect of retention interval on retrospective and current autobiographical memories of social events. Figure 1 depicts the timeline of both social events and data collection of the two independent studies. The Expo 2005 data set, collected in the year 2009, provided an opportunity to examine with older adult participants’ memories of a social event that was chronologically close (i.e., short retention interval—4 years past). Whereas, the Expo 1970 data set permitted an examination of the memories of a similar kind of social event that was chronologically distant (i.e., long retention interval—34 years past). As such, a distinct two-level grouping of retention intervals is afforded with the post-hoc examination of data from the two studies.

**Questionnaire and Procedure**

At the time at which the two independent studies were conducted, a Japanese-translated version of the MCQ (Takahashi & Shimizu, 2007), which included the original 38 items (Johnson et al., 1988) was administered to the participants.¹

¹ The order of the questions was identical to that in the original questionnaire (Johnson et al., 1988) but excluded Item 39 (i.e. “About when did this event happen?”) from the original version of the MCQ since the answer was obvious to the participants.
The participants from both independent studies were individually asked to answer the question items of the MCQ, in which they self-rated, on 7-point scales, the strength of various attributes of their memories of their visit(s) to Expo 1970 or 2005. The time required to complete all the questions on the MCQ ranged from 5 to 10 minutes.

**The 1970 and 2005 Expositions—The Memory Contexts**

Expo 1970 and Expo 2005 as experiential events for examining long-term memory were useful to investigating the long-term memories of naturally-occurring life events. A description of the events is represented in Appendix A. Visitors’ memories of Expos were generally positive, easily recalled events, and experienced by many people in Japan. In addition, these experiences represent a defined marker in time for which the retention intervals since the event were certain for all participants. Importantly, this addresses the issue of a threat to validity that might arise when examining memories of events with multiple and varying retention intervals, and is a critical factor in terms of the research design when attempting to examine retrospective memory of social events from two distinctly different time intervals. Epistemologically speaking, our view is that memories of personal experiences construct and reconstruct longitudinally, and that what was reported by participants might not be an entirely accurate version of the experience that originally produced the memories (Bruner, 1994; Freeman, 1993; Neisser & Fivush, 1994). However, the focus of this study was concerned with an investigation of the differences between retrospective and current long-term personal implications of autobiographical memories of very similar social events, and not the reliability and accuracy of participants’ memories. Hence, the qualitative characteristics of self-assessed memories were considered participants’ personal current and retrospective realities.

From today’s vantage point, it may be argued that Expo 1970 was a social event that historically holds greater significance for the nation of Japan than does Expo 2005. Unquestionably, Expo 1970 was larger in size, scale and overall attendance compared with Expo 2005. Moreover, from a national perspective, more has been written, documented, analyzed, and discussed about Expo 1970, staged more than four decades ago, compared to its more recent “cousin” Expo 2005. As such, one might readily jump to the conclusion that personal implications related to ones’ personal experiences of these events might directly equate with their national and/or historic significance. However, this kind of assumption may not be justified since personal memories of events can differ from the collective (national) and constructed memories of events (cf. Larson, 1988). Regardless, the participants in this study were explicitly asked to focus on the personal implications of specific long-term memories of these social events, and not the national implications, which have to date not been investigated. In addition, despite the actual differences in size, scale, and attendance of the two expositions, as social events of this nature, there are no other comparable memory events in Japan that can be available to investigate long-term memories recalled from two distinctly different life stages. Also, there is a possibility that Expo 2005 participants could conflate their autobiographical memories of Expo 2005 with Expo 1970. However, we regard this possibility to be remote because participants in both studies were acutely aware of the context of the autobiographical memories they were being asked about (i.e., Expo 1970 or Expo 2005, respectively). Hence, there was no conflation of personal implications about Expo 1970 in respect of the Expo 2005 research study participants that the researchers could reasonably detect.

**Data Analysis**

Data analysis of the MCQ item data comprised two stages. The first stage of analysis compared the two independent memory data sets with differing retention intervals—Expo 2005 (Close) and Expo 1970 (Distant)—by MCQ questions #25 (Retrospective memory perspective), #26 (Current memory perspective) and #32 (Identity) respectively, through independent t-tests using IBM-SPSS for Windows, Version 19.² The three questions—Q25, Q26, and Q32—were selected from the MCQ and were considered for detailed analysis because of their particular relevance to the issue of current and retrospective personal implications of autobiographical memories:

Q25. *At the time, the event seemed like it would have serious implications: 1 = not at all; 7 = definitely*

Q26. *Looking back, this event did have serious implications: 1 = not at all; 7 = definitely*

Q32. *This memory reveals or says about me: 1 = not much; 7 = a lot*

² Although this kind analysis may include Type 1 errors overestimating the differences between the two groups, it is worthwhile in terms of our primary concerns driven by the research questions of the study.
Q25 was selected for analysis because it specifically assessed the extent to which the participants’ recollections of the Expo at the time of their experiences had, in retrospect, significant implications (Retrospective). Q26 was selected for analysis because it specifically assessed the extent to which the participants’ current recollections of the Expo had significant implications (Current). Q32 was selected for analysis because it specifically assessed the extent to which the autobiographical memories were significant to the participants’ self in terms of their memory-related identity (Identity). Other items in the MCQ were not considered for the retrospective analysis because they did not relate to issues of current or retrospective personal implications. Furthermore, this approach has been commonly employed and is consistent with other studies that have selected items of the MCQ to examine the particular aspects of autobiographical memories (e.g., Destun & Kuiper, 1999; Schaefer & Phillippot, 2005). The second stage of the analysis sought to understand the relationships between the Retrospective and Current personal implications of autobiographical memories which proved to be significant in the first stage via Pearson Correlation analysis.

The present study has three reasons for the reanalysis of the data from the previous independent studies. First, the previous studies already analyzed the data of the Memory Characteristics Questionnaire (MCQ) from the participants having the experiences of Expo 1970 and Expo 2005 with a factor analysis, revealed the eight-factor structure of the MCQ, and found no clear difference between memories of Expo 1970 and Expo 2005 (Anderson & Shimizu, 2012; Shimizu, Anderson, & Takahashi, 2012) with the exception of the Sensory Experience factor. However, the factor structure of the MCQ is not always a valid means to examine the research questions of the present study. Especially, the “retrospective recollection” factor in the MCQ in the previous studies is conceptually related to the issue to be clarified in the present study, but this factor includes not only items relating to the self (Q25, Q26, Q32), but also items relating to rehearsal, and emotional intensity. Because of the qualitative variety of included items, the overall meaning of this factor becomes highly ambiguous. Therefore, in the present study, the analysis involving estimated value of selected individual items, not based on factors, has validity (cf. D’Argembeau & Van der Linden, 2008). Second, memory researchers have frequently used well-known social events, including the events inducing negative feeling or traumatic memories, to clarify the characteristics of personal memories (e.g., Lee & Brown, 2003). However, the two similar social events with close and distant retention interval, desirable not inducing unpleasant feeling for the participants, are very limited. At this point, re-analyses of the data sets of memories about Osaka 1970 and Aichi 2005 expos are highly appropriate for our research question. Finally, although the re-analysis of data in the present study has been carried out from a theoretical interest differing from those of the authors’ previous studies (i.e., current and retrospective autobiographic memory implications), this in no way affected the capacity to reinterpret the quantitative data in the light of the research question when framed this current analysis. Therefore, we believe that reanalysis of previously published data, collected under the same methodological conditions, with a new research question was a best way to achieve the purpose of this study.

Results

A comparison of retrospective, current and identity items of MCQ by retention interval

Table 1 indicates the results of the independent t-test—Retrospective (Q25), Current (Q26), and Identity (Q32) items by Close and Distant retention intervals (Expos 2005 and 1970).

From this analysis, it is evident that the effect of the retention interval was statistically significant for retrospective ($p<.05$) and current memory ($p<.05$) implications of autobiographical memories, but not for identity. Specifically, the more chronologically distant memories (based on the distant retention interval data set) were seen by participants containing higher implications both in the retrospective and current personal implications of autobiographical memories, compared with the personal implication of more recent memories (based on the close retention interval data set). For these participants, memories of these social events with a longer retention interval (recollections of an event that occurred at the life stage of young adults) are seen as having greater implications than shorter retention interval memories (recollections of an event that occurred at the life stage of retirees).

The relationship between retrospective and current memory personal implications of autobiographical memories

Table 2 shows the Pearson’s coefficients of correlation be-
The relationship between Retrospective and Current implication, by retention interval and an analysis of both data sets as a whole. The Pearson $r$-coefficients of correlation between Retrospective (Q25) and Current (Q26) implication for both retention intervals were highly positive (Close-Expo 2005, $r^{'} .568, p^{'} .01$; Distant-Expo 1970, $r^{'} .481, p^{'} .01$), and there is no difference between the two correlation coefficients ($\chi^2(1) .274, n.s.$). Furthermore, this same relationship is evidenced across both independent data sets as a whole (All Data-Total, $r^{'} .548, p^{'} .01$).

The relationship between Retrospective and Current implication is not different as a function of retention interval, that is, the chronological distance of the memory. This is evidenced by the nearly identical Pearson’s coefficients of correlation between Retrospective and Current memories for the two independent Expo data sets.

**Discussion**

The results of the study can be summarized in two points. First, when we compare the response of Retrospective (Q25), Current (Q26), and Identity (Q32), it is evident that significant differences exist by retention interval for Retrospective and Current memories, but not for Identity. As a whole pattern, memories of Expo 1970, which are inherently of a longer (distant) retention interval, were rated with higher levels of implication than those memories of Expo 2005 which are inherently of a shorter (close) retention interval. In respect of the non-significant result for identity (Q32), the mean values for close and distant retention intervals were 4.14 and 4.32 respectively. These values closely approximated the neutral point rating (4), suggesting that neither experience (exposition visited) had a great impact on formation, establishment, or modification of self-identity. This might be explained by the fact that the experience was a one or two-day event against the backdrop of 60 or more years of more significant life experiences, and so the question concerning implication for identity is not significant for participants in either Expo Case.

Second, there are statistically significant correlations between Retrospective and Current implications indicating that the higher implication associated with the event at the time of Expo (Retrospective), the higher the implication one felt about that event now (Current). Conversely, the lower the implication associated with the memories at the time of Expo (Retrospective), the lower the implication one felt about that event now (Current). This result is not different by retention interval (Expo), that is, the correlation relationship is equivalently observed.

These results indicate that the memories with a longer retention interval are rated with higher levels of implication than those memories with shorter retention intervals. It could be reasonable to explain this outcome in terms of the pattern of the reminiscence bump (Leist, Ferring, & Filipp, 2010; Rubin et al., 1996), which indicates more (and perhaps high-implication) autobiographical memories of younger adulthood. Interpretation of this result with the recency effect would predict that the memories of Expo 2005, which are

**Table 1.** Independent $t$-test Analysis—Retrospective (Q25), Current (Q26), and Identity (Q32) items by Close and Distant retention intervals (Expos 2005 and 1970).

<table>
<thead>
<tr>
<th>Retention interval</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retrospective (Q25)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Close (Expo 2005)</td>
<td>42</td>
<td>4.12</td>
<td>1.864</td>
<td>$-2.190$</td>
<td>78</td>
<td>.032*</td>
</tr>
<tr>
<td>Distant (Expo 1970)</td>
<td>38</td>
<td>5.13</td>
<td>2.268</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current (Q26)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Close (Expo 2005)</td>
<td>42</td>
<td>4.40</td>
<td>1.795</td>
<td>$-2.236$</td>
<td>78</td>
<td>.028*</td>
</tr>
<tr>
<td>Distant (Expo 1970)</td>
<td>38</td>
<td>5.37</td>
<td>2.059</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identity (Q32)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Close (Expo 2005)</td>
<td>42</td>
<td>4.14</td>
<td>1.829</td>
<td>$-0.379$</td>
<td>78</td>
<td>.705</td>
</tr>
<tr>
<td>Distant (Expo 1970)</td>
<td>38</td>
<td>4.32</td>
<td>2.243</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Significant $p^{<.05}$; Equal variances assumed.

**Table 2.** Pearson Correlation between Retrospective Implication and Current Implication as a function Retention Interval—Close/Distant (Expo).

<table>
<thead>
<tr>
<th>Retention Interval</th>
<th>Implications</th>
<th>Current (Q26)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Close (Expo 2005)</td>
<td>Retrospective (Q25)</td>
<td>.568**</td>
</tr>
<tr>
<td>Distant (Expo 1970)</td>
<td>Retrospective (Q25)</td>
<td>.481**</td>
</tr>
<tr>
<td>All Data (Total)</td>
<td>Retrospective (Q25)</td>
<td>.548**</td>
</tr>
</tbody>
</table>

**Correlation is significant at the $p^{<.01}$ (2-tailed).
Bump. However, it is probable that the reminiscence bump for somewhat later than the ordinary periods of the reminiscence mostly in their mid-thirties in 1970, and as such, their ages are the older participants visiting Expo 1970 in this study were the older adults (≈ 70 years) were in a life stage where they
were apt to retrospectively reflect on the active, and likely more vibrant and significant years of their early adult life. We acknowledge that this study can provide insights about the nature of the relationship between retention interval and implication given the comparison of only two different and highly differentiated retention intervals. However, the outcomes of these analyses does provide the opportunity to question an assumption, exclusively and intensively based on the recency effects, that the memories of events that occurred several years ago might be more remembered and probably hold greater personal implication than the memories of experiences that occurred much earlier in life for older adults (Spreng & Levine, 2006).

These outcomes under the constraint of this research design provide some tantalizing future opportunities for further investigations around the exact nature of this relationship as a function of life stage. Such future studies need not be limited to specific social events like expositions, but rather, consider retention intervals of commonly experienced movies, music, and news that participants encountered in both the recent and distant past (Rubin, Rahhal, & Poon, 1998).

Furthermore, while this study revealed a correlation relationship between retrospective and current memory personal implications of autobiographical memories, it does not ad-
dress which of the two implication types (retrospective or current) was responsible for influencing the other in the demonstrated relationship. Specifically, we cannot speculate if it is the retrospective memory implication that influences the current memory implication, or whether it is the current memory implication that influences the retrospective memory implication. However, it may be reasonable to assume that there exists bi-directional influence as suggested by Peterson et al. (2002) and Wilson and Ross (2003).

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References


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**Appendix A**

Description of the Exposition Cases

—Expo 1970 (Osaka) and Expo 2005 (Aichi)

**Expo 1970** was a Category One Universal Exposition held in the Senri Hills in the city of Osaka, Japan. The exposition ran for 182 days, from March 15 to September 13, 1970, and the official attendance over the six months of operations was 64 million visitors. The theme of Expo1970 was “Progress and Harmony for Mankind.” Expo 1970 featured numerous visions of the future. For example, the telecommunications pavilions featured “dream telephones”—wireless handheld telephones where visitors could call any part of the country.

**Expo 2005** was an international exposition held in Aichi Prefecture, Japan, east of the city of Nagoya. The exposition ran for 185 days between March 25 and September 25, 2005, and the official attendance over the six months of operations was 22 million visitors, 95.4% of whom were residents of Japan. Typical visitor experiences included visiting national and corporate pavilions where they viewed high-technology movies, visual displays, and static as well as interactive exhibitions. Technologies such as robots featured highly in much of the exposition, in addition to modern art (kinetic sculptures), nature experiences (parks and woodlands), dining and eating (restaurants), shopping (gift and souvenir shops), and shared social experiences.

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