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Collective Imagination

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Abstract

Life is filled with experiences that contribute to who we are, who we will become, and the social connections we make. We are constantly reflecting on past experiences, be it alone or with others, as well as thinking about what is to come and where we see ourselves in the future. Social and cognitive psychology research has focused on the processes behind autobiographical memory and episodic simulation. The link between collective memory and episodic simulation is the focus of the present study. The specific aim is to explore the potential link between reflecting on past experiences and imagining the future in building novel social relationships. Implementing methods from both memory and episodic simulation research, participants imagined plausible future events either collectively, with another participant, or individually, to examine the effect of collective imagination on social affiliation. We predict that when participants collectively imagine future events, they will feel a greater association to the other, unfamiliar, participant. The results of this study demonstrate a significant increase in social affiliation when imagining a future event with another person. More research is required to gain further insight into the full influence of collective imagination, but the present study contributes to the expansion of current knowledge on social imagination and memory.

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List of Figures

Table of Contents

Collective Imagination

Memory and imagination are used every day, between reflecting on the past, remembering to complete daily tasks, and thinking about the ideal future self. Social relationships and situations have been demonstrated to influence how memories are recalled. There is little research to demonstrate similar social effects on imagination, however, there is extensive research that indicates there is a connection between the processes behind memory and imagination. Because the processes of memory and imagination have been shown to be linked, it is possible that social influences will have a similar effect on imagination. The present study aims to explore this potential link between collective memory and imagination, by examining one aspect of social behavior, sharing.

Collective Memory

Collective memory refers to the study of social influences on memory (Olick, 1999). Olick (1999) argues that there is no memory without social experience, and there is no collective memory without individual input. Extensive research has been done to explore the benefits to memory of collaborative recall (i.e. an increase in memory performance), as well as the use of autobiographical memory (memories specific to an individual's life) recall to form and maintain social bonds. These topics within memory research provide the basic framework for "collective imagination" and are further explained in the next section.

Although collaboratively recalling events and information provides benefits to the memory system itself, the social aspect of memory extends beyond the small-scale interpersonal relationships. Though individuals tend to do the remembering, it is often in group settings that memories are generated, and these social settings are what provide the "cues" for what and how

memories are to be recalled (Olick, 1999; Sutton, 2008). In addition, memory provides the framework for group identity and social norms that will eventually influence a culture (Weldon & Bellinger, 1997). Groups provide the necessary structures for what societies collectively remember, and the act of remembering is not only performed as members of a group, but also allows for the formation of these groups through remembering (Olick, 1999).

Benefits of Collaborative Memory

Collaborative memory research has focused on recall for internal and external details regarding autobiographical memories (AMs) in pre-existing relationships (Barnier et al., 2014) and semantic information relative to displayed pictures and words in a novel setting (Weldon & Bellinger, 1997). Literature on the topic demonstrates that in general, collaborative recall promotes memory performance when compared to individual recall (Barnier et al., 2014; Barnier et al., 2008; Bietti & Stone, 2019; Weldon & Bellinger, 1997).

The first study to explore collaborative recall on memory performance was done by Weldon & Bellinger (1997). The researchers examined memory performance with individual recall, collaborative recall, and nominal (pool of the individual recall responses) recall for pictures and words (Study 1) and the story "The War of the Ghosts" (Study 2) (Weldon & Bellinger, 1997). For Study 1 participants were shown pictures or words where they were to recall the pictures in two separate recall trials, testing the condition groups. The possible combinations for the recall trials were individual-individual, collaborative-collaborative, individual-collaborative, and collaborative-individual. Study 2 utilized the same methods replacing the words or pictures manipulation with a story. In both experiments it was found that the collaborative group exhibited less forgetting than the individuals and maintained more consistent details across trials. However, the nominal group showed greater performance in the

memory tasks than the collaborative group across experiments, suggesting collaborative inhibition on recall. Although collaboration reduced group memory performance, memory collaboration prior to individual recall, as seen in the collaborative-individual group, increased participants' memory performance.

Barnier et al. (2014) investigated the idea of social scaffolding, in which another individual helps feed details and support to promote performance in AM recall of episodic and semantic details for both younger and older intimate couples. Episodic details include information that is directly related to the recalled event; whereas semantic details include information outside of the event, or not directly related to the recalled event. The researchers examined the role of collaboration on episodic and semantic details in AMs. They found that collaboration on AM recall reduced episodic deficits, and increased generation of internal (episodic) details for older couples but observed no difference in generation of episodic and semantic details for younger couples. This finding suggests that memory scaffolding increases with age, such that older individuals rely on others for AM recall as they age. In addition, Barnier et al. (2014) also found that couples that displayed higher intimacy ratings recalled more details, suggesting that within a couple, memory that is richer in detail because of scaffolding may indicate greater social intimacy.

In addition to social scaffolding and greater social intimacy, another theory as to why memory performance may increase as a result of collaboration attributes the benefit to transactive memory system. A transactive memory system is the social distribution of memory systems (sharing, encoding, and retrieval) across individuals to increase efficiency (Barnier et al., 2014; Barnier et al., 2008; Pasupathi, 2001; Sutton, 2008). Although transactive memory is observed in both pre-existing and novel relationships, there is a greater enhancement of

collaboration on memory performance for when relationships are ongoing, such that they have more time to develop this system and have a richer context for remembering (Barnier et al., 2008; Sutton, 2008). Remembering can be viewed as a social process where the "discussion of a shared past can help paint the full picture because individual memory can be seen as incomplete" (Sutton, 2008).

Using Memory to Form and Maintain Relationships

Self-image, the conceptual self, and long-term self-image are often reflected in AMs (Alea & Bluck, 2003; Bluck et al., 2010; Pasupathi, 2001) and the perceptions others have towards individuals are often influenced by collective memory (Weldon & Bellinger, 1997). Reflection of past experiences allows for self-reflection of emotional and moral values, given that how an event is encoded and shared represents a reflection of one's self and one's character (Pasupathi, 2001; Sutton, 2008). Relationships tend to form between individuals that are similar to one another, and further develop through disclosure of emotions and personal details. Sharing AMs with others allows for one to easily share information about their personality and values with others, while the other listens and assesses whether their values match (Alea & Bluck, 2003; Bietti & Stone, 2019; Bluck et al., 2010; Bluck et al., 2005). Thus, social bonds can be formed through social remembering and autobiographical memory.

A successful relationship is one that moves beyond the initial stages of disclosure. It is common for romantic couples and friends to reminisce about past experiences they have shared together, and often, this is used as a way to assess the quality and health of the present relationship (Alea & Bluck, 2003; Barnier et al., 2008); memory is relied on as a way to maintain intimacy and strengthen friendships (Alea & Bluck, 2007; Alea & Vick, 2010; Bazzini et al., 2007; Bluck et al., 2010; Pasupathi, 2001; Pasupathi et al., 2002). When people experience an

event together, each individual forms their own memory of the experience that can be combined independently, or eventually will be combined through collective remembering into one full narrative between them, increasing their affiliation to one another (Sutton, 2008). The individual memories dynamically adapt to match the emotions and status of the group to strengthen their bond by increasing similarity between individuals.

When discussing the contribution collective memory has on forging and maintaining relationships, one account is that it is a result of a "shared reality" that is formed between those involved in the social remembering (Bietti & Stone, 2019; Pasupathi et al., 2002). A shared reality occurs when there is a subjectively perceived commonality between individuals' inner states. The shared reality is formed around a target referent, there must be appropriate motivation surrounding the commonality of inner states between individuals, and involve an experience of a successful connection of people's inner states (Echterhoff et al., 2009). Social remembering acts can make individuals' independent experiences converge so as to form a shared reality, further strengthening their relationship (Bietti & Stone, 2019; Pasupathi et al., 2002).

Episodic Simulation

Episodic and autobiographical memories are responsible for understanding an individual's past, leading up to the present. As explained in the previous section, memory is often used in a social context to build and maintain relationships through referencing the past. Cognitive and social psychology research has started to shift from focusing on retaining and recalling past experiences to also include the ability to simulate future events. Although reflecting on the past and imagining about the future are different, reviews of research have suggested that the cognitive processes behind memory and imagination are linked (Buckner & Carroll, 2007; Gaesser, 2012; Schacter et al., 2017; Szpunar & Schacter, 2013), such that the

processes used when reflecting on the past are used to vividly imagine possible events in the future. Memory provides the details that can be recombined into an imagined event (Schacter et al., 2007). Of interest, it has also been demonstrated that there can be confusion between a memory of an actual event or an imagined future event (Gerlach et al., 2014; Schacter et al., 2011).

The link between memory and imagination is also demonstratable through the constructive episodic simulation hypothesis. The constructive episodic simulation hypothesis states that the ability to imagine the future requires a flexible system that can recombine details from past experiences to simulate novel future events (Madore et al., 2014; Schacter et al., 2007). One way in which this theoretical link between memory and imagination has been demonstrated is in neuroimaging studies. A review by Schacter et al. (2007) summarized that most of the shared brain activity for descriptions of past and future events can be confined to regions in the prefrontal cortex and parts of the medial temporal lobe. Specifically, positive future events can be limited to the ventral regions of the prefrontal cortex (Benoit et al., 2011; D'Argembeau et al., 2008).

Simulation of Future Events

As with memory, the simulation of future events can serve multiple functions. One is that it allows for the speculation of receiving a long-term reward in the present. Benoit et al. (2011) examined whether episodic prospection of a long-term scenario would attenuate temporal discounting, the devaluation of rewards that have a delayed delivery. Temporal discounting is observed when individuals make decisions that have a direct impact on the present, despite the long-term option being more beneficial. Participants were asked to either imagine specific episodes of spending money in the future or estimate what the monetary amount could purchase

in the given scenario. When participants first imagined themselves spending a certain amount of money in the future they were more likely to select a higher long-term monetary reward over a lesser-value short-term reward when compared to just the Estimating Task; demonstrating that the episodic simulation of the future reward attenuates the effects of temporal discounting, making a long-term reward appear more desirable.

In addition to the attenuation of temporal discounting, episodic simulation has been demonstrated to increase the perceived likelihood of an event (Crisp & Turner, 2009; D'Argembeau & Van der Linden, 2012; Szpunar & Schacter, 2013), and even extends to the facilitation of prosocial intentions and behaviors (Gaesser, 2012; Gaesser et al., 2018; Gaesser & Schacter, 2014). Participants are asked to read stories in which a person is in need of help, and then imagine themselves helping that person in different contexts to vary the vividness of the details in the imagined event. When individuals imagine themselves helping another person, they are more willing to help them, and the more vivid the imagined event is, the more willing they are to help (Gaesser et al., 2018). Gaesser et al. (2018) also found that simulating helping behavior not only increases an individual's reported willingness to help another, but increases their prosocial behavior, as demonstrated through behavior in an economic game.

Additionally, memory recall plays a pivotal role in developing the long-term self and decision making (Bluck et al., 2010). The memories that most contribute to the long-term self and decision making are viewed as "core memories". Hence, if people can define core memories that play an important role in their sense of self, people can also define core future events that they consider as defining to them as individuals, allowing for a personal continuity (D'Argembeau et al., 2012). The researchers found that both self-defining memories (SDMs) and self-defining future projections (SDFPs) tend to focus around relationships and achievements,

suggesting the importance of relationships and achievements for personal continuity. Both reflecting on and imagining past and future achievements and relationships are important for maintaining a full sense of the individual self, such that life includes the past and future.

The Present Study: Collective Imagination

Research in imagination is still relatively new in the field of social and cognitive psychology, with many gaps unexplored. Imagination can be linked to memory through the underlying processes used in memory being used to vividly imagine future events. Because relationships can be formed and maintained through recalling past experiences, the aim of this study is to determine whether this is true for imagining a future event with another person. The imagination of a detailed, positive, future event with another individual would allow for a reverse reflection on a relationship, such that they are evaluating what a potential relationship with the other individual *could* be instead of reflecting on what it is.

Implementing a cue word paradigm from imagination (Madore et al., 2016) and memory research (Barnier et al., 2014), it was hypothesized that because of the many links between memory and imagination, imagining future positive and plausible interactions with another individual will increase social affiliation with one another. Likewise, imagining oneself positively interacting in the future alongside another individual may act as a way to increase the likelihood of the interaction and thus, leading us to our hypothesis. It is also possible that, when imagining the future event together it may feel as if the event had actually happened between the two, resulting in a simulated reflection on their newly formed relationship.

Methods

Materials

Nine cue words were randomly selected from Madore et al. (2016) and were displayed for each trial in order to help the participants generate an idea for a future event. Participants were required to complete at least two of four practice trials before moving on to the real trials for the study. There were three conditions. The *collaborative* condition required three computers, one for each participant to record their responses on, and one in the middle of the table for the display of the cue words. The *independent* and *puzzle* conditions only required one computer for each participant. All conditions were audio recorded, and all conditions collected pre and post affiliation measures.

Participants

A total of 120 participants (40 participants for each condition) were recruited using the University at Albany Research Pool (N=120, 66.7% female, 32.5% male, 0.8% other) in exchange for class research credit. Pre-registration criteria for eligibility for participation included correctly answering three out of four comprehension check questions based on the instructions (e.g. “True or False, the imagined event should be plausible”). No participants were excluded based on these criteria, however, 22 pairs of participants were removed and not included in the analyses due to technical difficulties.

Measures

The primary dependent variables are affiliation and closeness measures that are filled out in a survey before the start and at the end of the experiment. These measures assess each participant’s perceptions and feelings about the interaction with the other participant.

Specifically, these measures include: a visual measure of self-other overlap, (7 images to select from), satisfaction with the relationship measured using a 7-point Likert scale (*1=very dissatisfied, 7=very satisfied*), 5 statements about feelings of connectedness and affiliation using a 7-point Likert scale (*1=strongly disagree, 7=strongly agree*), and how close the participant feels to the other participant measured using a sliding scale rating from 0-100.

Exploratory measures were also collected after each imagination trial. These exploratory measures consisted of vividness, coherence, likelihood, difficulty and perspective taking of the imagined event. These measures include: a visual depiction of vividness (7 options to choose from, the first being no image), mentally pictured scene while responding to the questions using a 3-point scale (*1=I didn't really picture anything, vague images at most, 3=I pictured a whole scene (objects and surrounding background, whole scene)*), coherency of the event using a 7-point Likert scale (*1=vague, 7=highly coherent and clear*), likelihood to experience the imagined event in the future using a 7-point Likert scale (*1=extremely unlikely, 7=extremely likely*), difficulty of the task using a 7-point Likert scale (*1=extremely easy, 7=extremely difficult*), and considered thoughts and feelings of the other participant using a 7-point Likert scale (*1=not at all, 7=strongly considered*).

Procedure

Collaborative and Independent Conditions

After participants signed the consent forms, they were moved into separate rooms to complete the pre-affiliation measures. For the independent condition participants continued in these rooms for the remainder of the study. For the collaborative condition they were moved into

a larger room with the other participant to complete the imagination task after these measures were completed.

Participants read study instructions and an example of how the imagine task is supposed to run, followed by four instruction comprehension questions. The participants were instructed to visualize a positive interaction together in as much detail as possible, as if they were actually there. A sample of the wording of these instructions is provided in Appendix A. An example of how the imagination task was displayed to participants, is also included in Appendix A. Once participants completed the instructions, they were to complete the practice trials for the imagine task. The imagination task was split into a "Brainstorm Phase", where the participants were first exposed to the cue word and had up to one minute to generate a future event to imagine in detail, followed by the "Imagine Phase", during which they then described details about the chosen event for three minutes. This paradigm was adapted from other memory and imagination studies (Barnier et al., 2014; Gaesser et al., 2011; Madore & Schacter, 2016; Madore et al., 2016). A three-minute timer set by the research assistant went off at the end of each Imagine Phase to signal the end of the trial. After each practice trial, the research assistant provided feedback to help keep the participants on track for the task to make sure the events are as detailed as they can be. Once the participants completed at least two practice trials and understood how to complete the task, they moved to the real trials. Once the practice trials were completed, vividness, coherence, probability, difficulty and perspective taking measures were collected following each Imagine Phase. The main imagination task consisted of five trials. For the collaborative condition, at the end of the five trials, participants were separated back into their individual rooms to complete the post-affiliation measures and attention checks (i.e. "Did you imagine an

event for this word?"). Both the collaborative and independent conditions kept the participants separate for the remainder of the study.

Once the imagination task was completed, the participants performed a filler task of two-digit multiplication problems for 12 minutes. Ten problems were displayed on each page, and each page was set to auto advance after three minutes to ensure all participants completed the task for the same amount of time. At the end of the filler task, participants moved on to the memory task where they recalled the events they had imagined with (collaborative condition) or involving (independent condition) the other participant in as much detail as possible for up to three minutes. The cue words displayed for the imagination task were displayed during each of these trials, and the same vividness, coherence, probability, difficulty and perspective taking measures were collected as in the imagination task. At the end of the study participants completed measures gauging enjoyment (e.g. "How enjoyable was this task for you?") before completing demographic information.

Puzzle Condition

As in the collaborative condition, after participants signed the consent forms, they were moved into separate rooms to complete the pre-affiliation measures. Once the pre-affiliation measures were completed, participants were moved into a larger room, where they worked on a 1000-piece puzzle together for 35 minutes (about the length of the imagination task). Participants were instructed to work on the puzzle together and were encouraged to speak freely during the task. A sample of the wording of these instructions is provided in Appendix A. As in the imagination task, at the end of the 35 minutes a timer set by the research assistant went off to signal the end of the task. At the end of the task, the participants were separated into individual rooms again where they were to complete the post-affiliation and measures gauging enjoyment

and difficulty before completing demographic information. The main purpose of this condition was to act as a social control, such that the participants would still interact with one another in the lab, but not perform an imagination task.

Results

A mixed design ANOVA was run to compare the (within subjects measure of) pre and post affiliation scores for the (between subjects factor of) conditions. We found a main effect of time point (pre and post affiliation) ($F(1,117)=175.6$, $p<0.001$, $\eta^2_p=0.600$) and an interaction of time point and condition (collaborative, independent, or puzzle) ($F(2,117)=17.6$, $p<0.001$, $\eta^2_p=0.231$). Between-subjects effect of condition was also significant ($F(2,117)=5.16$, $p=0.007$, $\eta^2_p=0.081$). Post-hoc comparisons between conditions with Bonferroni corrections indicated that, there were no differences before the manipulation for any of the conditions. The analysis revealed an increase in affiliation for all three conditions from before the experimental task to after (collaborative: $t(117)=-11.604$, $p<0.001$; independent: $t(117)=-3.248$, $p=0.023$; puzzle: $t(117)= -8.104$, $p<0.001$). Most importantly, post-affiliation in the collaborative condition was found to be significantly greater than post affiliation in the independent condition ($t(196)=5.660$, $p<0.001$) and, in the puzzle condition ($t(196)=3.443$, $p=0.011$). At the same time, post affiliation in the independent condition was not significantly different than post-affiliation in the puzzle condition ($t(196)=-2.217$, $p=0.417$), showing support for our hypothesis that collective imagination increases social affiliation. Means are summarized in Figure 1 in Appendix B.

Discussion

The study examined the potential role of imagination in social affiliation. The results support the hypothesis that social affiliation can increase through the collaborative imagination

of future events with another person. Although the mean post-affiliation scores increased for all three conditions, the most significant increase and greatest difference between pre and post affiliation scores was found to be in the collaborative condition. The fact that the independent and puzzle conditions generated a smaller difference in affiliation scores also supports this hypothesis, because the puzzle condition acted as a control for social interaction within the laboratory to work together in completing a shared goal, which also has been known to increase social affiliation between two individuals (Wolf et al., 2016). Although the independent condition did not display as large of an increase in affiliation as the collaborative condition, the statistically significant increase in affiliation in the independent condition suggests that the act of imagining positive interactions with another person in the future can result in an increase in social affiliation. Future work should be aimed toward delineating of the effect of simply imagining a future event involving another individual as contrasted with actually imagining the event together.

The observed effect of affiliation on imagination extends the effect of social research evident in memory task. Memory and imagination have been demonstrated to be linked (Buckner & Carroll, 2007; Gaesser, 2012; Schacter et al., 2017; Szpunar & Schacter, 2013), and we have demonstrated that they are similar with respect to the effect of sharing personal information. The results of this study include supporting evidence that the social implications of collective memory would encompass imagination as well, given that we use episodic details of memory to create an imagined event (Schacter et al., 2007). Through the sharing of memories, personal information is disclosed to the other individual (Alea & Bluck, 2003; Bietti & Stone, 2019; Bluck et al., 2010; Bluck et al., 2005). A similar process of disclosure can occur through the brainstorming and imagination of a future event. Information about an individual such as food or

activity preferences can be conveyed during the imagination of the plausible future interaction, acting as a self-disclosing activity between the two individuals. Social scaffolding may also be demonstrated through the imagination task in that participants used one another to relay ideas and details about the imagined event as a way to make the task easier and more enjoyable for one another. Further, through the formation of the imagined event and completion of the lab task, they are potentially forming a shared reality about the future event with one another. This concept of a shared reality is considered important for the formation and maintenance of social bonds through the use of memory (Bietti & Stone, 2019; Pasupathi et al., 2002).

Imagination has also been found to both increase the likelihood of an event to occur (Crisp & Turner, 2009; D'Argembeau & Van der Linden, 2012; Szpunar & Schacter, 2013) and to facilitate prosocial intentions and behaviors (Gaesser, 2012; Gaesser et al., 2018; Gaesser & Schacter, 2014). This aspect of imagination may be exhibited through collective imagination in that the plausibility of these types of interactions in the future increases as individuals imagine interacting in the future together. This interaction and conversation with another person may allow for an increased subjective emotional value of the event and of interacting with the other person. This would result in the attenuation of the long-term reward of a relationship, making a possible relationship with the other person appear to be more desirable (attenuation of temporal discounting), (Benoit et al., 2011). If the potential relationship appears to be more desirable, then individuals may feel a greater affiliation towards the other individual in an attempt to make that potential future relationship more of a reality.

This preliminary study on collective imagination acts as the first step towards considering the role of collective imagination on the formation of relationships. Future research on collective imagination, as mentioned earlier, should explore whether the increase in social affiliation that

was observed is directly related to the imagination of a future interaction, or if it resulted from other components of the episodic process such as scene construction. Because memory provides the episodic details required for imagination (Schacter et al., 2007), a paradigm allowing for isolation of these episodic and non-episodic details (i.e. the picture description task in Madore et al. 2014) would allow for further convergence that it is the act of imagining with another person about a future interaction that increased affiliation. This picture description task would replace the puzzle condition, acting as a specific control for episodic details in place of a general control for social interaction in a laboratory. It would also be of interest to use this picture paradigm to compare to the independent condition, because these individuals are still simulating a future event including another individual, though independently. Future work may also aim to examine the influence of collective imagination on trust and empathy in individuals through behavioral paradigms such as incorporating an economic game into the current procedure. Another possible direction would be to consider, the role of imagination in maintaining pre-existing relationships and intimacy. A longitudinal study may also be of interest to observe the lasting effects of imagination on affiliation between the individuals.

Although this study supports our hypothesis that the imagination of future events with another person increases affiliation, it is important to note that this study was conducted in a laboratory setting, where the individuals were participating in order to receive research credit for their classes. Because the participants are imagining these future events under the supervision of a research assistant and in an unnatural setting, it is possible that the observed effects of collective imagination may be different in a more natural setting. Although the lab does not have much external validity for a day to day interaction, it would be interesting to see collective imagination used in an educational or workplace environment as a bonding activity. Collective

imagination is a novel concept, and further research is required to truly understand its implications; this study acted as a way to open this new direction for cognitive and social psychology research.

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Appendix A: Instructions Supplement

Presented Instructions:

"Imagine an event lasting at least a few minutes but no longer than a day. When creating the imagined event, make sure to generate as much detail as possible. Visualize yourself and the other participant positively interacting, creating a vivid and elaborate event where you strongly see the scenario in your mind's eye, as if you were actually there. You want to imagine, for instance, what each of you are wearing, what you are doing, what the scene and surrounding location looks like, and any emotions or thoughts each of you may have."

"Work on a jigsaw puzzle together for 35 minutes. You will be allowed to speak freely to each other about anything you would like. What is important is that you work together on completing as much of the puzzle as you can before the time is up."

Example Imagination Trial:

Brainstorm Phase

Imagine cue word: **String**

You have up to one minute to settle on a future event to imagine together. If you have settled on an idea for your future event before one minute is up, click on >> to continue.

A small sample of what you may brainstorm for this event could be:
Participant 1: Ummm shoe string… french fries?
collective laughter
P1: Shoelace?
Silence
Participant 2: Hmmm
P1: How bout we…..go to the fair and watch the rodeo show, and the guy's got his uh?-
P2: Rope?
P1: Yeah! He's got his rope, yeah!
P2: Lasso!
P2: [Laughs] Mhm
P1 So, would you like to go to the fair with me, on um, the first Saturday of June?
P2: Yes, let's do it!
P1: Cool

Imagine Phase

Imagine cue word: **String**

Imagine and describe the event in as much detail as possible for 3 minutes.

A small sample of what you may imagine for this event could be:

P1: Alright so….. we're driving to the fair in the afternoon, the sun is shining, it's a nice day. I'm

wearing shorts and a blue t-shirt. Parking's crazy, everyone's charging like $20 to park on their lawn, but…that's a rip off and we can just drive down the street and park for free in the dusty green field.
P2: Mhm yeah
P1: We have a little bit of a walk but we have money in our pockets to get all the food now.
P2: We go up to a white and blue ticket booth and pay the entrance fee. We get the red stamps on our hands, and enter the fair.
P1: It's a little crowded, but not too bad. There are a lot of groups of friends, family's with little kids, and couples walking around. As we walk towards the rodeo show we walk by one of those yo-yo swing rides and person working the game where you try to throw a ball in a fish bowl to win a prize is trying to get us to play.
P2: Uh I'm kind of hungry so we search for some food before the rodeo show.
P1: Yeah sounds great, I definitely wanna grab some bloomin onion and fresh squeezed lemonade. What are you looking for?
P2: Mmm, I'm also gonna get a lemonade, I really want to get fried dough with powdered sugar, and….and….I think that's all I'm gonna get. The fried dough is so warm and delicious! I'm so happy right now.
P1: Alright, yeah cool. I get the fried dough too, but without sugar! [Laughs] I'm very particular about it.

…

*The same example was displayed to the independent condition but instead of alternating between "P1" and "P2" each line is written as "P" to represent a single participant.

Appendix B: Figures

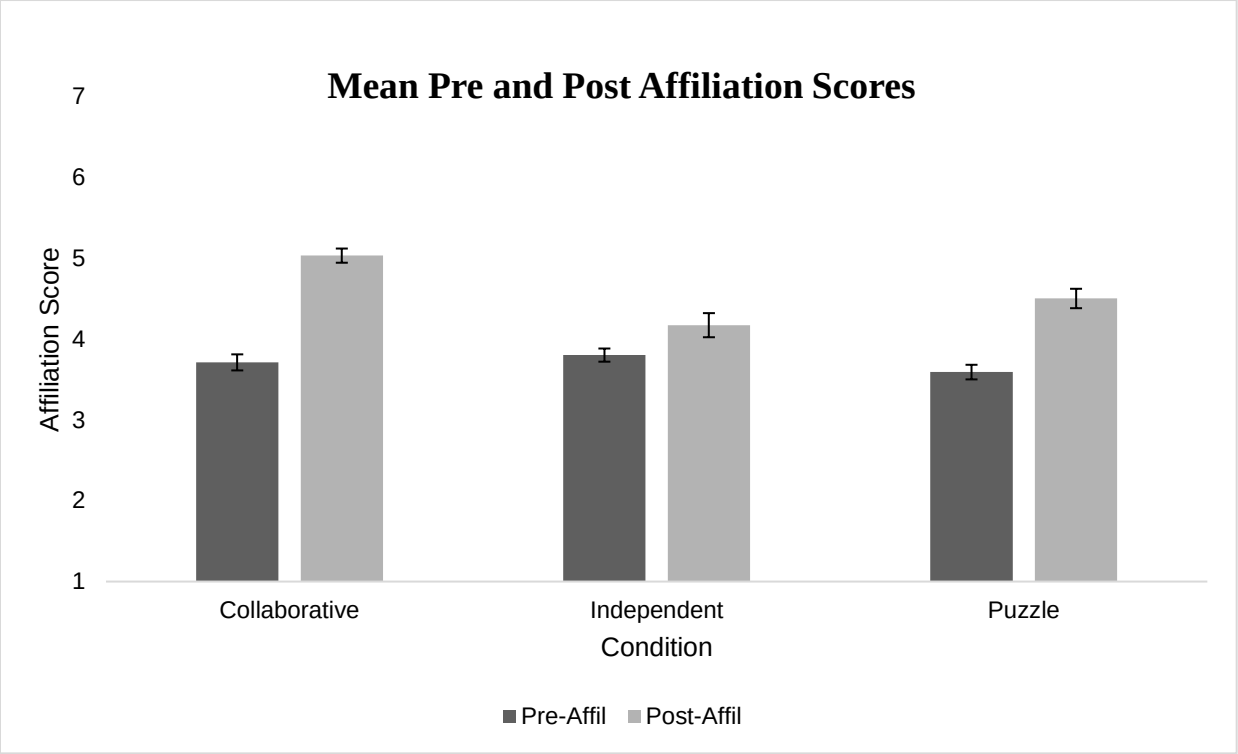

Figure 1. This graph represents the measured pre and post affiliation scores of participants for each condition. The error bars represent the standard error of the mean.