The effects of aging on nostalgia in consumers' advertisement processing[1]

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Abstract

We investigated the triggers and functions of nostalgia in consumers' processing of television advertisements in relation to aging. Study 1 explored the contents and triggers of nostalgic experiences by requesting 451 undergraduates to write four different nostalgic descriptions (of scenes, songs, events, and commercials). An analysis of the descriptions using text mining revealed that nostalgic reactions occur in response to events that had been frequently repeated in the past and were separated from the present by a long time interval. Study 2 explored the functions of nostalgia among 737 consumers (15–65 years old) using a survey. Structural equation modeling revealed five steps in the processing of nostalgic advertisements. Aging facilitates a predisposition toward nostalgia. Highly nostalgic consumers are more sensitive to nostalgic triggers. Nostalgic triggers facilitate the retrieval of past events and memorization of advertisements evoking familiarity and positive attitudes, which, in turn, facilitate intentions to purchase. Nostalgic predispositions and sensitivity to nostalgic triggers increase with age. This tendency was higher among men than among women. We proposed a model of nostalgia based on frequent repetition in the past and a long time lag between the nostalgia-inducing event and the present.

Nostalgia refers to a preference toward objects (people, places, or things) that were more common (popular or circulated) when one was younger (in childhood, in adolescence, or even before birth) (Holbrook & Schindler, 1991). Nostalgia is a positive attitude toward the past that is related to aging and autobiographical memory. In addition, nostalgic phenomena are useful in marketing and advertising strategies that utilize market segmentation based on age. Much empirical research has focused on nostalgic consumption and advertising (Holbrook & Schindler, 1991, 1996; Horiuchi, 2007; Mizukoshi, 2007).

Three kinds of research in the literature concern nostalgia and aging. The first attempts to identify the triggers and content of nostalgia (Davis, 1979; Havlena & Holak, 1991; Hirsch, 1992; Holak & Havlena, 1992; Holbrook & Schindler, 1991). These studies reveal that the effective nostalgic triggers and salient contents are based on past events and objects experienced during one's youth (Holbrook & Schindler, 1996; Schuman & Scott, 1989). The second kind of research has attempted to identify how nostalgic triggers can influence feelings, cognitive processes, and behaviors (Holbrook & Schindler, 2003; Wildschut, Sedikides, Arndt, & Routledge, 2006). These studies show that the psychological functions of nostalgia might be affected by factors such as cognitive aging. This fact leads to the third kind of research, which attempts to identify individual differences (including age differences) among people during the cognitive processing of nostalgic triggers (Goulding, 2002; Havlena & Holak, 1991; Holbrook, 1993).

Few cognitive studies have explored the relationships among those three kinds of

research topics and aging. However, some related phenomena—for example, mere

exposure effects and preferences, autobiographical memory, source memory, déjà vu

experiences, and so on—also have potential relevance. Many triggers (e.g., popular

music) of nostalgic reactions are based on frequent exposure to an object in the distant

past (especially in childhood or in adolescence); these are related to mere exposure effects

(Zajonc, 2002) and the reminiscence bump that characterizes autobiographical memory

(Rubin, 1999). On the other hand, some triggers (e.g., scenes of an old village) evoke

strong familiarity and nostalgic feelings without source memory. This phenomenon is

related to source memory and the déjà vu phenomenon (Brown, 2004; Kusumi, 2006).

The source and original experience of *déjà vu* relate to very long-term or autobiographical

memory (Kusumi, 2006).

Based on these related phenomena, we propose a hypothesis that nostalgic

reactions are triggered by two factors, frequent repetition in the past and a long time lag

between the nostalgia-inducing event and the present. Figure 1 presents the hypothetical

model of nostalgia in consumers' processing of advertisements. According to this model,

when a person was frequently exposed to a popular song in the past, frequent repetition of

the song increases the preference for it. After a long interval, if the person listens to that

music again in a television advertisement, this person is likely to feel nostalgic and

retrieve related past experiences. Afterwards, as the person looks at the advertised

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product in a shop, he/she feels nostalgic, and a preference for the product may arise even without source memory of the music in the televised advertisement.

The effects of aging on nostalgic reactions in consumers' processing of advertisements have not been made clear in previous studies. Nostalgic predispositions seem to be enhanced by aging, and this tendency is usually explained by a preference for one's own adolescence and the willingness to return to one's younger days. However, in addition to the long interval from the original experience, which enhances nostalgic feelings, the decay of source memory as a function of aging may enhance sensitivity to nostalgic triggers, such as situations and scenes that are similar to one's own experiences. The decay of source memory, which is related to the déjà vu phenomenon (Brown, 2004; Kusumi, 2006), is assumed to further catalyze nostalgic feelings.
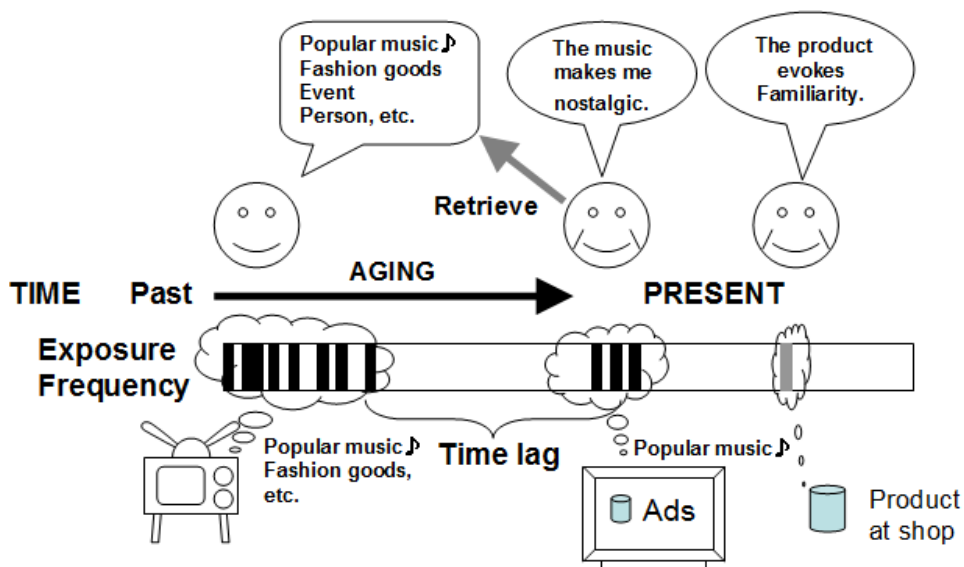

Figure 1. Hypothetical model of nostalgia in consumers' advertisement processing.

Therefore, we had three research questions in this study: (a) What are the contents and triggers of nostalgic experiences?; (b) How do nostalgic feelings affect consumers' advertisement processing and buying behaviors?; and (c) How does aging affect nostalgic triggers and influence consumer behavior?

The main purpose of this study is to investigate how nostalgic feelings affect consumers' processing of television advertisements and their buying behaviors, as mediated by aging, memory, and emotion, based on the hypothetical model presented in Figure 1. In Study 1, we explored the triggers and the content of nostalgia among 451 undergraduates. We analyzed free answers to questions concerning nostalgic triggers using a text-mining tool. In Study 2, we explored the triggers and functions of nostalgia among 737 consumers (15 to 65 years of age) using a survey method. We wanted to investigate in particular how nostalgic triggers in television advertisements affect perception, feelings, remembrance of one's past, memory of products, attitudes, and intention to purchase.

Study 1

Method

Participants. A total of 451 Japanese undergraduates (231 males, 218 females, 2 unspecified, mean age = 19.2) participated in the study.

Questionnaire. The questionnaire used was comprised of two parts. The first part

contained the following four free-answer questions: Q1: What kind of TV advertisements

do you feel nostalgic about?; Q2: What kind of music do you feel nostalgic about?; Q3:

What kind of scenes do you feel nostalgic about?; and Q4: What kind of events do you

feel nostalgic about?

In the second part of the questionnaire, participants rated on a 5-point scale (1: not

important to 5: important) what components of television advertisements were important

for triggering nostalgic feelings (e.g., person, story, music, scene, brand name, product

information). The questionnaire was completed in a classroom.

Results and discussion

The free answers given to each question in the first part of the questionnaire were

analyzed using a text-mining tool (TRUSTIA/R.2, Just System). We counted the

frequency of key words in participants' responses to the question **"**What kind of TV

advertisements do you feel nostalgic about?" Participants' responses included 0 to 5 idea

units. The total number of idea units was 501. The first category of keywords related to

nostalgic triggers involved visual components of television advertisements: film

(keyword frequency = 26), monochrome (16), scene (23), photo (8), and sepia (4). The

second category of keywords involved auditory components of television advertisements:

melody (14), music (13), and background music (BGM) (3). Other frequently mentioned

words were "past" (77) and "children" (15), which were related to the long interval

between the present and the experience in one's own autobiographical memory.

We also counted the frequency of keywords in participants' responses to the question **"**What kind of music do you feel nostalgic about?**"** Participants' responses included 0 to 6 idea units. The total number of idea units was 669. The first category of keywords related to nostalgic triggers was school songs: elementary school (39), junior high school (34), and high school (25). The second category of keywords included television cartoon music: children's songs (17), music of TV programs (16), and TV cartoons (14). Participants were frequently exposed to both kinds of music (i.e., school songs and television cartoon music) in childhood, and a long interval without exposure followed, which corresponds to the model presented in Figure 1.

The results of the next two questions concerning nostalgic scene and events seem to be more complicated. We counted the frequency of keywords and conducted a cluster analysis (Ward method) using concurrence data of the nouns in each respondent's response. In response to **"**What kind of scene do you feel nostalgic about?,**"** participants' responses were composed of 0 to 13 idea units. The total number of idea units was 576. Figure 2(a) shows the dendrogram of the cluster analysis. Three major clusters of nostalgic scenes in advertisements can be observed: (a) school (upper cluster in Figure 2(a)), (b) one's home (middle cluster), and (c) country views (lower cluster). In the school cluster, the frequently mentioned keywords for nostalgic triggers were elementary school (45), junior high school (23), high school (10), school building (17), and school

track and field (11). In the cluster for one's home, the frequently mentioned keywords

were home (47) and family home (16). In the country views cluster, the frequently

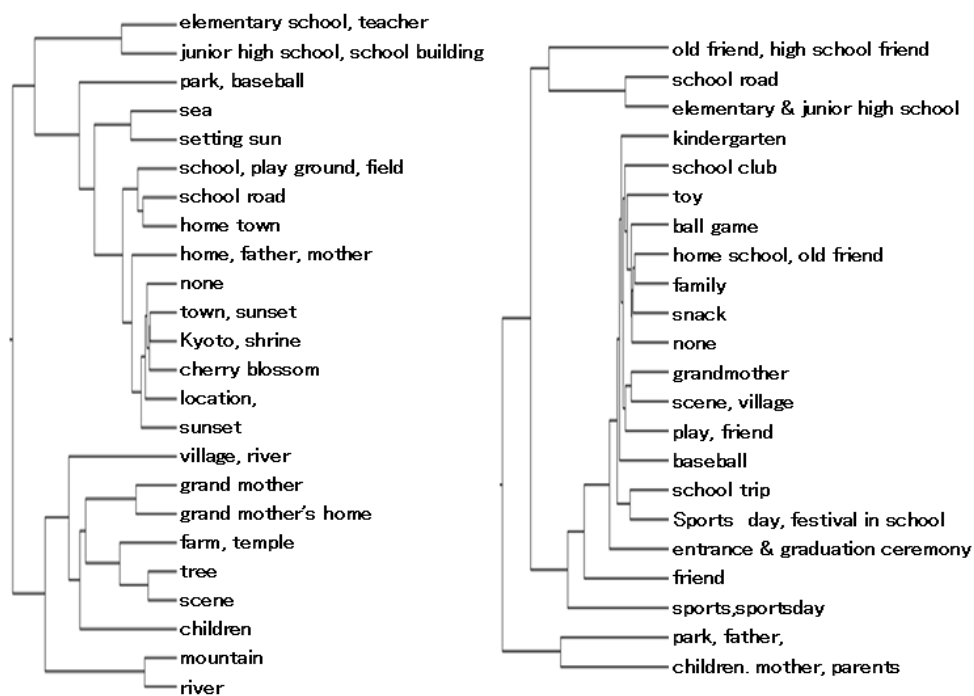mentioned key words were rice field (58), mountain (56), village (45), river (22), and

farm (16).

Figure 2. Results of cluster analysis of participants' responses.

In the responses to the question **"**What kind of events do you feel nostalgic about?", participants' responses were composed of 0 to 13 idea units. The total number of idea units was 521. Figure 2(b) shows the dendrogram of the cluster analysis. Three major clusters of nostalgic events in advertisements can be observed: (a) visiting old schools and friends (upper cluster in Figure 2(b)), (b) remembering school days (middle cluster), and (c) looking at children in a park (lower cluster). In the clusters for visiting old schools and friends and remembering school days, the frequently mentioned keywords for categories of nostalgic triggers were friend (67), elementary school (56), junior high school (26), high school (10), sports festival (22), and graduation ceremony (9). In the children in a park cluster, the frequently mentioned keywords were children (45), park (29), and swing (7).

Figure 3 shows the mean importance ratings of nostalgic triggers in television advertisements. Music and scene were important triggers for nostalgic feelings. On the other hand, product information and brand name were not effective triggers of nostalgic feelings. In addition, sex differences were minor. In sum, the free answers and the ratings data suggest that music to which one is frequently exposed in childhood and elementary school-related scenes and stories are effective triggers of nostalgic feelings for undergraduates.
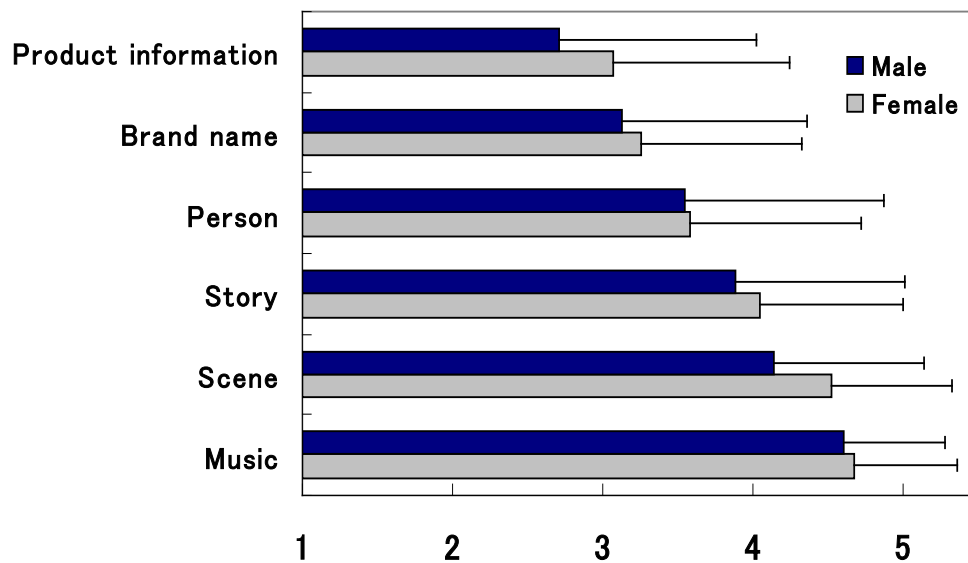
Figure 3. Mean importance ratings (+*SD*) of nostalgic triggers in advertisement

In this study, we have shown that three factors trigger nostalgia. The first factor is frequent repetition in the past. For example, high school buildings or events (Havlena & Holak, 1991), old songs, and old television programs for children were frequently mentioned in participants' free answers. The second factor is a long time lag between the nostalgia-inducing event and the present. For example, meeting with old friends (Holak & Havlena, 1992) and visiting one's high school after a long time were reported to be nostalgic experiences for many participants. These two factors correspond to our nostalgia model presented in Figure 1. The third factor is cultural triggers. For example, sepia-toned pictures (Davis, 1979) and old scenes (farm, town, etc.) are effective

nostalgia triggers. These triggers, however, are not necessarily based on participants'

autobiographical memories. Sepia or monochrome pictures, for example, are frequently

used in television and films to represent past scenes. As a result, it is reasonable to assume

that these symbols have become cultural signs of past events. We explored the effects of

aging on these three factors in Study 2.

<div align="center">Study 2</div>

The purpose of Study 2 was to use a survey methodology to investigate how

nostalgic feelings affect the advertisement processing and buying behavior of consumers

15 to 65 years of age. We also explored age and sex differences in the processing of

advertisements. In particular, we wanted to investigate how nostalgic triggers embedded

in television advertisements affect perception, feelings, remembrance of one's past,

memory of products, attitudes, and intention to purchase.

Method

    Participants The survey population was defined as all urban residents older than

15 years of age. A random location sampling of Tokyo metropolitan area residents

ranging from 15 to 65 years of age was carried out. A drop-off/pick-up data-gathering

method was used. Respondents were contacted in person, usually at their homes, and

asked to complete a questionnaire at their convenience. Arrangements were then made to

pick up the completed questionnaires at a specified time. The final number of responses

was 737 (380 males and 357 females). The response rate was 47.1%. Twelve age–gender

groups were constituted based on the survey population. The number of responses per age

group were (a) 15–19 years old: $n = 24$ males and 18 females; (b) 20–29 years old: $n = 76$,

70; (c) 30–39 years old: $n = 96$, 90; (d) 40–49 years old: $n = 71$, 66; (e) 50–59 years old n

$= 74$, 72; and (f) 60–65 years old: $n = 39$, 41. Seven occupational categories were

identified: managers and administrators (percentage of responses = 11%), clerical

workers (12%), laborers (16%), self-employed workers (7%), part-time workers (14%),

homemakers (21%), students (10%), and unemployed people (8%). The survey was

conducted as part of the advertisement omnibus survey by Dentsu Research, Inc., in July

2007.

Questionnaire. The questionnaire had three parts. Part 1 included items referring

to different nostalgic triggers. The question used was "What kind of feelings and

reactions do you have to the following triggers in TV advertisements?" Participants rated

triggers[3] in television advertisements that included sepia-toned/monochromatic photos,

oldies music, old scenes (farm, town), school scenes (classrooms, commencements), and

momentous events. Participants were asked to choose multiple answers (nostalgia,[4]

familiarity, relaxation, remembrance of past experiences, and memorization of

advertisements) to describe the kind of feelings and reactions they had in response to

these triggers. These five nostalgic triggers in television advertisements were based on

the results of the free-answer questions of Study 1.

Part 2 included three items referring to the predisposition to nostalgia. For this

part, we obtained three items from Holbrook's (1993) scale of nostalgia predisposition. The items were "Things used to be better in the good old days" (P1), "Sometimes, I wish I could return to my mother's womb" (P2), and "When I was younger, I was happier than I am today" (P3). The respondents were asked to rate to what extent they agreed with these statements on a 5-point scale ranging from 1: not at all true of myself to 5: true of myself.

Part 3 of the questionnaire included items referring to the functions of nostalgic advertisements. The question used was "To what extent do you agree that each item below describes you?" The respondents rated the items on a 5-point scale (ranging from 1: not at all true of myself to 5: true of myself) in relation to nostalgic triggers, memories, attitudes, and intentions to purchase.

The questions in relation to nostalgic triggers were "Viewing advertisements with music I was frequently exposed to in the past makes me feel nostalgic" (T1); "Viewing advertisements with old music I haven't heard in a long time makes me feel nostalgic" (T2); "Viewing advertisements with scenes from memorable events makes me feel nostalgic" (T3); "Sometimes viewing advertisements with contents that I have never experienced gives me a feeling of familiarity" (déjà vu experience) (T4); and "Viewing advertisements with nostalgic scenes or music grabs my attention" (T5).

The items in relation to memory were "Nostalgic advertisements remind me of my past experiences" (M1); "Nostalgic advertisements are embedded in my memory"

(M2); and "Company or brand names that use nostalgic advertisements are embedded in my memory" (M3).

The items in relation to attitude were "Nostalgic advertisements evoke feelings of familiarity" (A1); "Nostalgic advertisements evoke liking" (A2): "Nostalgic advertisements evoke a positive attitude towards the company or brand" (A3); and the item relating to intention to purchase was "Nostalgic advertisements make me want to purchase the product" (I).

Results and discussion

Because we wanted to assess individual differences in the processing of nostalgic advertisements, we first calculated mean rating scores according to age and sex.

Concerning Part 1, Figure 4 shows the percentage of participants who experienced nostalgic feelings in response to triggers in television advertisements. Among men, nostalgic feelings in response to triggers increased with age. On the other hand, among women, the peak of this tendency occurred the 40s. For both men and women, the most effective nostalgic trigger was oldies music to which they were frequently exposed in the past. School scenes (classrooms, commencements) were also effective triggers; however, the effectiveness declined starting during their 50s. The effectiveness of memorable events, sepia-toned or monochromatic photos, and old scenes (farm, town) increased with age, although the tendency was weaker than was that for oldies music and school scenes among women.

We also asked participants to give ratings for familiarity and feelings of relaxation, and we found a similar pattern of results for both categories.

Figure 5 shows participants' memories for nostalgic advertisements. The vertical axis indicates the percentage of participants who frequently memorize advertisements. Among men and women, memory for nostalgic advertisements decreased gradually with age. This tendency corresponds with the decreasing ability to memorize accompanying aging. Advertisements with 'oldies music' to which participants were frequently exposed in the past were the most likely to be memorized by both males and females, especially by those 50 and older.

Concerning Part 2, Figure 6 shows that, among men, nostalgic predisposition (i.e., "Things used to be better in the good old days" (P1)), increased with age and peaked in the 50s. The vertical axes in Figures 6 and 7 show the percentages of ratings of 4 (somewhat true) and 5 (true of myself). Among women, however, the peak of this tendency was at around 45%, which was considerably lower than was that for males. The percentage of agreement with "Sometimes, I wish I could return to my mother's womb" (P2) decreased with age among females. These results suggest that nostalgic predisposition increases with age and peaks in the 50s, especially among men. Such a difference, showing that males are more nostalgic, has already been observed in several studies (Davis, 1979). Davis explained this tendency by claiming that it may be due to the fact that transitional discontinuities of status and roles are sharper for men than for

women. We speculate that such discontinuities enhance subjective time lag from source experiences in childhood and in adolescence. One possible reason for the finding that the tendency toward nostalgia peaks in the 50s among men concerns a cohort effect. When compared to other generations, those currently in their 50s had a happy childhood and adolescence, constituted the main share of the workforce at the height of Japan's economic boom, and in that capacity, suffered significantly from the effects of the "bubble bursting." For that reason, it is understandable that they would most wish to return to the economic boom era and the "good old days."

Concerning Part 3, Figure 7 shows the functions of nostalgic advertisements. In Figure 7(a), the percentages of agreement with "Viewing advertisements with music I was frequently exposed to in the past makes me feel nostalgic" (T1), and with "Viewing advertisements with old music I haven't heard in a long time makes me feel nostalgic" (T2), were over 90% at the peak for men in their 40s and 50s and for women in their 30s and 40s. These high levels of agreement about nostalgic triggers with frequent repetition in the past and a subsequent long intervals of non-exposure support our hypothetical model of nostalgia. The percentages of agreement with "Viewing advertisements with scenes from memorable events makes me feel nostalgic" (T3), and with "Viewing advertisements with nostalgic scenes or music grabs my attention" (T5), increased with age, and peaked for males in their 50s and 60s, and for women from their 30s through their 50s. The percentage of agreement with the déjà vu experience elicited by

advertisements (T4) increased with age and peaked in the 40s at 60%. The increasing

tendency to experience déjà vu might be related to the decay of source monitoring ability

with aging (e.g., Brown, 2004). In Figure 7(b), the percentages of agreement with

"Nostalgic advertisements remind me of my past experiences" (A1) increased with age.

The peak was over 60% for men in their 50s and for women in their 40s. The percentages

of agreement with the statements regarding nostalgic advertisements and memory (M2,

M3), liking (A2), and positive attitude (A3) increased with age for men, whereas the

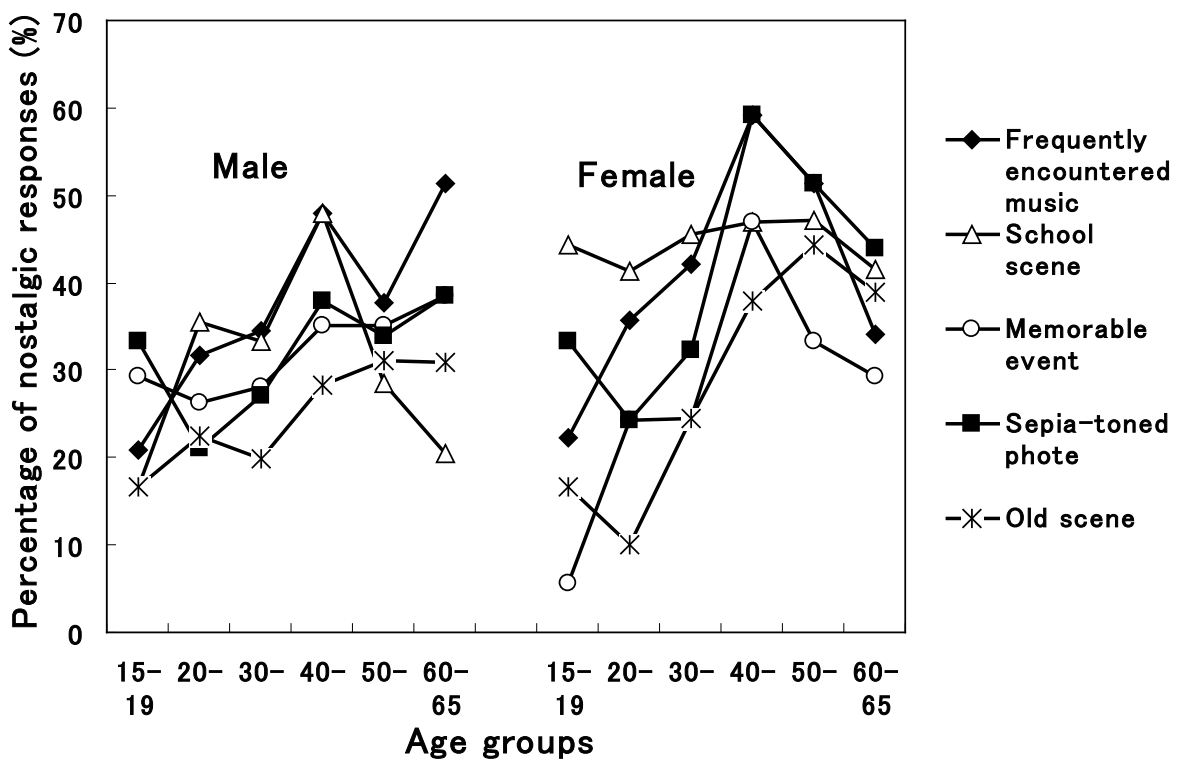tendency was not clear for women.

Figure 4. Percentage of nostalgic responses by triggers in television advertisements (Part 1).
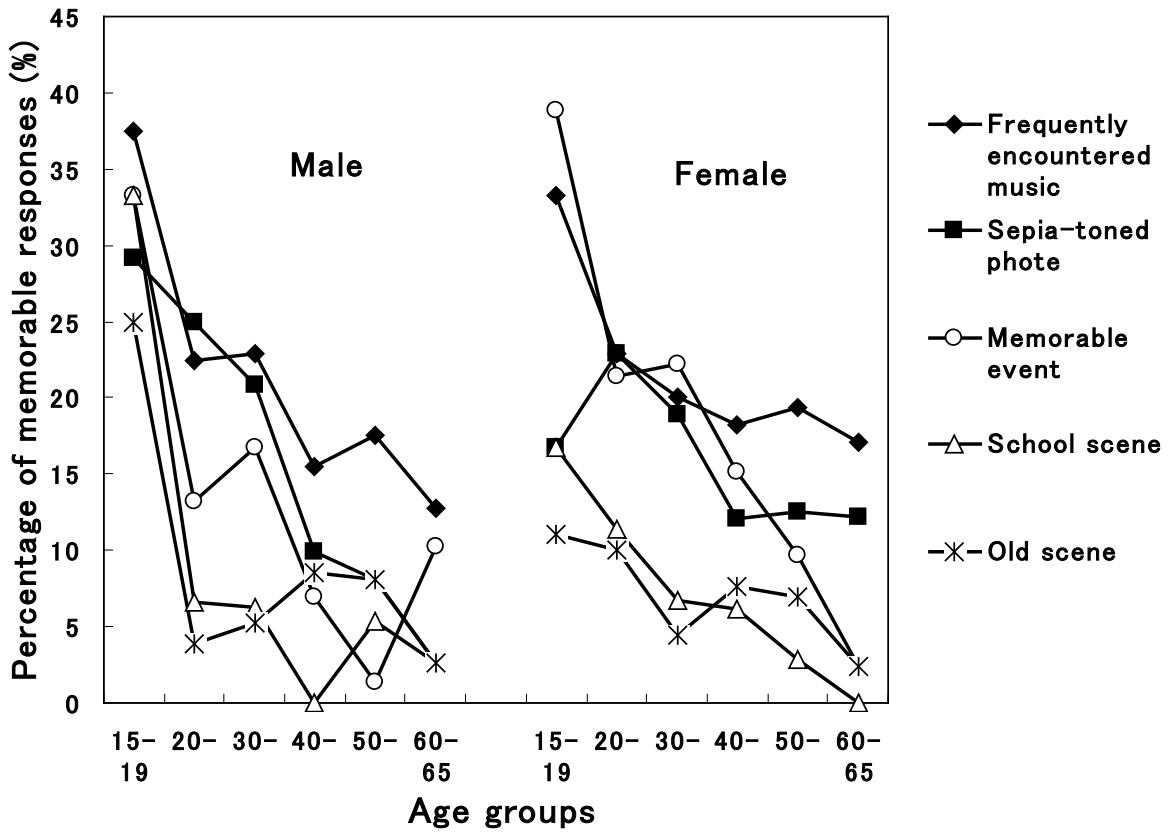
Figure 5. Percentage of memorization of television advertisements by triggers (Part 1).
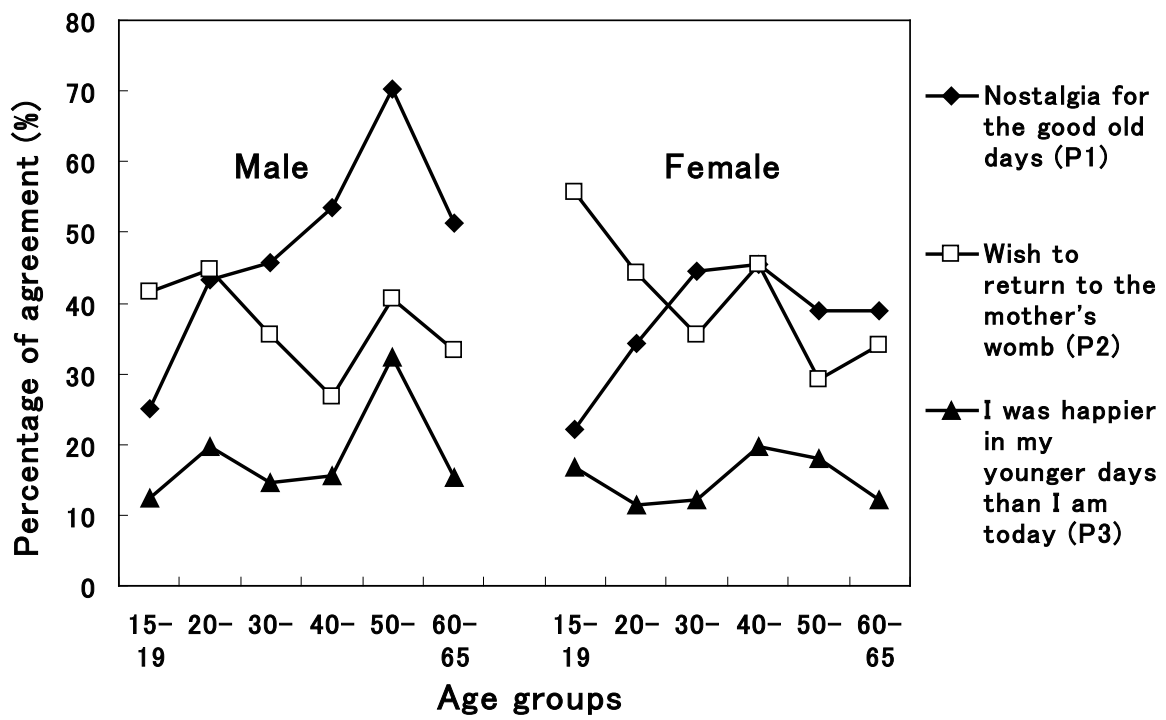
Figure 6. Percentage of agreement with items assessing nostalgic predisposition (Part 2).
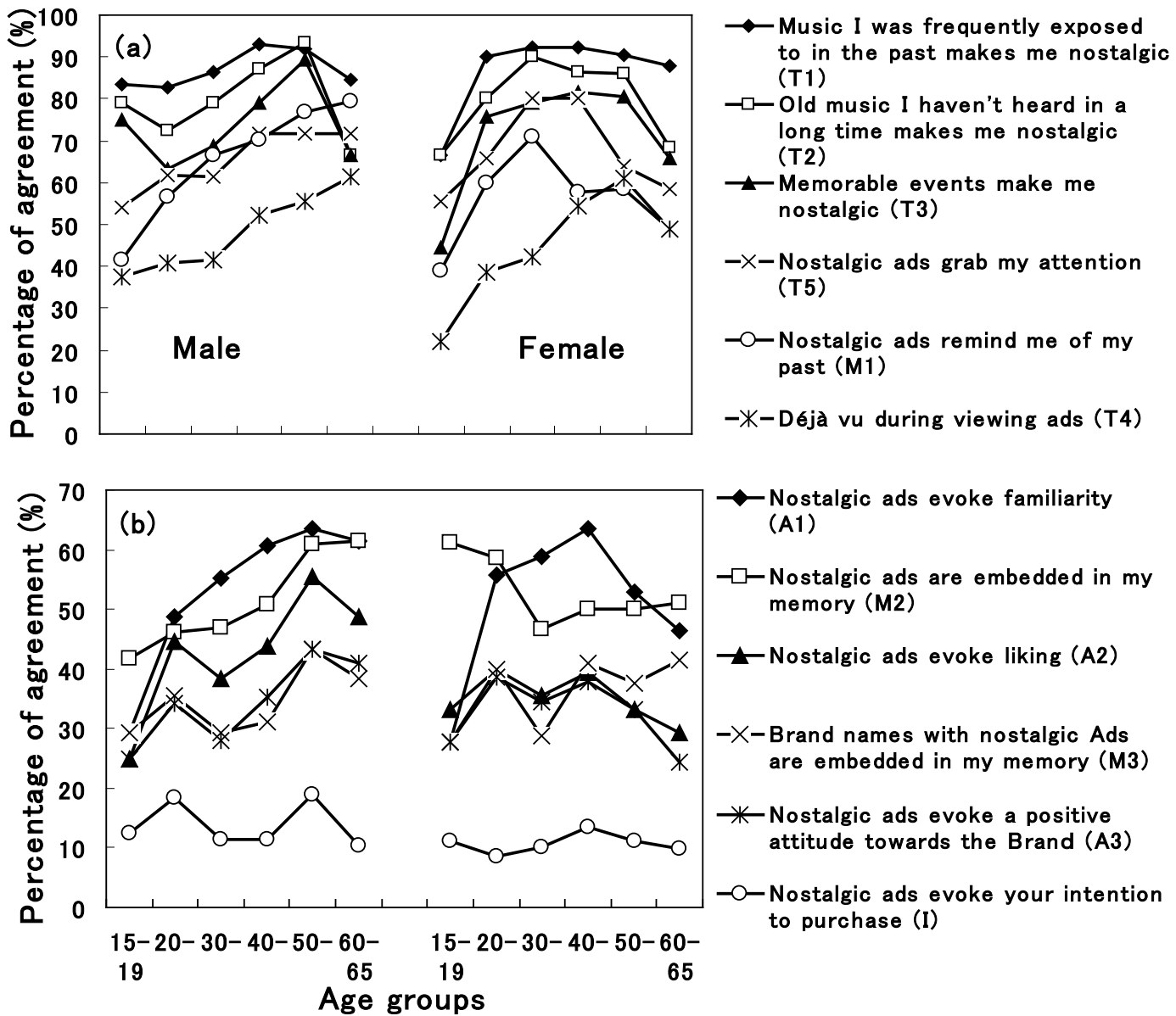
Figure 7. Percentage of agreement with functions of nostalgic advertisements (Part 3).

Table 1 presents the correlations among age and the items in Parts 2 and 3 of the questionnaire. As is apparent from the data, the correlations between age and the items in Parts 2 and 3 are not strong, ranging from -.10 to .20. On the other hand, all items used in Parts 2 and 3 were positively related. For this reason, we performed explanatory factor analysis (SPSS 17.0J) and structural equation modeling (Amos 17.0J) to explore the latent structure of nostalgic advertisement processing and the effects of aging on that structure.

Table 1. Correlations between age and items related to nostalgic advertisement processing.

Items		Age^a	P1	P2	P3	T1	T2	T3	T4	T5	M1	M2	M3	A1	A2	A3	I
Age			.19	.14	-.05	.03	.04	.10	.21	.07	.20	.13	.10	.15	.09	.12	.04
Predisposition	P1	.12		.38	.25	.23	.29	.29	.26	.30	.34	.15	.16	.29	.29	.15	.04
	P2	.10	.49		.36	.12	.16	.15	.08	.12	.20	.15	.11	.13	.13	.14	.06
	P3	-.10	.23	.51		.16	.13	.14	.06	.14	.10	.07	.03	.03	.10	.01	.03
Trigger	T1	-.02	.21	.12	.24		.70	.49	.26	.48	.43	.40	.35	.44	.42	.36	.26
	T2	-.04	.21	.07	.11	.69		.53	.30	.49	.43	.36	.38	.43	.43	.34	.21
	T3	.05	.19	.15	.12	.54	.54		.38	.49	.51	.44	.36	.45	.42	.29	.20
	T4	.20	.17	.12	-.01	.32	.41	.43		.42	.42	.41	.35	.39	.36	.35	.27
	T5	.01	.18	.02	.07	.54	.53	.47	.44		.55	.58	.52	.56	.59	.45	.37
Memory	M1	.02	.18	.13	.08	.32	.30	.48	.38	.43		.56	.49	.58	.53	.41	.31
	M2	-.03	.20	.13	.07	.33	.29	.38	.38	.52	.56		.75	.58	.57	.53	.49
	M3	.03	.18	.11	.03	.29	.25	.28	.36	.42	.40	.69		.58	.58	.56	.53
Attitude	A1	-.01	.26	.09	-.02	.35	.35	.40	.39	.48	.36	.59	.57		.75	.65	.51
	A2	-.03	.28	.15	.05	.35	.34	.38	.41	.49	.45	.60	.59	.72		.70	.49
	A3	-.03	.31	.22	.10	.33	.28	.32	.33	.37	.36	.50	.59	.59	.72		.58
Intention to purchase	I	-.02	.25	.18	.15	.26	.22	.25	.29	.33	.25	.49	.62	.45	.55	.66	
Mean (Male)		—	3.38	2.81	3.08	4.21	4.02	3.82	3.33	3.75	3.67	3.46	3.16	3.51	3.37	3.19	2.73
SD (Male)		—	1.04	0.96	1.14	0.77	0.84	0.84	1.03	0.93	0.97	1.03	1.00	0.90	0.95	0.88	0.86
Mean (Female)		—	3.20	2.65	3.09	4.29	4.13	3.96	3.35	3.87	3.57	3.47	3.17	3.50	3.22	3.18	2.72
SD (Female)		—	1.01	0.94	1.19	0.73	0.77	0.85	1.00	0.85	0.92	0.91	0.90	0.86	0.90	0.86	0.82

Note: Correlations above the diagonal are based on the male group ($n = 380$); those below the diagonal are based on the female group ($n = 357$). Correlations $> .15$ ($p < .01$) are in boldface.

[a] The variable of age is a discrete variable (e.g., 15–19 years old = 1, 20s = 2, 30s = 3, 40s = 4, 50s = 5, 60–65 = 6).

Table 2. Factor loadings for nostalgic predisposition,

triggers, memory, and attitude.

Items		F1	F2	F3	F4
Attitude	A2	**.93**	-.00	-.04	-.01
	A3	**.80**	-.07	.02	.03
	A1	**.74**	.09	.06	-.05
Trigger	T2	-.01	**.90**	-.13	.00
	T1	-.01	**.82**	-.07	.03
	T3	.05	**.62**	.16	.05
	T5	.13	**.46**	.27	-.04
	T4	.13	**.27**	.22	.00
Memory	M2	-.04	-.05	**.98**	-.00
	M3	.30	-.07	**.57**	-.03
	M1	.16	.26	**.39**	.07
Predisposition	P2	-.01	-.12	.05	**.91**
	P3	-.14	.14	-.00	**.49**
	P1	.25	.13	-.10	**.44**
F2		.60			
F3		.73	.57		
F4		.24	.24	.19	

Note. Factor loadings > .40 are in boldface.

      We conducted the explanatory factor analysis using data rated on a 5-point scale

(excluding the item regarding "intention to purchase"). Table 2 depicts the promax

rotated factor matrix (unweighted least square method). Four factors were extracted:

Nostalgic predisposition, Sensitivity to nostalgic triggers, Memory, and Positive attitude.

To assess how these factors relate to the components of advertisement processing and to

explore the effects of aging, we performed a simultaneous structural equation modeling

using ratings data and age of participants in the male and in the female groups (Table 1).

The goodness-of-fit indices of the resulting model were GFI = .873, AGFI =.824,

RMSEA = .064. The model and significant standardized path coefficients are shown in

Figure 8. The model revealed five steps of nostalgic advertisement processing as follows.

(1) Aging facilitates nostalgic predisposition. This effect was stronger among males than

among females (standardized path coefficients = .22 and .10, respectively). (2) Highly

nostalgic consumers are more sensitive to nostalgic triggers. The effect was also stronger

among males than among females (.47, .17). (3) Nostalgic triggers facilitate the retrieval

of past events and memorization of advertisements, which, in turn, (4) evoke familiarity

and a positive attitude. Furthermore, nostalgic triggers directly facilitate familiarity and a

positive attitude. These effects were strong in advertisement processing. Finally, (5)

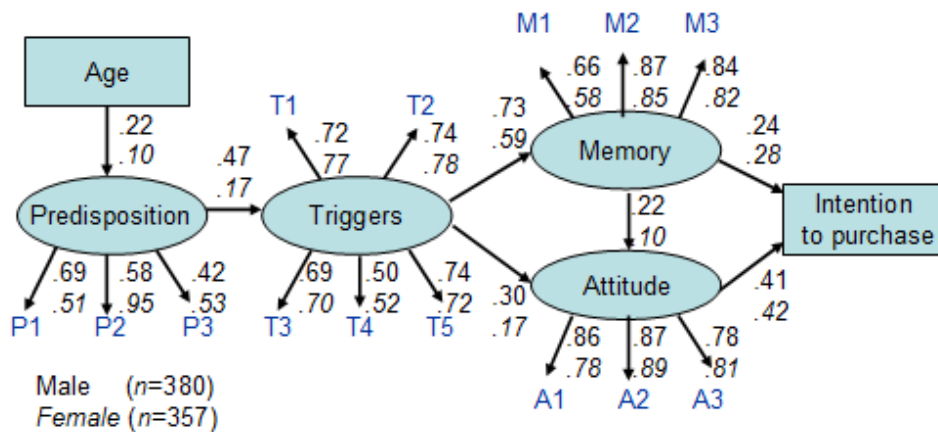memory and the attitude factor facilitate intention to purchase.

Figure 8. Five steps of nostalgic advertisement processing by simultaneous structural equation modeling. Numbers on each path show significant standardized path coefficients.

Discussion

In this study, we investigated the triggers and functions of nostalgia in consumers'
advertisement processing in relation to aging. An analysis of the participants' responses
regarding nostalgic triggers using text mining (Study 1) and a social survey (Study 2)
revealed that nostalgia occurs in response to events that were frequently repeated in the
past and that subsequently were separated by a long time lag from the present. This result
supports our hypothetical model of nostalgia in consumers' advertisement processing
(Figure 1). The model explains how autobiographical nostalgic triggers, frequent
repetition in the past, and a long time lag between the event and the present are important
for triggering nostalgia when one is watching television advertisements. Cultural

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nostalgic triggers such as sepia-toned pictures and old scenes are also important. These triggers are effective in all age groups, and the effectiveness increases with age. The sensitivity for nostalgia is affected by nostalgic predisposition. Among men, the tendency toward nostalgia increases with age, whereas among women, the peak is around 30 to 40 years of age. Structural equation modeling revealed that aging affects nostalgic advertisement via nostalgic predisposition and sensitivity for nostalgic triggers. The effective triggers are based on frequent exposure in the past and a subsequent long time lag.

The participants in Study 1 were undergraduate students and those in Study 2 were consumers aged 15–65 years. We restricted Study 1 to undergraduates because text mining is based on the frequency with which words appear in texts. Indeed, it is important to identify high frequency words. Some words that appeared most frequently in free answers to questions concerning TV advertisements and music were proper nouns (e.g., names of products, companies, artists, music, etc.), which varied according to cohort. We intended to identify words that occurred with high frequency and to eliminate cohort effects. For this reason, we focused on undergraduate students in the same cohort. Study 2 generalizes the results of Study 1, based on undergraduates, to consumers 15–65 years of age. However, investigations relying on free answers about the content of nostalgia among other cohorts and examinations of the generalizability and specificity of such content constitute our next research foci.

The present study introduced two novel models of nostalgia. The first is based on two factors, mere exposure and time lag, whereas the second is based on five steps from age to intention to purchase via nostalgic predisposition and cognitive processes. These models are useful in explaining the cognitive process underlying the relationship between nostalgia and aging, as well as in predicting consumer's tastes and advertisement processing in relation to age (Holbrook & Schindler, 1996).

We are currently performing experimental studies to determine the effects of nostalgic triggers on advertisement processing using nostalgic scenes and music (Kusumi, Matsuda, & Sugimori, 2009; Matsuda, Sugimori, & Kusumi,2008). However, further laboratory studies investigating the effect of aging on nostalgic advertisement processing are still warranted. In addition, further studies examining the relationships among nostalgia, mere exposure effects (Zajonc, 2002), the reminiscence bump in autobiographical memory (Rubin, 1999), and aging may shed more light on the cognitive functions and contents of nostalgia. Similarly, other factors such as cohort effects and collective memories (Schuman & Scott, 1989) may also be related to nostalgia and aging. Such possibilities also merit investigation.

In sum, in this study, we demonstrated the triggers and functions of nostalgia in consumers' advertisement processing in relation to aging and proposed a new model of the role of nostalgia in consumers' advertisement processing. The English in this document has been checked by at least two professional editors, both native speakers of English. For a certificate, please see:

<div align="center">References</div>

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Note.

[3] Photographs and music were not presented while the questionnaire was being answered.

[4] In this questionnaire, the definition of the word nostalgia was not provided because the equivalent word in Japanese (natsukashii) is common knowledge and is frequently used in ordinary conversations.