

# The Effect of Nostalgic Contents on Self-Esteem: The Mediating Role of Loneliness

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**Background:** Research has demonstrated that nostalgia can improve self-esteem as a positive psychological resource in Western culture. Moreover, nostalgia is cross-culturally consistent. Therefore, nostalgia triggered by an event reflection task affects self-esteem in Eastern cultures. However, it is unknown whether the collective or personal content of nostalgia affects self-esteem and the role of loneliness in this process.

**Purpose:** This study examined the cross-cultural consistency of nostalgia's impact on self-esteem, whether nostalgic content affects self-esteem levels, and what role loneliness plays in this process.

**Methods:** We conducted two experiments in this study. Experiment 1 used an event reflection task with different instructions to prime the nostalgia and control groups. Participants were asked to complete the Positive and Negative Affect Scale and a revised positive version of the Rosenberg Self-Esteem Scale after priming. Experiment 2 used different instructions and pictures to prime the social and personal nostalgia groups. The PANAS, a revised positive version of the Rosenberg Self-Esteem Scale, and the Russell Loneliness Scale were then administered to the groups.

**Results:** Experiment 1 showed that in the nostalgic condition, self-esteem was higher than in the control condition. In the nostalgic condition, participants felt more positive than in the control condition. Experiment 2 revealed that self-esteem was higher in the collective nostalgic context than in the personal nostalgic context. Regarding the positive effect, participants felt more positive in the collective nostalgic context than in the personal nostalgic context. Loneliness also had a mediating effect on this process.

**Conclusion:** Results show that nostalgia affects self-esteem through cross-cultural consistency and social nostalgia can be a resource for positive mental health. Moreover, loneliness plays a significant role in mediating nostalgia's effect on self-esteem.

**Keywords:** social nostalgia, personal nostalgia, self-esteem, loneliness

## Introduction

Unlike Western scholars' views hundreds of years ago, nostalgia has now been distinguished from other pathological interpretations. The New Oxford English Dictionary defines nostalgia as "a sentimental longing or wistful affection for the past." (citation) The fifth edition of the Modern Chinese Dictionary defines nostalgic person as "the person who misses the past and has a relationship with the old days," (citation) a definition which according to oriental scholars is consistent with the "missed past." Thus, the definitions of nostalgia in the east and west are consistent, and this has led some researchers to believe that nostalgia is a pan-cultural sentiment.<sup>1</sup>

Psychologists' perspectives on nostalgia are currently evolving. Nostalgia, according to Xue and Huang,<sup>2</sup> is "a complex emotional state that misses the past. It can be positive, negative, or bittersweet." Although some scholars emphasize nostalgia as a sad emotion and define it as a yearning for a past that no longer exists,<sup>3</sup> most researchers believe that nostalgia is a positive emotion that will result in a positive experience. Some researchers believe that nostalgia can enhance people's self-esteem,<sup>4</sup> strengthen social connections,<sup>5</sup> subjective well-being,<sup>6</sup> and youth,<sup>7</sup> promote health optimism and physical activity,<sup>8</sup> reduce prejudice,<sup>9</sup> weaken or mitigate the perception of external threats,<sup>10</sup> and make people feel that life is more meaningful and create a peaceful mindset.<sup>11</sup> According to previous studies, nostalgia is a positive psychological resource.

There are three common interpretations of nostalgia's mechanism: sensory implantation theory,<sup>12</sup> emotional repair theory,<sup>13</sup> and interpersonal interaction theory.<sup>2</sup> The sensory implantation theory is concerned with the development of nostalgia, which is often accompanied by sensory stimulation. The emotional repair theory refers to nostalgia as a kind of yearning for the past and passing years; when an individual's senses, such as smell, hearing, and vision, are stimulated by the outside world, they often trigger emotional memories from the past. The individual's yearning for the past is not objective in the absolute sense, but rather a projection of present emotions in the past. During this process, the individual reassembles and reconstructs the past, and filters out negative emotions and memories. According to this theory, interpersonal interactions trigger nostalgia (citation).

Zhao believes that in the nostalgic classification, it is most practical to divide nostalgic content into personal and social nostalgia. On the one hand, personal nostalgia is based on an individual's experience and closely related to an individual's life.<sup>14,15</sup> Consequently, it can provide a rich experience base for individual nostalgia and the greatest difference in interpreting nostalgic variables.<sup>16</sup> On the other hand, social nostalgia refers to events or objects pertinent to a group one identifies with. It is based on relationship orientation and tends to the aspects of society, culture, or groups.<sup>17</sup> Social nostalgia strengthens the positivity of in-group evaluations while also providing an approach orientation, group support, consumer ethnocentrism, and personal sacrifice for the in-group.<sup>18</sup> According to Wildschut et al, social nostalgia is a group-level emotion that provides distinct benefits to the group. For example, compared with personal nostalgia, social nostalgia is more likely to support intentions.<sup>19</sup>

Previous research has found that nostalgia can boost people's self-esteem and elicit positive emotions.<sup>4</sup> In addition, according to Cheung et al, state nostalgia can improve self-esteem and trait nostalgia is positively related to self-esteem.<sup>5</sup> Thus, these results indicate that nostalgia may increase self-esteem. However, studies have shown that there are cultural differences in self-esteem,<sup>20</sup> and these differences are frequently reflected in origin, inclusiveness, and expression.<sup>21</sup> Specifically, the root cause of this difference is that in individualistic cultures, individual self-esteem emphasizes more on individuals' achievements and qualities, whereas in collectivist cultures, it emphasizes more on their social and collective nature.<sup>21,22</sup> The difference in inclusiveness is reflected in the fact that in Western culture, the individual's self-esteem is centered on the independent self.<sup>23</sup> Meanwhile, Chinese people's self-esteem involves the individual and also includes those close to the individual.<sup>24</sup> The main difference in expressiveness is positive self-evaluations are expressed more implicitly at the explicit level and in overt situations in Eastern culture.<sup>25</sup> This could imply that there are differences in how nostalgia enhances self-esteem in the Eastern context. As a result, whether this study is culturally consistent remains unclear and must be validated.<sup>4</sup>

According to recent research, nostalgia, self-esteem, and loneliness are significantly linked. Loneliness, the feeling that interpersonal interactions are not as expected, can result in a variety of disturbing symptoms, including depression, self-blame, and pessimism.<sup>26</sup> According to the findings of Abeyta et al, nostalgia feelings reduce negative thoughts and motivations associated with loneliness.<sup>27</sup> Experimentally induced nostalgia can alleviate loneliness by enhancing people's perception of social support and social connections and reduce loneliness by regulating the social support that individuals feel.<sup>28-30</sup> However, the type of nostalgia that reduced loneliness was not considered in these studies, and it was the nostalgic trait that was predominantly measured. Consequently, it is critical to explore its relationship to loneliness by inducing nostalgia at different content levels. Furthermore, several previous studies have found a significant negative correlation between self-esteem and state and trait loneliness: the higher the loneliness, the lower the level of self-esteem.<sup>31-34</sup> However, given the discovery that nostalgia affects self-esteem, more research is needed to determine whether nostalgic content is related to loneliness and whether loneliness plays an important role in the process of different nostalgic content affecting self-esteem.

In summary, nostalgia promotes self-esteem. This viewpoint may be consistent with the East and West's cultural background, and social nostalgia may provide people with greater benefits. Additionally, loneliness may play an important role in this process. Thus, the following research questions are raised by this study. First, does nostalgia have the same effect on self-esteem in a collectivist culture? Second, does nostalgic content have an impact on self-esteem? Third, is nostalgic content linked to loneliness, and does loneliness influence how different nostalgic contents affect self-esteem? This study attempted to verify whether nostalgia improves self-esteem and is culturally consistent. And this study explored the influence of nostalgic content on self-esteem and examined the role of loneliness.

## Experiment I

This experiment used the event reflection task to induce nostalgia and the Rosenberg Positive Self-Esteem Scale to measure participants' self-esteem.<sup>4,35</sup> Previous research has shown that nostalgia can raise people's self-esteem,<sup>4,5</sup> but this has only been observed in studies involving Western participants. Given the cross-cultural consistency of nostalgia,<sup>1</sup> it is debatable whether self-esteem differs across cultures.<sup>20,21</sup> Therefore, Chinese participants were used to verify this result. This experiment aimed to explore the influence of nostalgia on self-esteem, and we hypothesized that the nostalgia group would have a higher level of self-esteem than that of the non-nostalgia group.

## Materials and Methods

### Participants

According to previous studies,<sup>4,36-39</sup> 72 participants (nine men;  $M_{age} = 19.10$  years,  $SD = 1.29$ ) were recruited, all of whom were undergraduate non-psychology majors from Hunan Normal University. There were 35 participants in the nostalgia group (four men;  $M_{age} = 19.29$  years,  $SD = 1.23$ ) and 37 participants in the non-nostalgia group (five men;  $M_{age} = 18.92$  years,  $SD = 1.34$ ). All participants were randomly assigned to one of the two groups: nostalgic or non-nostalgic. The dependent variable was self-esteem level, which was measured using a self-esteem scale score. All participants provided informed consent and had normal or corrected-to-normal vision. This study was conducted in accordance with the Declaration of Helsinki and approved by the Hunan Normal University's ethics committee.

### Manipulating Nostalgia

Participants were asked to recall experiences according to the instructions before filling out the scale in a separate room with sound insulation and moderate brightness. They were randomly divided into two groups, which were controlled by instructions. The nostalgic group was instructed as follows:

For three minutes, please remember a nostalgic time in your life. Nostalgia is commonly defined as a complex emotional state where a person yearns for the past, and it can be positive, negative, or even bittersweet. In particular, please think carefully about the past and the events that brought impressive feelings of life. Subsequently, please write four sentences regarding this recollection.<sup>2,40,41</sup>

The non-nostalgia group instructions were,

For three minutes, please think about the daily events in your life. Daily events are usually defined as a variety of similar events each day. Specifically, please think carefully about your daily memory, and write four sentences about it.<sup>4,40</sup>

Thereafter, to check for manipulation, participants were required to answer the following question using a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree): "Thinking about this memory makes me feel nostalgic."<sup>40</sup>

### Measurement of Self-Esteem and Other Variables

Self-esteem was measured using the Chinese version of the Rosenberg Positive Self-Esteem Scale (SES).<sup>35</sup> Rosenberg developed the SES, which was originally used to assess adolescents' overall feelings about self-worth and self-acceptance.<sup>41</sup> Six samples consisting of 1166 high school students, college students, adults, and active-duty soldiers were used as survey objects by some domestic researchers, who localized and revised the scale. The scale's applicability in the Chinese population was examined using reliability and validity tests. With a Cronbach  $\alpha$  of 0.83 and a test-retest reliability of 0.76, the Chinese version of the Rosenberg Positive SES has good reliability and validity.<sup>35</sup> In this study, the scale had a good reliability ( $\alpha = 0.86$ ;  $M = 30.04$ ,  $SD = 3.89$ ). The revised scale consisted of 10 items (eg, I find myself useful) scored on a 5-point Likert scale ranging from 1 (completely disagree) to 5 (completely agree). The higher the overall score, the higher the level of self-esteem. In addition, emotion was measured using the Positive and Negative Affect Scale (PANAS), compiled by Watson.<sup>42</sup> This scale has been revised by some researchers; 290 college students from four universities in China participated in this survey. Results reveal that the Chinese version of the PANAS has good reliability and validity, with the internal consistency of the two subscales being 0.84 and 0.85, as well as a test-retest reliability of 0.76 and 0.46.<sup>43</sup> The revised scale in this study consists of 18 items, nine of which are positive emotions (eg,

happy, excited, delighted) and the other nine are negative emotions (eg, sad, angry, ashamed).<sup>43</sup> In the experiment, the internal consistency of the two subscales is 0.81 ( $M=23.82$ ,  $SD=4.16$ ) and 0.84 ( $M=18.33$ ,  $SD=4.55$ ), respectively.

## Results and Discussion

### Manipulation Check Results

One-way analysis of variance (ANOVA) showed that the nostalgic group's score ( $M=5.80$ ;  $SD=0.93$ ) was significantly higher than that of the non-nostalgic group ( $M=2.81$ ,  $SD=1.15$ ),  $F(1, 71)=145.58$ ,  $p<0.001$ ,  $\eta_p^2=0.68$ , 95% confidence interval (CI) = [2.595, 3.483]. This indicates that nostalgia priming is effective.

### Self-Esteem Results

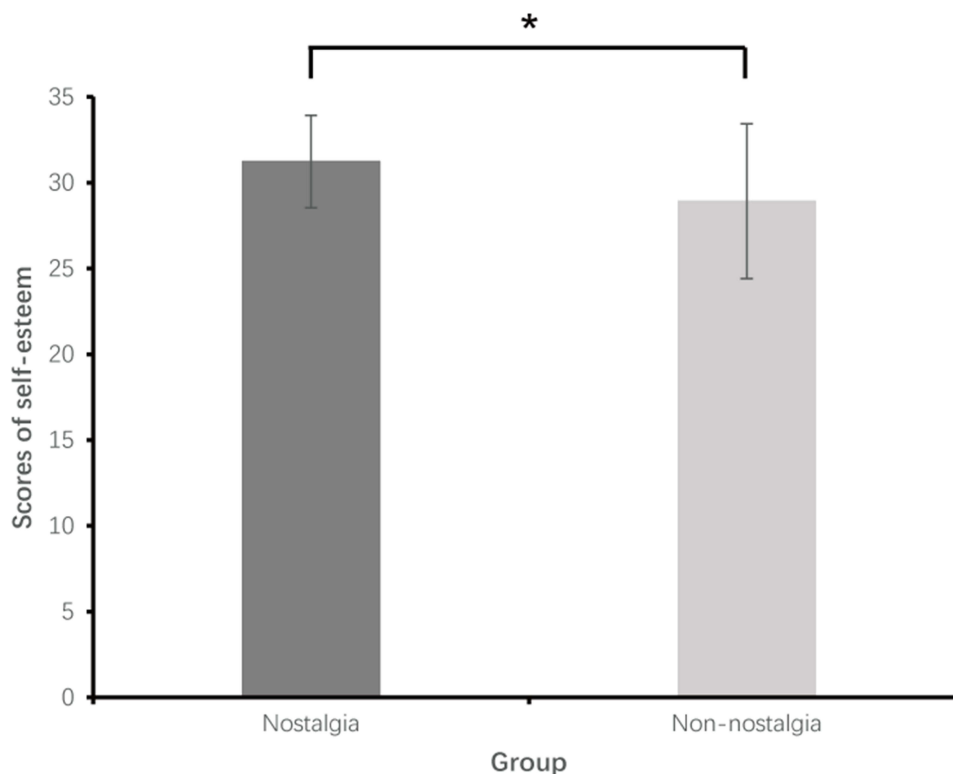
The nostalgic group's self-esteem score was significantly higher than that of the non-nostalgic group,  $F(1, 71)=6.88$ ,  $p<0.05$ ,  $\eta_p^2=0.09$ , 95% CI = [0.553, 4.066] (Figure 1), indicating that people who are nostalgic can improve their self-esteem.

### Emotion Results

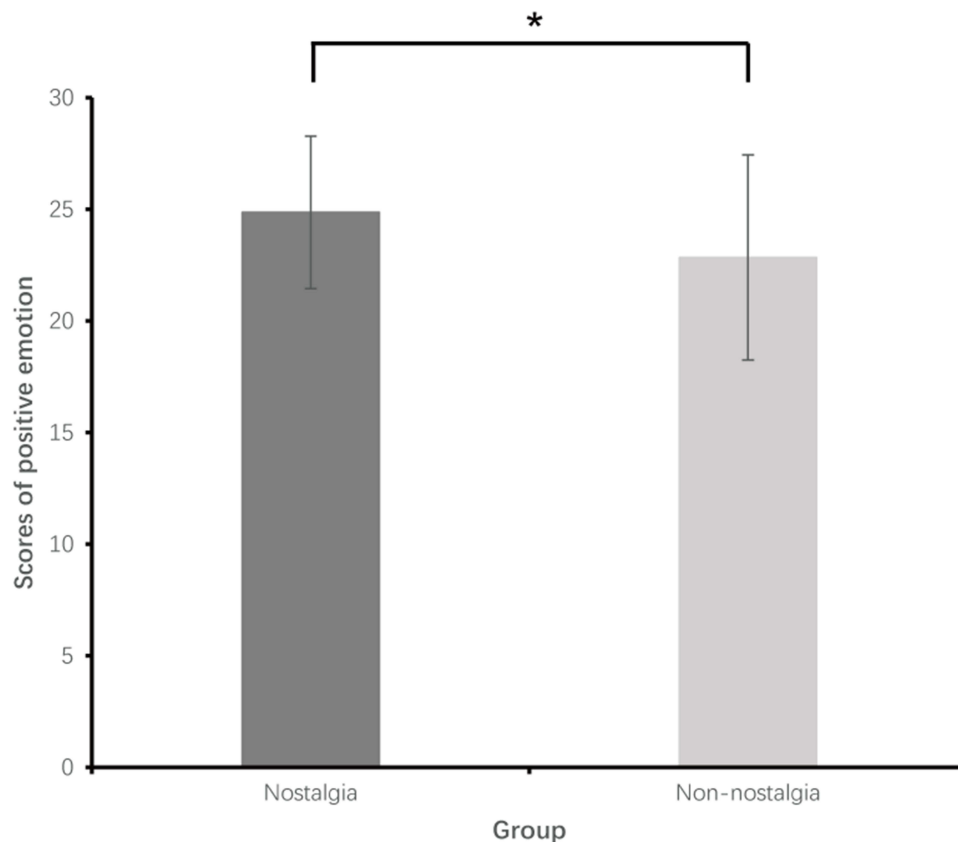
The nostalgic group's positive emotion scores were significantly higher than those of the non-nostalgic group,  $F(1, 71)=4.44$ ,  $p<0.05$ ,  $\eta_p^2=0.06$ , 95% CI = [0.109, 3.930] (Figure 2), indicating that nostalgia can have a positive influence. Negative emotions did not differ significantly.

## Discussion

The results of Experiment 1 were consistent with previous research.<sup>4,5</sup> These findings suggest that nostalgia has a consistently positive effect on self-esteem across cultures. The type of content in which the participants recalled nostalgic memories is worth mentioning. Some people recalled their own memories, such as "I picked up a small piece of grass in high school. I put it in a book; it holds many memories." Others recalled memories related to others, such as "I used to chat with my good friends in the hallway after the class, basking in the sun," and such memories are



**Figure 1** Scores of self-esteem under different conditions in experiment 1.  
Note: \* $p<0.05$ .



**Figure 2** Scores of positive emotion under different conditions in experiment 1.

Note: \* $p < 0.05$ .

labeled collective nostalgic memories. Zhao believes that social nostalgia serves to ensure the integrity and coherence of the entire system of society.<sup>14</sup> Arguably, an exploration of social nostalgia may be justifiable. Experiment 2 further explored the issue of “Does the influence of social nostalgia on self-esteem differs from that of personal nostalgia?”

## Experiment 2

Experiment 2 used the same paradigm to explore the role of loneliness in mediating the effect of nostalgic content on self-esteem.<sup>4,19,40</sup> Based on the previous literature, we hypothesized that social nostalgia has higher self-esteem than that of individual nostalgia and that loneliness has a mediating effect on the process.<sup>19,29</sup>

## Materials and Methods

### Participants

Based on the previous research,<sup>4,37–39</sup> we recruited 62 participants, who were undergraduate non-psychology majors from Hunan Normal University, for the experiment. Due to the failure of personal nostalgia priming, eight participants were excluded, resulting in an effective sample size of 54 (16 men,  $M_{age} = 18.26$  years,  $SD = 0.76$ ).<sup>44,45</sup> We used a single-factor, two-level, completely randomized experimental design. The independent variable was nostalgic content, which was divided into two levels according to the instructions (personal nostalgia vs social nostalgia). The dependent variable was the level of self-esteem, as measured by the same scale in Experiment 1. Additionally, the experiment included a measure of loneliness. The personal nostalgia condition was examined in 27 participants (6 men,  $M_{age} = 18.33$  years,  $SD = 0.92$ ) and the social nostalgia condition in the remaining 27 participants (10 men,  $M_{age} = 18.19$  years,  $SD = 0.56$ ). All participants provided informed consent and had normal or corrected-to-normal vision. This study was conducted in accordance with the Helsinki Declaration and approved by the Hunan Normal University’s ethics committee.

## Materials

Priming materials included both collective and personal nostalgic pictures, as well as instructions. A standardized nostalgia gallery was used to select nostalgic pictures.<sup>46</sup> First, we chose 100 nostalgic pictures with nostalgic values greater than five points (utilizing a 7-point Likert scale). Then we asked 33 people (they did not participate in formal experiments) to re-evaluate 100 pictures, distinguish between personal and collective nostalgic pictures, and choose 10 pictures depicting collective nostalgic content and 10 pictures depicting personal nostalgic content. We used E-prime 2.0, a software program that displays pictures on a black background, and each picture was shown separately and randomly for eight seconds.<sup>47</sup> To eliminate the influence of stimulating materials, the image size (resolution: 564×438 pixels) was uniformly processed using Adobe Illustrator CS6 software.

The instructions were adapted from prior studies.<sup>2,4,19</sup> The personal nostalgic instruction stated:

Nostalgia refers to a complex emotional state that yearns for the past. It can be positive, negative, or bittersweet. Please look at the pictures on the screen and recall the events that you miss and are impressed with when you are alone and write down four sentences.

The social nostalgic instruction stated:

Nostalgia refers to a complex emotional state that yearns for the past. It can be positive, negative, or bittersweet. Please look at the pictures on the screen, recall the events you experienced with other students during your school days and write down four sentences.

Furthermore, the self-esteem and emotion measures were similar to those in Experiment 1. In this study, the Rosenberg Positive SES has good reliability ( $\alpha=0.91$ ;  $M=35.65$ ,  $SD=6.52$ ), and the internal consistency of the two PANAS subscales is 0.91 ( $M=25.50$ ,  $SD=7.68$ ) and 0.85 ( $M=13.59$ ,  $SD=4.80$ ), respectively. To measure loneliness, we used Wang Dengfeng's revised Russell Loneliness Scale, which consists of 18 items (eg, "I feel that I lack the friendship of others"), scored on a six-point scale ranging from 1 (completely disagree) to 6 (completely agree).<sup>48</sup> The higher a participant's overall score, the higher their level of loneliness. The scale showed good reliability ( $\alpha = 0.90$ ;  $M=43.39$ ,  $SD=14.15$ ).

## Procedure

During this study, the participants were seated in a room with sound insulation and moderate brightness. Before the experiment, they were asked to complete the PANAS and Rosenberg Positive SES. Subsequently, participants were asked to follow the instructions. The participants in the collective nostalgic group read the instructions and looked at a series of collective nostalgic pictures presented on the screen. Participants in the personal nostalgic group read the instructions and looked at a series of personal nostalgic pictures presented on the screen. The participants were then written the content of their memories according to the instructions. Thereafter, the participants were required to answer two questions and perform a manipulation check: (1) "I am feeling nostalgic right now" (1 = completely disagree, 7 = completely agree); (2) "To what extent is the nostalgic content in this recollection collective?" (1 = less collective; 7 = more collective). Finally, the PANAS, Loneliness Scale, and SES were administered to the participants.

## Results

### Manipulation Check

According to the one-way ANOVA, the difference between the personal and collective nostalgic groups was significant in the first manipulation check,  $F(1, 53)=8.45$ ,  $p<0.01$ ,  $\eta_p^2=0.14$ , 95% CI = [0.287, 1.565]. The social nostalgia group ( $M=5.41$ ,  $SD=1.01$ ) outperformed the personal nostalgia group ( $M=4.48$ ,  $SD=1.31$ ) on the check, indicating that participants in the personal nostalgic group felt more nostalgic. The second manipulation check revealed a highly significant difference between the personal and social nostalgia groups,  $F(1, 53)=450.52$ ,  $p<0.001$ ,  $\eta_p^2=0.90$ , 95% CI = [3.924, 4.743]. Compared with the personal nostalgia group ( $M=2.04$ ,  $SD=0.85$ ), the social nostalgia group ( $M=6.37$ ,  $SD=0.63$ ) scored higher on the manipulation check, indicating that participants could effectively distinguish between social and personal nostalgia and that priming had an effect.

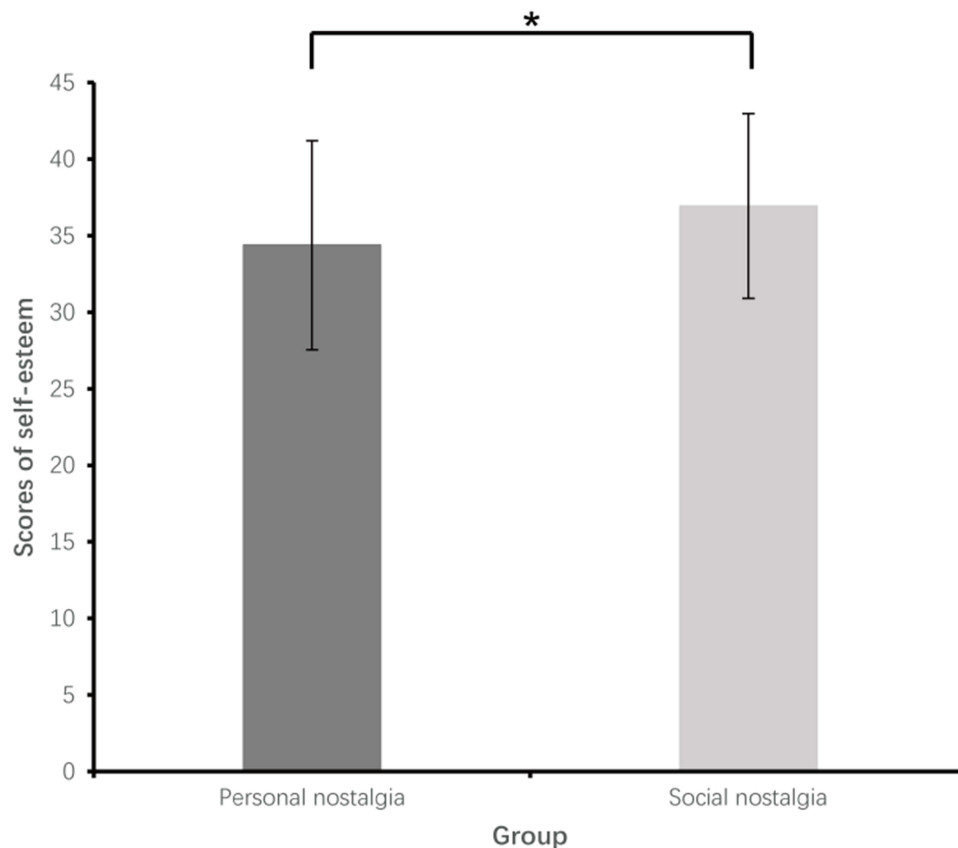
### Self-Esteem Results

We used an analysis of covariance (ANCOVA) to rule out the possibility that the participants' initial self-esteem level would influence the results. Before performing ANCOVA, it is necessary to test whether the regression lines of each group are parallel because the analysis can only be used once the condition of parallel regression lines of each group is established. According to the test results of the between-subjects effects, the interaction between the nostalgia groups and pretest self-esteem was not significant,  $F(1, 53)=0.271$ ,  $p>0.05$ , indicating that the regression line was parallel. Following that, a covariance analysis was performed.<sup>49</sup> Under the two conditions, the results showed that  $F(1, 53)=7.41$ ,  $p<0.01$ ,  $\eta_p^2=0.13$ , 95% CI = [0.654, 4.336], indicating that the participants' self-esteem levels were significantly different under the influence of the measure before self-esteem was excluded. In comparison to the personal nostalgia condition ( $M=34.40$ ,  $SD=0.65$ ), the participants' level of self-esteem was higher in the social nostalgia condition ( $M=36.90$ ,  $SD=0.65$ ) (Figure 3).

### Emotion Results

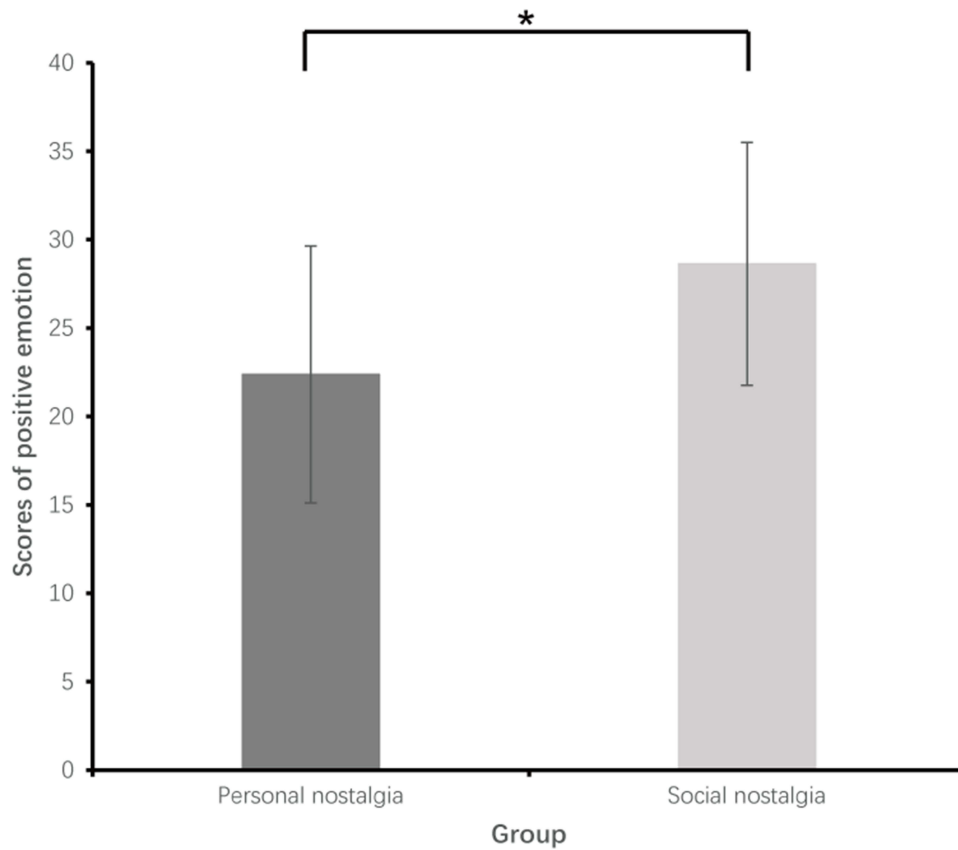
We performed an ANOVA to assess emotion. Positive emotions differed significantly between the two groups,  $F(1, 53)=10.59$ ,  $p<0.01$ ,  $\eta_p^2=0.17$ , 95% CI = [2.400, 10.119], with the scores for positive emotions in the social nostalgia group significantly higher than those in the personal nostalgia group (Figure 4). This result indicates that the participants' positive feelings were stronger in the social nostalgia group. In terms of loneliness, there was a significant difference between the two groups,  $F$

(1, 53)=7.26,  $p<0.01$ ,  $\eta_p^2=0.12$ , 95% CI = [2.504, 17.126], and the loneliness score of the social nostalgia group was significantly lower than that of the personal nostalgia group.



**Figure 3** Scores of self-esteem under different conditions in experiment 2.  
Note: \* $p<0.05$ .

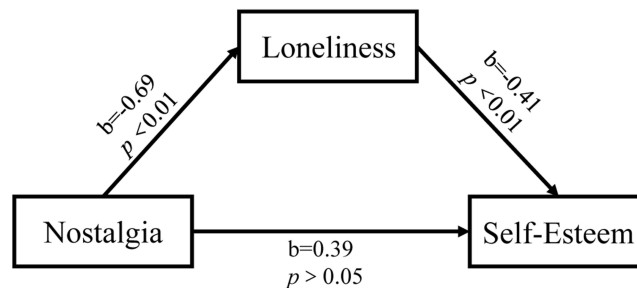




**Figure 4** Scores of positive emotion under different conditions in experiment 2.  
 Note: \* $p < 0.05$ .

### Mediating Effect of Loneliness

The PROCESS 3.3 macro (Model 4, 5000 bootstrap samples) for SPSS was used to test for the mediating effect of loneliness on self-esteem.<sup>50</sup> Dummy codes were used for the nostalgia manipulation conditions (0 = personal nostalgia, 1 = social nostalgia). Based on the corresponding scores, loneliness was used as a continuous variable. A significant mediating effect was found ( $b = -0.41$ ,  $SE = 0.06$ ,  $t = -3.01$ ,  $p < 0.01$ , 95% CI =  $[-0.31, -0.06]$ ,  $\Delta R^2 = 0.18$ ). However, the effect of nostalgia on self-esteem was not significant, implying that loneliness had a full mediating effect on the effect of nostalgia on self-esteem ( $b = 0.39$ ,  $SE = 1.76$ ,  $t = 1.46$ ,  $p > 0.05$ , 95% CI =  $[-0.97, 6.08]$ ,  $\Delta R^2 = 0.04$ ) (Figure 5).



**Figure 5** Mediated model: loneliness plays an important role by mediating the effect of nostalgia on self-esteem.



## Discussion

This study found that participants in the social nostalgia group had more positive emotions, and loneliness fully mediated the process of nostalgic content affecting self-esteem. These findings support our hypothesis that social nostalgia increases self-esteem.<sup>4,19</sup> Moreover, the relationship between loneliness and self-esteem in this experiment is consistent with previous research.<sup>31–34</sup> This could be because discordant interpersonal relationships frequently lead to loneliness, and the gap between the desire for communication and the actual situation leads to negative psychological experiences. This results in a negative self-evaluation, which lowers self-esteem.<sup>31,33,34</sup> This finding demonstrates that social nostalgia makes people feel less lonely, which can lead to individuals experiencing more positive emotions, reducing loneliness overall, and thus affecting self-esteem.

## General Discussion

### Nostalgia Enhances Self-Esteem with Cross-Cultural Consistency

Experiment 1 examined the cross-cultural consistency of nostalgia's effects on self-esteem. While nostalgia is consistent across cultures, there are cultural differences in self-esteem.<sup>1,20</sup> As a result, we believe that there may be cultural differences in the process of nostalgia affecting self-esteem. However, there are differences and similarities in the form (process and mechanism) and content of human psychology, and self-esteem as a high-level psychological need is culturally universal.<sup>51</sup> Additionally, in different cultural contexts, self-esteem serves many similar functions, such as promoting individual mental health, improving well-being and life satisfaction, relieving emotional stress caused by failure, regulating psychological states, and alleviating death anxiety.<sup>52–55</sup> The cross-cultural consistency of nostalgia enhancing self-esteem effects is important in understanding the cultural differences between nostalgia and self-esteem, and it can also be used to interpret cross-cultural differences in related research.

### Full Mediation Effect of Loneliness

Experiment 2 revealed that, when compared with the personal nostalgia group, the social nostalgia group induced stronger positive emotions, and loneliness had a complete mediating effect in the process of nostalgic content affecting self-esteem. As nostalgia is a complex and ambivalent emotion, loneliness may have a complete mediating effect. Although it is widely believed that nostalgia is a positive psychological resource,<sup>6</sup> the mechanism of psychological resources lies in emotional repair.<sup>13</sup> In other words, recalling the past will inevitably result in feelings of loss and loneliness. However, as nostalgia has emotional repair characteristics, the positive effect will weaken this negative emotion, resulting in a positive psychological effect. This experiment suggests that social nostalgia can alleviate loneliness by eliciting more positive emotions through the memory of interpersonal interactions, resulting in increased self-esteem.<sup>29</sup> As a result, social nostalgia can be viewed as a positive psychological resource.

## Practical Implications

In terms of the study's practical implications, nostalgia can enhance people's self-esteem, social bonding, healthy motivation, physical activity, and so on.<sup>4–10</sup> Furthermore, nostalgia therapy has been shown to be an effective treatment for psychological crises among the elderly.<sup>56,57</sup> Currently, nostalgia is widely regarded as a positive emotional and psychological resilience resource by most researchers.<sup>19,58</sup> The findings of this study provide more direct guidance for nostalgia treatment; that is, recalling collective content can boost individual self-esteem, which is beneficial to the body and mind. Its function should be used in the development of people's psychological and physical health, and in psychological interventions.

## Limitations and Future Directions

There are several limitations to this study. First, there are still challenges in priming personal nostalgia, as it is hard to prime. We excluded eight participants in the personal nostalgia group who failed the manipulation check in Experiment,<sup>44,45</sup> that is, the participants scored more than four points in the second manipulation check and hence were considered not successfully primed. Thus, even though we excluded eight ineligible data to ensure the study's

reliability, this study shows that the prime of nostalgic content still needs improvement. This could be because the instruction was translated from the West,<sup>4,19,40</sup> and the Western participants' individualism is stronger.<sup>59</sup> Therefore, when exploring personal nostalgia in their research, the Western participants were often more likely to recall their personal memories, while Eastern participants were more collectivistic, and even if they were asked to recall individual nostalgic memories, some of them were still more inclined to recall collective content. Second, because only a few Changsha colleges and universities were sampled, the representativeness was insufficient. Furthermore, although our sample size is reasonable according to previous research,<sup>4,36-39</sup> in future studies, the sample size can be increased, which may allow the research findings to have a better generalization and stronger explanatory power. Finally, because of the large difference in sample sizes of male and female participants in this study, we were unable to investigate individual differences between men and women, which should be considered in future research.

Future research should reinforce local theoretical research on nostalgia. First, nostalgic psychology has been widely used in marketing, media, and other fields;<sup>39,56,60-62</sup> however, nostalgic psychology research in China has only recently begun. Hence, presently, its definition and structure are not clearly distinguished. Therefore, an in-depth study of nostalgia is required. Second, a more diverse nostalgia priming paradigm must be developed. The majority of existing studies were initiated by instruction, and a few researchers used pictures and music.<sup>4,19,40,63,64</sup> Priming through instruction is currently more effective, but it has some drawbacks. It may, for example, affect experimental results due to linguistic and cultural environment problems. Nostalgic instruction priming will require participants to write keywords or sentences, which will also involve the participants' language ability, potentially influencing the results. The priming methods of pictures and music were used less; however, in terms of results, the use of this method was not as strong as the instructions. Overall, although pictures or music from the same era were chosen, the effect of nostalgia was weakened due to the different levels of importance to individuals. Therefore, the development and research of a nostalgic priming paradigm is required. Third, research on the mediating effects of nostalgia on self-esteem should be reinforced. Existing research indicates that factors such as perceived social support can strengthen the positive effects of nostalgia.<sup>5,29,65</sup> Therefore, future research on the internal cognitive mechanisms of nostalgia should be encouraged. Finally, nostalgic psychological research should be conducted across various age groups. Individuals of different age groups exhibit distinct characteristics in terms of time and intergenerational backgrounds. Additionally, as the content that different age groups pay attention to differs, it is assumed that the content of nostalgia must also be different. However, the majority of current nostalgic psychology research participants are college students, and college students' nostalgic psychological characteristics do not represent the characteristics of all age groups. Therefore, to strengthen the literature on nostalgic psychology, it is necessary to expand the study across different age groups.

## Conclusion

This study provides a new perspective on the psychological mechanisms by which nostalgia affects self-esteem. The first experiment's findings verified that the effect of nostalgia on self-esteem exists in collectivistic cultures as well. Further, the second experiment showed that nostalgic content influences individual self-esteem; recalling collective nostalgic content increases people's self-esteem more than recalling personal nostalgic content. This finding implies that social nostalgia is a positive psychological resource. Moreover, the second experiment found that loneliness plays an important mediating role in the effect of nostalgic content on self-esteem. This provides a solid foundation for our understanding of the psychological mechanism by which nostalgia affects self-esteem and provides direct guidance for the implementation of psychological interventions.

## Ethical Approval

The Institutional Review Board of the Hunan Normal University in Hunan approved this study (2022-262).

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All authors contributed significantly to the work reported, whether in the conception, study design, execution, data acquisition, analysis, and interpretation, or in all these areas, participated in drafting, revising, or critically reviewing the

article; gave final approval of the version to be published; agreed on the journal to which the article was submitted; and agree to be accountable for all aspects of the work.

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## Disclosure

The authors report no conflicts of interest in this work.

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