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# The Power of Our Imaginations Combined: Collaborative Imagination's Role in Facilitating Social Connection

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**The power of our imaginations combined: Collaborative imagination's role in  
facilitating social connection**

An honors thesis presented to the  
Department of Psychology,  
University at Albany, State University of New York  
in partial fulfillment of the requirements  
for graduation with Honors in Psychology  
and  
graduation from the Honors College

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May 2023

## Abstract

Imagined events and scenarios can influence our perceptions, cognitions, and emotions. It has been found that our imaginations are abundant with social scenarios and can affect how we think of our relationships with others, but can imagining an event together further impact our connection with others? And does the vividness of that imagined event correspond to social connection? In this study, we recruited 126 participants and separated them into pairs of which were then randomly assigned into one of three conditions. Collaborative imagination was found to increase social connection more so than individually imagining a shared social scenario. The vividness of imagined encounters was significantly positively correlated with social connection. Thus, these results suggest that imagining an event together can foster feelings of social closeness and connection, and that the vividness of the imagined event may play a role in these effects, supporting the idea that collaborative imagination may play a role in the development of new relationships. Further research is suggested looking at group impact on collaborative imagination's role in social connection as well as how episodic-specificity inductions may influence social connection during collaborative imagination.

*Keywords:* social connection, vividness, collaborative imagination, relationships, imagination

## Acknowledgements

I don't believe that I can properly articulate the gratitude I feel towards everyone who has helped me through the journey of writing this thesis. I would like to begin by thanking Zoë Fowler as she has been a huge support and guiding light for me during this process. She has seen every stage of my thesis and provided the feedback that made this thesis what it is today. I could have never finished this without her. I would also like to thank Dr. O'Connor for agreeing to be my advisor, helping me with the process of figuring out the topic of my thesis, and being a support throughout. They have also given me unforgettable advice and help through navigating the next steps of my academic career.

To my fellow honors thesis writers, Amanda Scarlata and Vanessa Slone, thank you both for the support you have provided as we have navigated this stressful process. I cannot forget to thank my three roommates, Susannah Hall, Vanessa Slone, and Sonia Donbronravov, who have been there for me for four years, and gave me the confidence to push through.

To Kelly, my best friend, thank you for being with me through all the ups and downs of life. You never gave up on me and were always there when I needed you. I cannot imagine my life without you. I can only hope that I provide the same support and love to you that you have given me.

And finally, thank you to my parents, for the support that they have given me. I could not be where I am today without them.

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## **Group imagination vividness and social connection**

One of the most powerful tools that we have to create the initial spark for a new relationship may be imagination. When we imagine the future, we often envision future interactions or social situations (Andrew-Hanna et al., 2013; Mar et al., 2012). Not only this, but imagination impacts us daily by allowing us to feel empathy (Poerio et al., 2014; Gaesser et al., 2018; Sawczak et al., 2019; Vollberg et al., 2021; Ryan et al., 2022), and encourages use to help others (Gaesser & Schacter, 2014; Gaesser et al., 2018; O'Connor & Fowler, 2022). Thus, imagined events are often social in nature; however, despite the seen impact that imagination has on us, previous research has not explored the possibility that imagination itself is a piece of a dynamic social mechanism where individuals imagine together to create a shared simulation of novel future events. And yet, we are constantly making future plans with others, from deciding what to have for lunch with friends to where two roommates will move. These considerations are made with one another as we plan for future situations. Do these newly created memories that were collaboratively imagined together shape our relationships in the present?

In this study, we will be exploring how collaborative imagination, simulating novel future events together, impacts perceived social connection in a novel pair. In addition to this, we will be examining a possible relationship between the vividness of the imagined scenario and level of social connection.

To begin to examine imagination and its role within social contexts, it is imperative to understand the interconnection between imagination and memory. Recent studies have found that there is strong evidence for imagination and memory being closely related to each other (Andrews-Hanna & Grilli, 2021; Barnier et al., 2008; Beaty et al., 2020; Madore, Addis, & Schacter, 2015). One of these studies (Beaty et al., 2020) used fMRI scans to examine the brain during the remembering process as well as during the imagination process. The data

found activity in regions of the core network system of memory during imagination, especially during the construction of imagined events (i.e., medial frontal cortex, lateral temporal and parietal regions, the left anterior hippocampus, etc.). This research created a foundation for what is known as the constructive episodic simulation hypothesis which suggests that an aspect of imagination is using memories and reconstructing them to form novel simulations of future events (Schacter et. al, 2007). Another significant finding is that of activation being present in the amygdala during imagination (Beatty et al, 2020). The amygdala previously was identified as the region of the brain to be mainly responsible for emotions and emotional memories (Bocchio et al., 2017). Other evidence for this connection is the seen impairments in imagining future events for patients with hippocampal amnesia (Hassabis et al., 2007t).

Memory is not just an individual act, but a social act as well. For instance, there is the subject of group recall and collective memory. Barnier and colleagues (2008) further examined group recall and how the discussion of events affect emotions, finding evidence that individual's feelings about an emotional event can weaken after discussing the event with others. Interestingly, in group discussions, individuals focused more on other's emotions towards the situation rather than their own. There was also evidence that memories of the event changed for those that discussed the event together and that group discussions appear to have led participants to recall emotions felt during the event as less intense than initially recorded. However, group memory may lead to a strengthening of group ties and perception of social connection. In the same study, it was found that group reminiscing among high school friends that stayed in contact increased quality of memories and detail retainment (Barnier et al., 2007). Recalling shared past experiences with others has also been observed to create feelings of nostalgia, increasing social connection and meaning in life (Abeyta et al.,

2015; Cheung et al., 2020). Along with this, phenomena such as socially induced forgetting illustrate the extent to which memory is a social act (Coman & Hirst, 2015).

How does this relate to imagination and its connection with social acts? A study by Mar and colleagues (2012) has shown that our daydreams are largely consisted by imagining a situation or interaction that features another person. Almost two-thirds of people report that their thoughts while alone “always” or “frequently” feature other people. When we create plans, there is a tendency to think about others in relation to that plan. For instances, if someone is considering a plan that relates to their house, other household members may come to mind easily as one would expect them to participate in or be a part of that event. When students think about the next day of class, they may think of their classmates that interact with them frequently in that environment. Our memories of the past create contexts for us to use in our imagined futures as they provide various information that can be used. This process, as previously discussed, is the constructive episodic simulation hypothesis (Addis, & Buckner, 2007; Madore et al., 2014; Gaesser et al., 2018; Ghetti & Coughlin, 2018; Meyer et al., 2019; Schacter & Addis, 2020). Along with this, we may consider how being with another or others may make us feel.

Imagined events have a power over us that are stronger than some may believe. Similar emotions felt during scenarios are seen to be present when imagining a comparable situation (Poerio et al, 2014). This imagined situation could go two ways. Within the study of Poerio and colleagues, they aimed to investigate the phenomenon of daydreams with a focus on social interactions and explore the affects that social daydreaming has on a person (2014). They found that participants reported feeling more loving after social daydreams and less loving after daydreams that had no social elements. Individuals also reported feeling happier after social daydreams whilst there was no effect after participants imagined non-social daydreams. This study suggests that imagination has a large social element that can impact



how people feel in that moment. Emotions are not limited to events that took place in the past and/or take place in the present but also in an imagined future. Imagined events also impact the empathy of individuals and the likelihood of helping behaviours. Episodic simulation not only influences willingness to help but also has an impact on empathic concern for others (Gaesser et al., 2018; Sawczak et al., 2019; Ryan et al., 2022). Vividness has also been found to mediate the relationship between episodic simulation and willingness to help as well as the relationship between episodic simulation and empathic concern (Sawczak et al., 2019). Along with this, using episodic specificity inductions, a structure memory training activity, (Madore et al., 2014) increased empathy which was mediated by the degree of vividness (Vollberg et al., 2021). This training also appeared to allow individuals to imagine new simulated events with more detail.

Imagination plays a heavy role in our compassion and social relationships. Having the ability to imagine how others feel influences our interactions with one another and impacts our ability to create relationships. In fact, being capable of easily imagining helping another increases our willingness to help as well as the likelihood of engaging in prosocial behaviours (Gaesser et al., 2018). The vividness of this imagined situation is critical in influencing our thought patterns and actions. The more feasible the situation is perceived in our minds, the more conceivable is the helping behaviour. Thus, it is reasonable to suspect that the ability to distinctively envision a situation with another leads one to believe that it is more plausible. Previous research has produced similar data in which imagining an event has led to participants reporting higher confidence in its likelihood, otherwise known as the imagination inflation effect (Garry et al., 1996; Garry & Polaschek, 2000). With this, individuals may perceive interacting with the other individual a higher possibility, influencing their behaviours to do just that.

Gaesser and colleagues (2018) found that by using episodic specificity induction, they were able to increase willingness to help in participants who engaged in episodic simulation. Episodic specificity inductions during imagining events encourages individuals to develop more details on the simulated event. This also increases an individual's likelihood of remembering the imagined event and its details in the future, possibly explaining this increase in helping behaviour as individuals are more comfortable and familiar with the idea of helping in a scenario (Madore et al., 2014).

In another study published by Meleady and Seger (2016), they sought to build upon a previous hypothesis that explored how encouraged interaction between varying cultural groups can reduce prejudice between them (Allport, 1954). Meleady and Seger were curious if this reduction can be seen even without physical interaction. Through imagined contact, the mental simulation of a situation that involves the interaction of two separate groups, it was hypothesized that imagined contact, not just physical contact, may be able to reduce prejudice of outgroups. The data suggested that imagined contact increased positive feelings towards the target group and increased likelihood of positive behavioural intentions. Furthermore, Meleady and Seger (2016) found that participants that created an imagined contact scenario were more likely to make the prosocial choice in behaviour after the imagined contact. Additionally, participants felt higher levels of trust with those of the outgroup following imagined contact. Thus, imagining a scenario with another not only impacts how an individual feels generally but can influence how they feel and perceive another person. This can affect how that individual may act around and with the other person, and potentially change how close one may feel towards the other.

Until now, research focusing on the role that imagination has on our social relationships have been limited in scope. Few studies have looked at the direct impact that collaboratively imagining an event has on how connected one feels with another. This study

was designed to expand the knowledge of imagination's role in our social lives by measuring the effect that collaborative imagination may have on individual's sense of social connection. This leads us to our first hypothesis regarding the social effects of collaborative imagination:

Hypothesis 1: Imagining a shared future event with another person increases reported social connection.

Another factor that will be explored is the role of scene vividness in this relationship. Research has found that unfamiliar contexts are rated with lower vividness than familiar contexts, as well as imagined fictitious events being rated lower in richness when compared to actual previous events (Levine et al., 2002; Gaesser et al., 2018; Weiler et al., 2011). Vividness has also been found to play a role in the likelihood of helping behaviours with it being a mediator to empathic concern (Gaesser et al., 2018). In addition to this, previous research suggests that vividness is a strong predictor of willingness to help, as well as a mediator for the effect of episodic simulation on willingness to help (Sawczak et al., 2019). More vivid memories have higher reported levels of felt emotions, and this affect has the potential to carry over to imagined events as well, such that more vividly imagined scenarios evoke higher levels of emotions and, for imagined social interactions, higher levels of reported connection with another (Poerio et al., 2014). Strength of emotions may increase social connection. And as shared experiences also increase connection, this heightening of emotions may impact the social connection gained from imagined events as well (Aron, Norman, Aron, & Lewandowski, 2002). This leads us to the second hypothesis regarding the effect of collaborative imagination on scene vividness:

Hypothesis 2a: Collaborative imagined events are experienced as higher in subjective scene vividness compared to individually imagined events.

Hypothesis 2b: Subjective scene vividness is positively correlated with reported levels of social connection.

To preview the rest of this work, the results from this study suggest that imagining a shared future collaboratively increases perceived social connection more so than imagining a shared future event independently or collaborating on a non-imaginative activity. There also appears to be a relationship between the vividness of the simulated event and social connection ratings. With these findings, we can add to our understanding of imaginations role in our social lives as well as the social consequences that may erupt. This work provides new insight into the possibility that imagination itself may be a social process that influences the direction of new relationships.

## **Methods**

### **Participants.**

Participants were recruited via Prolific, an online research platform. Data from N=126 participants were used with a mean age of 24, 61% White, 11% Black/African American, 9% Asian/Asian American, 6% Hispanic/Latino/a, 63% women, and all participants were native English speakers. All participants were compensated through Prolific for their time spent on the study at a rate of \$15/hour and the study duration was between 90 and 120 minutes. A participant data was excluded if they met any of the following criteria: they were younger than 18 or 30 years of age or older; they were not native English speakers; they failed more than two attention checks; technical problems occurred during the video call; they did not understand the experimental task after completing four practice trials.

## **Procedure.**

Participants signed up for the study on Prolific and were given a link to Zoom for an assigned date and timeslot. Two participants participated per timeslot and were randomly assigned to one of three conditions. Participants introduced themselves to each other and then completed consent forms. Participants in the Collaborative and Picture Description conditions stayed in the same Zoom call whilst those in the Individual condition entered breakout rooms with a research assistant.

Following this, those in the collaborative and individual condition were read similar instructions describing the imagine task. Participants then answered comprehension check questions to ensure they understood the instructions, and then completed up to four practice trials. Research assistants gave feedback to participants between these practice trials to assess participants' understanding of the task. After the practice trials were completed, participants finished five trials of the imagine task.

The imagine task held two distinct parts: the brainstorming phase and the elaboration phase. The brainstorming phase gave the participants a cue word and picture to prompt potential ideas for the task. Use of this cue word and picture in the imagine task was optional. For up to one minute, participants were asked to decide on a plausible and positive event to imagine that included them both. The order of the shown cue words and pictures were selected out of two randomly generated orders. The elaboration phase was a period of three minutes in which participants verbally described the imagined event in as much detail as possible. Participants in the collaborative condition worked together on choosing and describing the event, but those in the individual condition completed the imagine task by themselves. Ratings of scene vividness were collected after each imagination trial. After completing the imagine task, participants in the collaborative condition were moved to separate breakout rooms for the remainder of the study.

The picture description condition, drawn from previous research conducted by Madore and colleagues (2014), was included in the study as a control condition to isolate the effects of episodic simulation from effects of scene construction. This condition adapted the same stimuli – pictures as well as cue words – used in the imagination conditions. The pair of participants were instructed to work together to describe the complete picture including people, objects and the environment as literally presented, and in as much detail as possible out loud as if they were describing it to another person who could not see the picture. Participants were given three minutes to describe the picture together for each picture and cue word. After completing the picture description task, participants were moved to separate breakout rooms.

After completing the experimental tasks (imagine or picture description), participants were asked to provide ratings of social connection. Then, for 15 minutes, they completed a math task that was composed of multiplications problems. Participants were then led to the memory portion of the study. The previous cue words, without the pictures, were shown on screen and participants verbally recalled the events or pictures that were previously described during the experimental task in as much detail as possible. Each memory trial lasted between one and three minutes. Like in the imagine trials, scene vividness was measured for each memory trial. Finally, participants were given a survey that measured demographic data and, when finished, were debriefed on the purpose of the study, thanked for their time spent, and were informed of how payment was to be made via Prolific.

## **Measures.**

### ***Social Connection.***

Social connection was measured using seven items that were averaged to create a composite score. These measures were completed by participants after the imagine or picture description task. The initial measure was a series of images portraying overlapping circles

meant to signify themselves in relation to the other participant. Following this were measures with a scaling of 1 (*strongly disagree*) to 7 (*strongly agree*) in which the participant reported how much they felt they had in common with the other participant, how much they felt they were on the same wavelength, how satisfied they felt with their relationship to the other participant, how much they liked the other participant, how much they valued them, and how connected they felt with the other participant.

### ***Scene Vividness.***

Participants were given seven images portraying increasing vividness and were asked to pick the photo that was most similar to how vividly they imagined or remembered the scene in their mind. Responses were coded on a scale from 1 (*least vivid*) to 7 (*most vivid*).

## **Results**

### **Overview.**

In subsequent, from the N=126 participants, the effect of collaborative imagination will be examined to determine its social effects. Then, the relationship between subjective scene vividness and social connection will be analysed.

### ***Social Connection.***

A one-way ANOVA was conducted to analyse social connection rating means between the three conditions: Collaborative, Individual, Picture Description. Results showed that social connections varied significantly between the conditions ( $F(2, 80.6)=8.06, p<.001$ ). Specifically, post-hoc analyses found that the collaborative condition showed significantly greater ratings of social connection ( $M=5.53, SD=0.66$ ) than the individual condition ( $M=4.83, SD=0.93; t(74.1)=3.97, p<.001$ ). The data suggests that collaboratively imagining a shared future event together can increase feelings of closeness and affiliation beyond independently imagining a social interaction. As for the picture condition, there was not a significant difference in social connection ratings between the collaborative condition and the

picture conditions ( $M=5.19, SD=0.71; t(81.6)=2.24, p=.07$ ). This suggests that, although collaborating in general increases participants reported social connection rating, collaborative imagination has a unique effect on social connection.

### ***Scene Vividness.***

T-tests were conducted to analyse the condition differences of scene vividness on both the imagination and memory trials. These analyses revealed a significant difference in scene vividness of simulated future events in collaborative versus individual conditions during the imagination trials ( $M_{Collab}=5.95, SD=0.76; M_{Indiv}=5.43, SD=1.11; t(82)=2.51, p=.01, Effect Size=0.55$ ); however, there was no significant difference observed during memory trials ( $M_{Collab}=5.23, SD=.84; M_{Indiv}=4.83, SD=1.19; t(82)=1.75, p=.08, Effect Size=0.38$ ). A *t*-test comparing the scene vividness of the memory task between the picture condition and the collaborative condition showed no significance ( $t(79.9)=1.75, p=.32, Effect Size=0.22$ ), as did a *t*-test between the picture condition and the individual condition ( $t(79.4)= -.82, p=.42, Effect Size=-0.18$ ). Therefore, collaborative imagination appears to allow participants to imagine more vivid scenes during simulation.

A correlation matrix was compiled between social connection and scene vividness. The subjective scene vividness of the shared future event was significantly associated with social connection ratings for both imagine trials ( $r(84)=.34, p=.001$ ) and memory trials ( $r(84)=.35, p=.001$ ). So, this shows that higher ratings of vividness are correlated with higher ratings of social connection.

## **Discussion**

This study found evidence that collaborative imagination increases social connection in novel interaction partners. The average rating of social connection was significantly higher after the collaborative imagine task compared to the individual imagine task. In addition, the collaboration imagination condition had a higher average social connection rating than the



picture description, suggesting that the effect is not due to collaboration in general, but a unique effect of collaborative imagination on novel social relationships.

The potential effects of this finding can be seen in multiple possible areas. This information may allow us to improve out-group relations and reduce prejudice. Considering the knowledge that imagined contact has been seen to reduce prejudice and increase prosocial behaviour, future research may explore the possible effect of collaborative imagination on prejudice and helping behaviours towards out-group members (Meleady & Seger, 2016). By having individuals from different groups collaboratively imagine positive interactions together, this could improve attitudes towards those of the out-group. Vollberg and colleagues (2021) also found that using episodic simulation inductions increased levels of empathy for in-group members as well as out-group members, and it has been found that empathy is strongly linked to helping behaviours across groups (Baston & Ahmed, 2009). Thus, with increased attitudes, helping behaviours may increase as well.

With greater episodic detail contributing to having greater empathy for others, this suggests that this aspect can influence how we engage with others in the present (Vollberg et al., 2021). This is consistent with the results that we have observed of higher levels of scene vividness correlating with higher levels of social connection, suggesting a relationship between the experienced episodic simulation and its impact on our behaviour in the present. Considering that greater vividness in episodic simulation of helping behaviours increases the likelihood of said behaviours (Gaesser et al., 2018), future research exploring behavioural effects of collaborative imagination, and whether higher levels of vividness of co-imagined events may increase the likelihood of engaging in prosocial behaviour following episodic simulation of helping behaviours, is suggested. Most research focused on imagined situations including out-group members is primarily done by participants individually and explore how

collaboratively imagining events with a member of an out-group may increase this likelihood (Turner & Crisp, 2012).

Furthermore, the vividness of the imagined scene appears to have a moderate correlation with that of social connection. Consistent with our second hypothesis, the more vivid the image in the mind of the individual, the closer they tend to feel to the other individual that imagined a situation with them, showing a relationship between scene vividness and social connection. A possible aspect of this finding may be that the more vivid an imagined situation is, the more plausible it may seem to the individual, subtly increasing one's perception of the other part of the pair. If one imagines with another, getting along well, it may create the perception that the pair would get along well in that situation. Consider how imagining a situation that an individual would be happy in, activates the regions of the brain that impact the feeling of happiness (Poerio et al., 2014). There is potential that being able to imagine the event more vividly may increase the activity level in the brain for the emotion envisioned. This could influence an individual to feel the pleasant emotions felt while positively interacting with another person during imagination of such a scene, contributing to social connection.

The last finding was that of significant difference in means for scene vividness between conditions during the imagination task but not the memory task, suggesting that it is the social context of collaboratively imagining that drives this effect. During collaboration, there are multiple individuals working together to imagine a scene. For instance, in group mind, there is the held concept of everyone having a "role" in group knowledge (Wegner, 1986; Barnier et al., 2014). Wegner (1986) brings up the idea of everyone in a group being an "expert" for one topic of knowledge. This could be true for collaborative imagination. Consider the constructive episodic simulation hypothesis proposed by Schacter and Addis (2007), which suggests that the ability to imagine future events is based mainly in an

individual's ability to take past memories, dissect them and reconstruct them in order to create possible novel future simulations (Schacter and Addis, 2020). With this concept in mind, each individual has their own knowledge, perspectives, and experience that they have gone through that makes up their memories up until imagining an event. As a result of this, each individual could have more preference or knowledge than another. One individual may focus on more internal – episodic; concerning people, location, events, etc. – details, and another may focus on more external – semantic; facts, elaborations, references, etc. – details (Levine et al., 2002; Bernier et al., 2014). Also, consider this with creativity. It has been found that individuals deemed as “creative experts” – those who are successful in creatively driven careers – are more easily able to imagine events in the distal future (Meyer et al., 2019). Each individual has a level of creativity and experiences to draw from that can be used to paint a simulated future event and perhaps increase the creativity level of the scene as a whole. Thus, considering this, collaboratively imagined events may result in a fuller, more vividly imagined scene that include details from a larger pool of information (i.e., different individuals' memories). Even with the memory of the collective imagined event containing contributions from both participants, the one participant is remembering individually and may focus on the details that they are more familiar with.

There are a few limitations to note in the present study. One limitation is that of the restricted age range of participants in the present study, which included individuals between 18 and 30 years old. The ability to imagine and the details imagined have been seen to vary among age groups, such that older individuals often have difficulty imagining events and include more external details (e.g., general facts or references), and fewer internal details (e.g., people and locations), than younger individuals (Addis et al., 2008). Thus, we added an age range to remove this variable. Future research may explore whether the effect of

collaborative imagination on social connection varies across different age groups due to these age-related changes in episodic processes.

While this study provides initial evidence of the effect of collaborative imagination on social connection, there are still many open questions that future research can explore. Examining the effects of collaborative imagination in groups rather than pairs would increase the knowledge of imaginations' impact on social relationships. Does collaboratively imagining a shared future with more people impact the level of social connection gained for the individuals in the group? Also, considering the observed differences in vividness found between the collaborative condition and individual condition, would collaboratively imagining with more people increase the vividness of the imagined event in one's mind? These are possible continuations of this research to increase the knowledge pertaining to social connection, scene vividness, and collaborative imagination.

### **Concluding Remarks**

To summarize, this present study explores research focusing on how collaborative imagination increases social connection in novel interaction partners. While participants reported increased social connection after individually imagined interactions, there was greater reported social connection with their paired partner after collaboratively imagined interactions. Further, this study explored the role of subjective scene vividness in the effects of collaborative imagination. Results showed that collaborative imagination leads to more vividly experienced scenes than individual imagination, and this heightened vividness is associated with heightened social connection. Therefore, collaboratively imagining future events leads to higher levels of social connection in a novel pair, as well as being associated with higher reported levels of vividness for the episodic simulation. This research provides insight into how collaborative imagination influences social connection in developing relationships and how vividness plays a role in this relationship. These results illustrate that

imagination isn't solely an individual process, as seen in a large portion of previous research, but can be a social act in of itself while having social consequences for the present.

Collaborative imagination can be used to encourage social connection even with no previous shared experiences across large social distances and regions. Furthermore, collaborative imagination can influence aspects of individuals' experiences of scene vividness during episodic simulation, which may affect this seen increase in social connection. It appears that our imaginations together are powerful in impacting our relationships, our experiences, and our present.

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