



Research article

Empathetic listening boosts nostalgia levels and positive emotions in autobiographical narrators

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ABSTRACT

Nostalgic memories serve to increase human resilience. Here, we hypothesized that emotional impressions on a narrator's nostalgic memory change depending on the level of empathy in the listener's response. This independent-measures study was conducted in 120 healthy Japanese undergraduates (66 women, 54 men, $M_{age} = 20.3 \pm 1.9$ years). Nostalgia was induced using a medley of Japanese pop songs from the years 2006–2010. Thirty minutes later each participant was randomly allocated to be interviewed by an experimenter who applied one of three listening conditions: empathy, non-empathy, or non-response. Output measures were participant's talking time, nostalgia ratings, and positive and negative emotion ratings. Data were analyzed by analysis of variance followed by a multiple comparisons test. Empathy group participants had a significantly longer talking time than non-empathy or non-response participants, higher nostalgia scores than non-response participants, and higher positive emotion scores than non-empathy and non-response participants, but lower negative emotion scores than non-response participants. Participants were then divided into a less nostalgia-prone and a more nostalgia-prone group using the Southampton Nostalgia Rating Scale and the data were reanalyzed for each experimental condition. The results showed that a person more prone to nostalgia felt more nostalgic and more positive toward their autobiographical memory than those who are less nostalgia-prone. The present findings have implications for human interaction in everyday life and in therapeutic settings.

1. Introduction

The concept of nostalgia, namely a state of emotional longing for one's idealized past, has changed over a period of about 300 years. First regarded as a mental disorder in immigrants and soldiers (Danek, 1988; Rosen, 1975), the phenomenon of nostalgia was later investigated from the psychiatric, psychoanalytical and, more recently, psychological points of view, and is now regarded as a psychological construct that serves to increase human resilience (Batcho, 2013). An individual is likely to feel nostalgia when exposed to a negative situation (Cavanagh et al., 2015). In such a situation, nostalgia is considered a reward for the brain (Oba et al., 2016; Speer et al., 2014). Research has uncovered the powerful influence nostalgia can have on the meaning making of life (Routledge et al., 2012), on motivation for one's future (Sedikides and Wildschut, 2016; Stephan et al., 2015), on counteracting boredom (van Tilburg et al., 2013), on recovering a sense of identity (Baldwin et al.,

2015), on managing existential anxiety (Sedikides et al., 2006) and preserving a sense of self in the face of death (Synnes, 2015).

We have been interested in investigating how nostalgic memories can be harnessed to empower individuals. From the viewpoint of memory recall, research has shown that the memory of a story is distorted depending on how the story is being told. In particular, Marsh and Tversky (2004) reported that the content of a story differs depending on whether an individual talks to a friend or to an experimenter (Marsh and Tversky, 2004). In addition, they showed that when individuals retold a story that they read before in a positive way, the memory about the story became more positive (Dudukovic et al., 2004). There is also accumulating evidence that a memory is distorted depending on how a listener listens to the story. Bavelas et al., (2000) showed that participants tell a story in more detail when a listener eagerly responds. Another study showed that subjects tell jokes more frequently when they talk to a listener who responds to them with kindness compared to a listener who shows little response (Kuhlen and Brennan, 2010). Further, it has been

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reported that when listened to attentively, a positive memory becomes more positive and a negative memory becomes less negative (Pasupathi and Oldroyd, 2015). Therefore, listener response is crucial to how a memory is relived and reevaluated during a conversation.

In this study, we compared active listening as empathetic listening and non-active listening as non-empathetic listening as a factor of listener response. Active listening or paraphrasing emotional words is a form of responding empathically to the person who is talking, which was introduced by Carl R. Rogers in Client-Centered Therapy (Rogers, 1942, 1951). In active listening, the listener repeats or paraphrases words that the speaker said by focusing on what they felt. In this way, the listener can demonstrate that he/she understands the speaker's perspective (cognitive empathy). Rogers defined cognitive empathy as the ability to feel a client's private world as if it were one's own, but without losing the "as if" quality (Rogers, 1951). This way of responding is still considered a fundamental therapeutic practice (e.g., Arnold, 2014).

With regard to nostalgic memory, however, how the listener's response affects the level of nostalgia and accompanying emotions that can be elicited from and felt by a narrator while recalling an autobiographical memory remains unknown. Here, we investigated how emotional impressions on a narrator's nostalgic memory change depending on the level of empathy in the listener's response. We evoked nostalgic memory by having participants listen to old popular songs, based on previous studies that found that nostalgic memory is triggered by old pop music (Janata et al., 2007; Juslin et al., 2008; Zentner et al., 2008). Our first hypothesis was that the narrator's memory becomes more nostalgic and more positive when the listener's attitude is empathetic than when the listener seems not to be empathetic or seems to ignore him/her (Hypothesis 1).

We were also interested in the individual differences in nostalgic feelings. Individuals have a natural tendency to be more or less nostalgic (Seehusen et al., 2013). We were therefore interested in investigating how talking about their autobiographical memory affects less nostalgia-prone individuals versus more nostalgia-prone individuals. Our second hypothesis was that a person more prone to nostalgia feels more nostalgic and more positive toward their autobiographical memory than those who are less nostalgia-prone (Hypothesis 2).

2. Method

2.1. Study design and study period

This study was designed as an independent-measures analysis with three experimental conditions. Experiments were conducted between May 2016 and July 2017.

2.2. Participant recruitment and selection criteria

We aimed at recruiting 120 participants. The study was conducted in 120 participants (66 women, 54 men, $M_{age} = 20.3$ years, $SD = 1.25$, age range: 18–23 years). Women and men were distributed among the three experimental conditions as follows. Empathy group: 22 women, 18 men ($M_{age} = 20.3$ years, $SD = 1.26$); non-empathy group: 20 women, 20 men ($M_{age} = 20.3$ years, $SD = 1.22$); non-response group: 24 women, 16 men ($M_{age} = 20.3$ years, $SD = 1.29$). Mean participant age between the three experimental groups was not significantly different. Participants were recruited from Waseda University. In particular, participants were chosen from a pool of undergraduates who saw a poster advertising the experiment on campus or who attended a class of one of the researchers. To be included in the study, participants had to be in good health with no history of mental illness and no current use of psychotropic medications. Further, the participants' native language had to be Japanese (or they had to have an equal ability of using and understanding Japanese) and they were required to have lived in Japan since birth. Participants received a small remuneration for their participation. None of the participants was

excluded, dropped out, or wanted to withdraw their data. Participant selection and experimental flow are shown in Figure 1.

We also separated the participants based on their Southampton Nostalgia Scale scores into a less nostalgia-prone group, with nostalgia scores ranging from 1 to 4 ($n = 19$ for all three conditions: empathy $M_{nostalgia\ score} = 2.53$, non-empathy $M_{nostalgia\ score} = 2.84$, and non-response $M_{nostalgia\ score} = 2.63$), and a more nostalgia-prone group, with nostalgia scores ranging from 5 to 7 ($n = 21$ for all three conditions: empathy $M_{nostalgia\ score} = 6.16$, non-empathy $M_{nostalgia\ score} = 6.05$, and non-response $M_{nostalgia\ score} = 6.11$).

We calculated sample size using g^* power (Erdfeiler et al., 2009) under the condition where effect size is 0.3, α is 0.05, and power ($1 - \beta$) is 0.8, and determined that the total sample size was 111 (18.5 for each responding condition) and that for the nostalgic prone group was 90 (15.0 for each proneness group). That is, these numbers of participants for each condition and each proneness group should suffice to ensure validity.

2.3. Study settings

All experiments were conducted on Waseda University. One-to-one, face-to-face experiments were conducted in an experimental room. One male experimenter, aged 50 years, conducted all interviews. The experimenter was trained in strictly applying the interview styles and listener responses characteristic for each of the three experimental conditions. Participants were not familiar with the room or the experimenter. Experiments were conducted in a way that participants were neither aware of the content and significance of the study, nor of the existence of the three experimental conditions until after the study was completed. After the end of the study, the experimenter gave the participants a debriefing session, which included explanations about the study purpose, its significance, and the nature of the experimental conditions. At that point, participants were also informed which experimental condition they had been assigned to and asked whether they had any questions.

2.4. Procedure

To induce nostalgia/autobiographical memory, each participant was asked to listen to a medley of Japanese pop (J-pop) songs which appeared in 2006–2010. We assumed that participants must have heard the songs when they were between seven and 15 years old. Participants listened to the song medley for 5 min and immediately after they were instructed to think in detail about what came up in their minds while listening to the songs. The instruction was as follows, "Now you are going to listen to several songs popular 7–15 years ago, when you were in elementary or junior high school. While you are listening to these songs, a memory from those days might come to your mind. When you recall the memory, I want you to make an effort to think about its details. The songs will be played for 5 min. However, once the memory comes to your mind, you don't have to listen to the song anymore. Focus on recalling the memory more vividly and profoundly. I will ask about the details afterwards." After the songs had been played for 5 min, the experimenter asked the participants to talk about what had come to their mind in as much detail as possible.

2.4.1. Experimental conditions

For the interview, participants were randomly allocated to one of the following three experimental conditions: (a) empathy group: The experimenter responded to participants' emotional statements using their emotional words, i.e., participant's statement: "I felt upset."; experimenter response: "It's actually upsetting."; participant's statement: "I was glad."; experimenter response: "That's great."; participant's statement: "It was funny."; experimenter response: "That's funny." (b) non-empathy group: The experimenter responded to participants' emotional statements just saying: "Huh." or "Well..." (c) non-response group: The experimenter pretended to type what a participant said and did not to

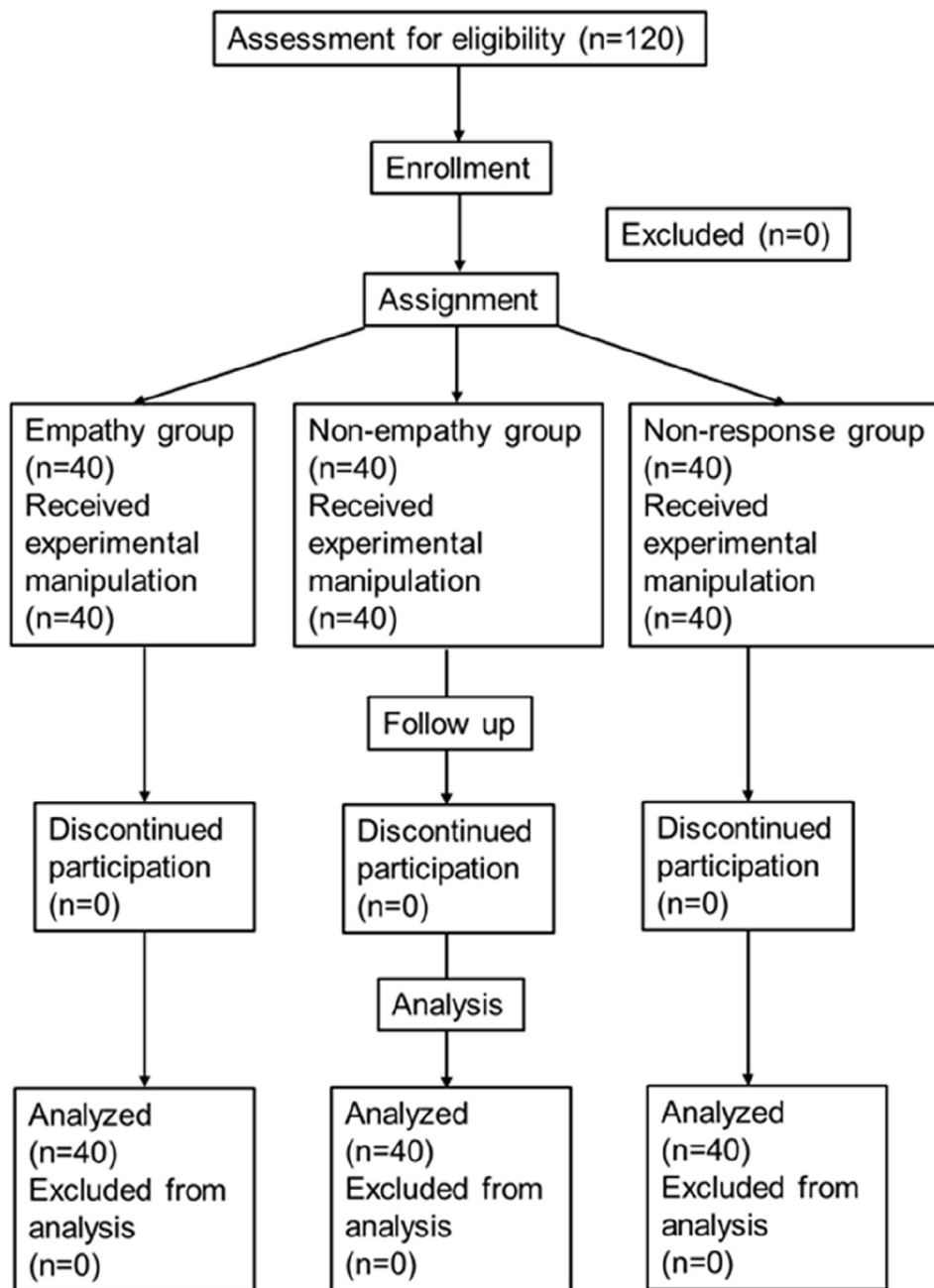


Figure 1. Flow of participants through each stage of experiment.

respond at all. The time participants spent on talking about their memory was termed “output time”.

2.4.2. Nostalgia and emotion ratings

After the end of the interview, participants were asked to perform another cognitive task (the Uchida-Kraepelin psycho-diagnostic test) for 30 min as a distractor task and were then asked to evaluate the emotional state elicited by their autobiographical memory. For this evaluation, Likert rating scales were used. One rating scale was used to evaluate the level of nostalgia felt. To rate the level of nostalgia, the participants were asked: “How much do you feel nostalgia toward what you talked about earlier?” Then, on a 7-point Likert scale (Ostrom and Gannon, 1996), which included the ratings: not at all nostalgic = 1, slightly nostalgic = 2, somewhat nostalgic = 3, moderately nostalgic = 4, fairly nostalgic = 5, very nostalgic = 6, and completely nostalgic = 7, participants were instructed to circle the point on the scale which most reflected their

actual level of nostalgia at that particular moment. Similarly, separate rating scales were used to evaluate each of the following four emotions: joy, anger, sadness, and amusement. Participants were asked: “How much do you feel joy, anger, sadness, and amusement?” Then, on a 5-point Likert scale (Brace, 2008) for each emotion, which included the ratings: not at all = 1, not really = 2, undecided = 3, somewhat = 4, and very much = 5, participants were instructed to circle the point on the scale which most reflected their actual emotional state at that particular moment.

At the end of the experiment, we administered questionnaires to measure nostalgic tendency in order to classify participants as more nostalgia-prone or less nostalgia-prone based on the levels of nostalgia they felt in their daily life, for which purpose we used the new version of the Southampton Nostalgia Scale, a 7-item scale first used by (Barrett et al., 2010) and based on a previous version (Routledge et al., 2008), which we downloaded from the University of Southampton internet site

(University of Southampton). Questions from the Japanese version of the Ten Item Personality Inventory (TIPI; Gosling et al., 2003), a 10-item measure of the Big Five (or Five-Factor Model) dimensions of personality, were also embedded in the questionnaires as distractors. Participants were asked to score the 17 items of this scale on a 7-point rating scale.

2.5. Data collection

Interviews were audio-recorded by the experimenter. Output time was defined as the time of the participant's output only. Therefore, output time was calculated by subtracting the experimenter's response time from the total interview time by listening to the audio recording after the experiment.

2.6. Data analysis

Differences between groups were analyzed by analysis of variance (ANOVA), followed by the REGWQ (Ryan-Einot-Gabriel-Welsch and Quot) post-hoc test as a multiple comparison test. p -values of less than 0.05 were considered statistically significant.

2.7. Ethical considerations

In accordance with the Ethical Guidelines for Medical and Health Research Involving Human Subjects of Waseda University, ethical approval was not required for this study. Written, informed consent was obtained from all participants, which stated that participation in the experiment was at their own free will, all data regarding the behavioral experiments and results were kept separate from their personal information, their privacy was protected, and they could cease participation and withdraw their data at any time during or after the research. After the experiment, participants were debriefed, asked whether they had any questions, handed a copy of the consent form and given a final opportunity to withdraw their data.

3. Results

3.1. Time for memory output

One-factor (responding conditions: empathy, non-empathy, and non-response) ANOVA was conducted, showing a significant main effect of the responding condition, $F(2, 117) = 83.78$, $MSE = 4.48$, $\eta^2 = .59$, $p < .001$. REGWQ (Ryan-Einot-Gabriel-Welsch and Quot) post-hoc showed that participants in the empathy condition took a significantly longer time than those in the non-empathy ($p < .001$) or non-response ($p < .001$) condition to talk about what had come up in their mind (Figure 2). We did not observe a significant difference in output times between the non-empathy and the non-response groups (Figure 2).

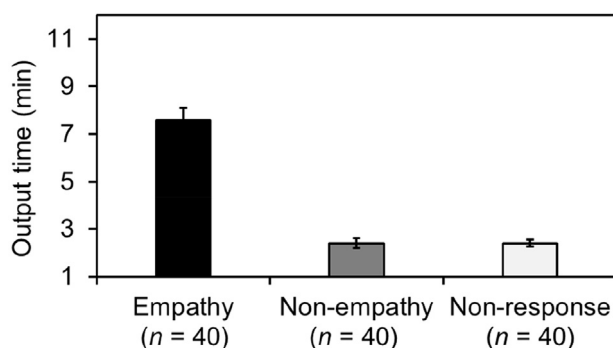


Figure 2. Mean output time (\pm SE) for an autobiographical memory.

3.2. Nostalgia evaluation of participants' autobiographical memory

One-factor (responding conditions: empathy, non-empathy, and non-response) ANOVA found a significant main effect in the experimental conditions, $F(2, 117) = 23.20$, $MSE = 1.60$, $\eta^2 = .28$, $p < .001$. REGWQ post-hoc showed that participants in the empathy condition felt significantly more nostalgia than participants in the non-empathy ($p < .001$) or non-response ($p < .001$) condition, and participants in the non-empathy condition felt significantly more nostalgia than those in the non-response condition ($p = .002$) (Figure 3).

3.3. Emotional evaluation of participants' autobiographical memory

For the emotional evaluation, we defined the mean scores of the combined amusement and joy scores as positive emotion scores and the mean scores of the combined anger and sadness scores as negative emotion scores. Two (emotion scores: positive and negative, within-participants) \times three (responding conditions: empathy, non-empathy, and non-response, between-participants) ANOVA was conducted. The main effect of the emotion scores was significant, and participants in all three experimental conditions scored higher on positive emotions than on negative emotions, $F(1, 117) = 416.20$, $MSE = .50$, $\eta^2 = .59$, $p < .001$ (Figure 4). There was a significant interaction between the emotion scores and the responding conditions, $F(1, 117) = 4.58$, $MSE = .50$, $\eta^2 = .12$, $p = .012$, and a simple main effect of the positive emotion scores, $F(2, 117) = 6.91$, $MSE = 0.426$, $\eta^2 = .11$, $p = .002$. That is, with regard to positive emotions, REGWQ post-hoc showed that participants in the empathy group scored significantly higher compared to participants in the non-empathy ($p = .005$) or the non-response group ($p = .002$). No difference was observed between the positive emotion scores of the non-empathy and the non-response groups (Figure 4). With regard to negative feelings, there was a significant simple main effect in the three groups, $F(2, 117) = 6.827$, $MSE = 0.69$, $\eta^2 = .11$, $p = .002$. REGWQ post-hoc showed that participants in the empathy group had a significantly lower score than in the non-response group ($p < .001$) (Figure 4).

3.4. Tendency toward nostalgia and nostalgia evaluation of participants' autobiographical memory

Two (nostalgia proneness: less nostalgia-prone, more nostalgia-prone) \times three (responding conditions: empathy, non-empathy, and non-response, between-participants) ANOVA was conducted. The main effect of nostalgia proneness was significant, $F(1, 114) = 11.35$, $MSE = 1.44$, $\eta^2 = .09$, $p = .001$: participants in the more nostalgia-prone group felt more nostalgia than those in the less nostalgia-prone group. The main effect of responding condition was also significant, $F(2, 114) = 26.31$, $MSE = 1.44$, $\eta^2 = .32$, $p < .001$. REGWQ post-hoc showed that participants in the empathy group scored significantly higher than those in the non-empathy group ($p < .001$), and non-empathy participants scored significantly higher than those in the non-response group ($p < .001$).

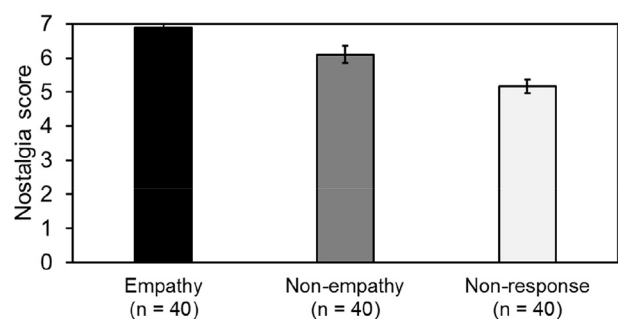


Figure 3. Mean nostalgia scores (\pm SE) of participants' autobiographical memory.

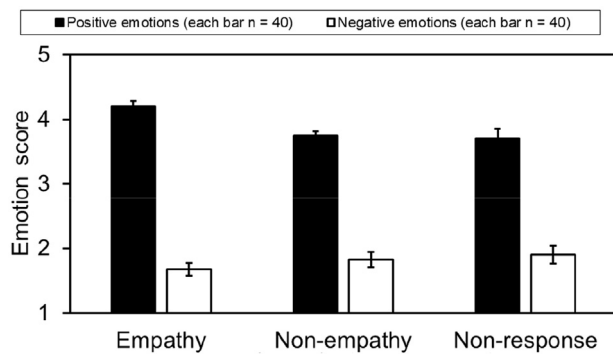


Figure 4. Mean emotion scores (\pm SE) of participants' autobiographical memory.

There was no significant interaction between nostalgia proneness and responding condition, $F(2, 114) = 2.19$, $MSE = 1.44$, $\eta^2 = .04$, $p = .116$ (Figure 5).

3.5. Emotional evaluation of nostalgic autobiographical memory in less nostalgia-prone versus more nostalgia-prone participants

Two (nostalgia proneness: less nostalgia-prone, more nostalgia-prone, between-participants) \times three (responding conditions: empathy, non-empathy, and non-response, between-participants) \times two (emotion scores: positive and negative, within-participants) ANOVA was conducted. The main effect of nostalgia proneness was significant, $F(1, 114) = 5.87$, $MSE = 2.73$, $\eta^2 = .01$, $p = .017$: participants in the more nostalgia-prone group felt both positive and negative feelings more than those in the less nostalgia-prone group. The main effect of responding condition was not significant, $F(2, 114) = .928$, $MSE = .43$, $\eta^2 = .00$, $p = .398$, while the main effect of the emotion score was significant, $F(1, 114) = 500.36$, $MSE = 213.82$, $\eta^2 = .64$, $p = .000$. REGWQ post-hoc showed that participants in the empathy group scored significantly higher than in either the non-empathy group ($p = .000$) or the non-response group ($p = .000$), and participants in the non-empathy group scored significantly higher than in the non-response group ($p = .000$). There was no significant interaction of nostalgia proneness, responding condition, and emotion score, $F(2, 114) = 1.89$, $MSE = .42$, $\eta^2 = .01$, $p = .156$, nor of nostalgia proneness and responding condition, $F(2, 114) = .44$, $MSE = .46$, $\eta^2 = .00$, $p = .64$, nor of nostalgia proneness and emotion score, $F(1, 114) = .13$, $MSE = .43$, $\eta^2 = .00$, $p = .719$ (Figure 5), while there was a significant interaction between nostalgia proneness and responding condition, $F(2, 114) = 17.32$, $MSE = .43$, $\eta^2 = .04$, $p = .000$ (Figure 5). Under the interaction between nostalgia proneness and responding

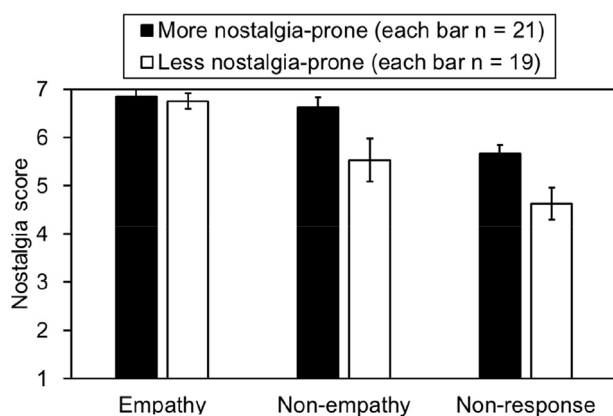


Figure 5. Mean nostalgia scores (\pm SE) of participants' autobiographical memory.

condition, there was a simple main effect of responding condition on both positive emotions, $F(2, 228) = 6.37$, $MSE = .45$, $\eta^2 = .12$, $p = .002$ and negative emotions $F(2, 228) = 11.18$, $MSE = .45$, $\eta^2 = .21$, $p < .001$. However, REGWQ post-hoc showed that participants in the empathy group scored significantly higher than in either the non-empathy group ($p = .004$) or the non-response group ($p = .001$) under positive emotions, while participants in the non-response group scored significantly higher than either those in the non-empathy group ($p = .026$) or the empathy group ($p = .000$), and participants in the non-empathy group scored significantly higher than those in the empathy group ($p = .013$) under negative emotions (see Figure 6).

3.6. Differences between male and female participants

To investigate if the effects on output time and nostalgia scores were affected by the participant's gender, we conducted a 3×2 (Listener condition [empathy, non-empathy, non-response] \times Sex [male, female]) ANOVA; however, no significant differences between sexes were observed [output time: $F(1, 114) = .272$, $MSE = 4.57$, $\eta^2 = .00$, $p = .603$, nostalgia scores: $F(1, 114) = .725$, $MSE = 1.64$, $\eta^2 = .00$, $p = .725$]. We also conducted a $3 \times 2 \times 2$ (Listener condition [empathy, non-empathy, non-response] \times Sex [male, female] \times Emotions [positive, negative]) ANOVA to test if there was a difference in the positive/negative emotion scores between male and female participants; again, however, no significant differences between sexes were observed: $F(1, 114) = 2.069$, $MSE = .61$, $\eta^2 = .01$, $p = .153$.

4. Discussion

The effects of listeners' response on the nature, extent, and accuracy of autobiographical storytelling have been discussed previously from various viewpoints, such as the listener's level of attention or distraction (Pasupathi and Oldroyd, 2015) or the listener's type of response, i.e., generic versus specific, during a conversation (Bavelas et al., 2000). To our knowledge, the present study is the first to report the effects of a listener's empathy level on the emotionality of autobiographical storytelling. Results showed that the level of nostalgia and emotions elicited in an autobiographical narrator can be affected, even manipulated, by the level of empathy a listener shows while responding during the conversation.

Our principle finding shows that when an unfamiliar conversation partner strictly used empathetic listening, participants were encouraged to talk freely and in more detail, which lengthened their autobiographical memory output time. In our experiment, the output time was more than three times longer in the empathy group than in the non-empathy or non-response group. This was accompanied by a significant increase in nostalgia levels and positive emotions in the autobiographical narrators in the empathy group compared to the non-empathy group or the non-response group. The results supported Hypothesis 1 (the narrator's memory becomes more nostalgic and more positive when the listener's attitude is empathetic than when the listener seems not to be empathetic or to be ignoring him/her). Consistent with our results, although in a slightly different context, it was recently shown that in healthy participants who were asked to talk about their experience with a recent social conflict, empathic paraphrasing by the experimenter increased positive valence ratings and decreased negative valence ratings compared to a control condition in which the experimenter silently took notes (Seehausen et al., 2012). In another study, which investigated the neurobiological circuitry of feeling understood and not understood, it was shown that experimentally induced felt understanding and not understanding activated different neural regions and different components of the system, which in turn led to subsequent feelings of connection or disconnection in healthy undergraduate students (Morelli et al., 2014).

Our secondary finding is that nostalgia levels and positive emotions are higher for more nostalgia-prone people than less nostalgia-prone people, and negative emotion is higher in less nostalgia-prone people

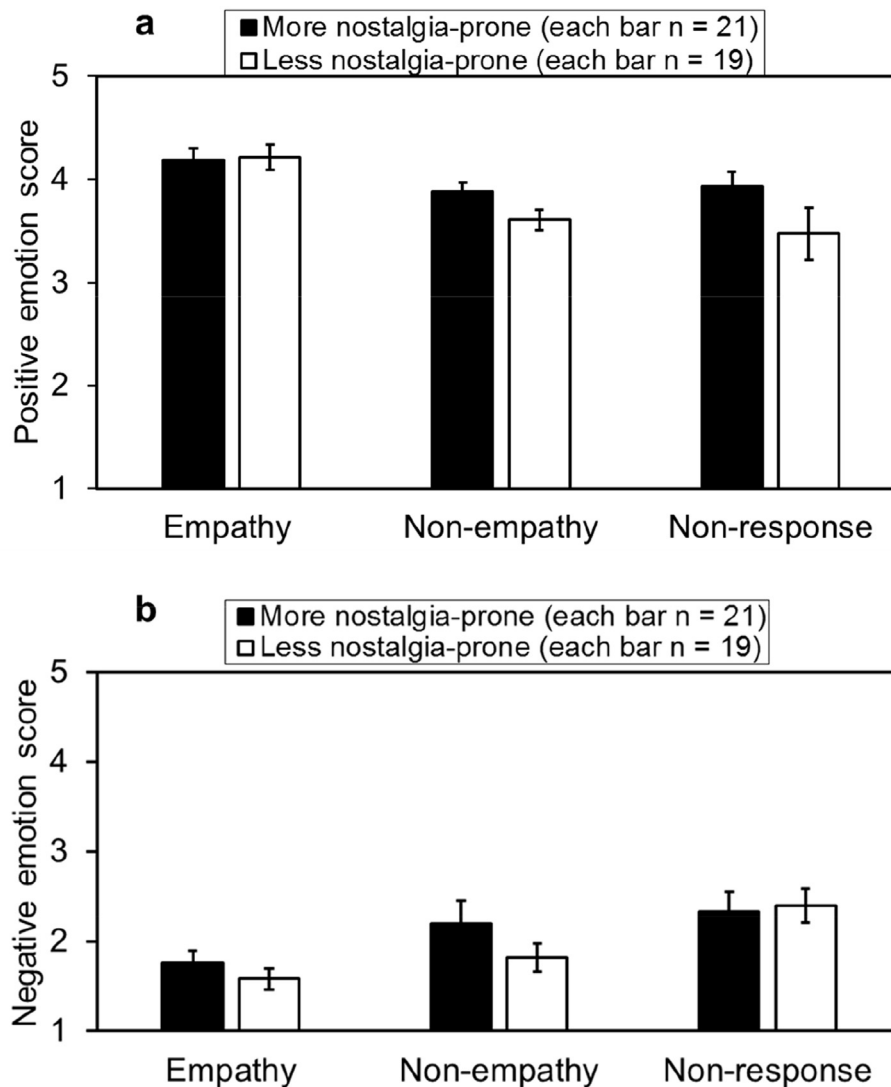


Figure 6. Mean emotion scores (\pm SE) for (a) positive emotions (sum of joy and amusement) and (b) negative emotions (sum of sadness and anger).

than more nostalgia-prone people, which supports Hypothesis 2 (a person with more nostalgia-proneness feels more nostalgic and more positive toward their autobiographical memory than those with less nostalgia-proneness). From these results it is apparent that more nostalgia-prone individuals may benefit from telling their autobiographical memories to a listener. Previous research has shown that nostalgic feelings can have differing outcomes on health depending on the personality type and the coping strategies employed by an individual (Garrido, 2018). As a result, it could be suggested that nostalgic feelings can be used to the advantage of an individual as long as the individual is not suffering from depression or using maladaptive coping styles. Further, various studies have demonstrated a causal relation between nostalgia and meaning in life, showing that when individuals who are not normally nostalgic were manipulated to have nostalgic feelings by recalling a nostalgic memory (versus an ordinary memory), they associated more meaning to their past experiences and their current life (Baldwin and Landau, 2014; Hepper et al., 2012; Leunissen et al., 2018). In line with the results of these previous studies that people can change their nostalgic proneness or that nostalgic proneness can be controlled by the environment, our results show that talking about autobiographical memory might be an effective therapeutic strategy for some individuals.

There are several limitations to this study. First, the participants were relatively young and their age range was narrow. As nostalgia is more

common and occurs more frequently as an individual ages (Kusumi et al., 2010), additional studies covering a wider age range should be conducted. Second, although we did not observe any effect of participant gender on the results, previous research has shown that for professional counseling the gender of the experimenter can be a sensitive issue, as some studies show that women show a greater preference for female counselors (Enns, 2000). We therefore think it will be necessary to test how the gender of the experimenter influences the benefit received from empathic listening to autobiographical memory. Third, this study was only able to clarify the short-term effects of empathic listener response on the emotional state of an autobiographical narrator. Further studies should investigate how empathic listening to autobiographical memory narration affects long-term psychological wellbeing and health. With these limitations taken into consideration, the results of this study can be a first step in research on how the impact of empathetic listening on nostalgia depends on proneness to the latter.

In conclusion, we have shown that nostalgic feelings and emotional evaluations on an individual's autobiographical memory can be changed depending on the level of empathy in the listener's response and that less nostalgia-prone participants can feel as much nostalgia and as much positive emotion as more nostalgia-prone participants when their listener responds to them with empathy. The findings of this study have implications for human interaction in everyday life and in the therapeutic

setting. While nostalgic feelings are not only more pronounced as an individual ages, they have also been shown to increase psychological resources in people diagnosed with various types of dementia (Ismail et al., 2018). Therefore, the findings of this study might be potentially useful in the development of future therapies for the increasing numbers of elderly individuals dealing with loneliness, anxiety, dementia and other mental conditions.

Declarations

Author contribution statement

E. Sugimori: Conceived and designed the experiments; Wrote the paper.

T. Kusumi: Conceived and designed the experiments.

K. Shimokawa: Performed the experiments; Contributed reagents, materials, analysis tools or data.

Y. Aoyama, T. Kita: Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data.

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Competing interest statement

The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

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