

THE EFFECTS OF CREDIBILITY ON THE SOCIAL CONTAGION OF MEMORY

Brian Boyle, Nihal Dayal, Andrew Fung, Kaitlyn Golden, Christopher Larsen, Leslie Nachbar, Liza Rubenstein, Sarah Schechter, Alexandra Shechtel, Paul Szerlip, Millicent Younger

Advisor: Dr. Patrick Dolan
Assistant: Jennifer Sissman

ABSTRACT

We investigated how memory is influenced by the presence of other people. While group recall has the potential to increase memory, it has also been shown to have negative effects on memory (“social contagion of memory”). Subjects in this experiment studied six photographs of household scenes and were asked to recall items from each scene in collaboration with a confederate. On six occasions, the confederate purposely recalled items not from a scene. On a follow-up individual memory test, subjects occasionally falsely recalled those items suggested by the confederate. We manipulated whether the confederate was a same-aged peer or an older figure of authority, and found that subjects were more likely to have false memories when paired with an authority figure. The implication is that people subconsciously put faith in the opinions of authority figures, even if the figures in question aren’t necessarily experts.

INTRODUCTION

As surrealist artist Salvador Dali stated, “The difference between false memories and true ones is the same as for jewels: it is always the false ones that look the most real, the most brilliant.” In short, people have the capability to form memories based on events they never experienced. Not only are these false memories products of preconceived notions, but they have the capability to seem, as Dali stated, “most brilliant” and more real than memories for actual events.

The ability to recall information manifests itself in more than one form. First, an individual has the ability to remember information by relying on past events and experiences. On the other hand, collaborative recall of a shared experience establishes a pool in which information is effectively exchanged and shared amongst the individuals [1]. For example, if one person remembers five items out of a group of ten, while another recalls five items with three shared; as a group they remember seven items, numerically superior to an individual’s recollections [2]. This supports Lorge and Solomon’s theory of “pooling of abilities” in which a group uses the various objects that individuals have an affinity towards remembering and combines them for a single response that encompasses a broad array of objects [3].

Remembering in social settings may not always be beneficial. A long history of research on conformity suggests that social influences can lead us to do, say, and even believe things that we normally would not. The classic study by Asch demonstrated the power of social suggestion in conformity. In these studies, a group of people sat around a table and judged the similarity of lengths of lines presented in front of the room. All but one person in the group were secretly in on the experiment (“confederates”) and gave their judgment before the only real participant did.

When this group of confederates made blatantly incorrect judgments (judging 2 different lengths of lines to be identical in length), the participant often conformed and also judged the lines to be the same length [4].

How might social pressures influence memory? If somebody in a group incorrectly remembers an event, their error might potentially spread to the others, leading others to also incorrectly remember the event in question. Signs of social influence on memory can be inferred from false memories often found in research on eyewitness testimony. In a typical study, participants witness a crime and are later asked to remember the details. In the phrasing of the questions, the experimenter indirectly provides misleading or inaccurate information [5]. For example, if participants witnessed a car crash at a *Yield* sign intersection, they might be later asked the question, “How many cars were present at the *Stop* sign?” In subsequent recollections of the event, the participant is likely to misremember the intersection having a *Stop* rather than a *Yield* sign. One can think of this misinformation as implied social influence since it came from the experimenter who presumably knows more about the stimuli of the experiment than the participants did.

Meade & colleagues devised a procedure to directly assess the social influence on remembering and misremembering (a phenomenon they called Social Contagion). In a typical experiment, a participant was paired with a confederate and studied a series of photos depicting household scenes. During a collaborative recall phase, the participant and confederate alternated recalling items from each scene. On some scenes, the confederate recalled two items that were not in the scene. These researchers found that in a subsequent individual recall phase, participants falsely recalled items suggested by the confederate, even when they were warned against guessing or relying on their “partner’s” recall [6].

These previous studies on social contagion always used a student confederate of approximately the same age as the actual participants. We wondered if we could influence the impact of the confederate by making him or her a more or less credible source of information. There have been relatively few studies of the effect of a speaker’s supposed credibility on a listener’s ability to recall information. According to Corrie, other studies that have dealt with the credibility of a speaker or source have focused on the attitude of the listener towards the information presented, rather than the listener’s ability to recall the information [7]. For example, you might be more likely to believe information regarding nutrition when it is presented by a doctor rather than by a supermarket tabloid newspaper [8]. In the few studies that have dealt with the effect of a speaker’s credibility on the memory of a listener, the results have suggested that listeners are more likely to recall information presented by a supposed “credible” source. For example, Gill and Badzinski found that subjects were more likely to recall information presented to them by a professor than by a student [9]. Corrie, building on these studies, tested whether, after two weeks, subjects were better able to recall information regarding credit advice when told that the speaker was a financial planner than when told he was a college freshman (all subjects listened to the same tape of a male voice). Although the results of Corrie’s experiment showed no relationship between the speaker’s credibility and the subjects’ ability to recall information, there were many possible variables discussed, such as the subjects’ interest in the topic presented [7].

To test the idea that participants are more likely to believe an authority figure than someone without authority, we employed the procedure developed by Meade & colleagues and compared levels of false memories when the confederate was a peer (another same-aged student) with those when the confederate was an older, authority figure.

METHODS

Subjects

The subjects were thirty-five students of the Governor's School in the Sciences who received donuts and/or candy for participating in the experiment. They were tested individually with a confederate and at least one experimenter present.

Design

The independent variable of interest is the type of confederate. Seventeen subjects participated with a counselor confederate, and the others were tested with a fellow Governor's School student as confederate. For counterbalancing purposes, approximately half of each group of confederates suggested items in the toolbox, kitchen, and bedroom scenes, and the other half suggested items in the bathroom, closet, and desk scenes. The dependent variable of interest is the likelihood of false memories during the individual recall session.

Materials

Six pictures described in Roediger, Meade & Bergman [10] were used. These photographs depicted different household scenes (toolbox, bathroom, kitchen, bedroom, closet, desk) with an average of 23.8 identifiable items each (See Appendix A). For each scene, four items that were not present in the scene (but might be expected) were used by the confederates as suggested items during collaborative recall (e.g. hairbrush in the bathroom scene).

Other materials included stopwatches, a CD player and a CD of Vivaldi's "Four Seasons", a page of difficult multiplication problems used as a filler task, a false survey of the subject's exposure to music, individual recall sheets, pens, and a note pad for the experimenter to record the collaborative recall.

The experiment used ten confederates—five Governor's School in the Sciences students and five counselors. The large number of confederates was used to minimize subjects' and non-participating students' suspicions. Each confederate participated in four different tests with four different student subjects. These confederates were compensated with a \$10 gift card to Atlanta Bread Company.

Procedure

Before testing began, the confederates attended a meeting explaining the experiment. At this meeting, they had an opportunity to study each scene and practice recalling objects. They were split into two groups of five, each with a combination of students and counselors. Group A

memorized contagion items for the toolbox, kitchen, and bedroom scenes. Group B memorized contagion items for the bathroom, closet, and desk scenes. They were also instructed to act naturally so as to not arouse suspicion among the subjects.

One subject and one confederate were tested at a time. They were brought into one of two testing rooms and placed side by side at a table. To mask the true purpose of the study, subjects were told that the experiment was testing the effects of music on memory. They were given a consent form to sign, and the Vivaldi CD was turned on and played until the end of the collaborative recall phase. First, the subject and confederate viewed each of the six scenes for 15 seconds in the following order: toolbox, bathroom, kitchen, bedroom, closet, desk. They then completed a four-minute filler task that consisted of solving multiplication problems. Afterward, they began collaborative recall. Alternating back and forth, the subject and confederate attempted to recall six items each per scene. The scenes were recalled in the same order in which they were presented. For each of his/her three scenes, the confederate named one suggested item in the fourth position and one suggested item in the sixth position. The subject and confederate were instructed to pay attention to the items named in order to not repeat any of them. Upon completion of the collaborative recall, the subject and confederate were given instructions regarding their individual recalls. They were told to be as accurate as possible in writing down objects they remembered from each scene. The subject and confederate were then taken into separate rooms. There was no music for this section of the test. The subject received a lined sheet of paper titled "Toolbox Scene" and was given two minutes to recall as many items as he/she could. The subject was also asked to indicate whether he/she Remembered or Knew the items recalled. Remembering was defined as specifically recalling the object's location in the scene or what the subject was thinking when he/she saw it. Knowing the item meant the subject recalled its appearance but could not recall any further details about it. Every two minutes the experimenter entered with a new sheet titled with the next scene. The sheets were given in the same order as the scenes were originally presented. The confederate's door was also opened every two minutes to convince the subject that the confederate was also going through individual recall. After the subject recalled the last scene individually, he/she filled out a survey about his/her exposure to music. Finally, the subject was given a short debriefing about the effects of music on memory and thanked for participating.

RESULTS

Collaborative recall performance was checked to ensure that the confederates correctly suggested the appropriate items during their assigned lists. However, the focus of our analyses was on the accuracy of recall in isolation. For each scene and for each subject, recall sheets were scored by recording the number of recalled items that were actually from the scene ("true memory") and the number of recalled items that were completely made-up. For scenes in which the confederate had suggested items, the percentage of these items (out of two) that was falsely recalled ("false memory") was also recorded. Recalled items such as "toolbox" from the Toolbox Scene were not counted toward their measure of true memory.

Starting with true memory, the average number of items recalled per participant per scene was 6.7. We first looked to see if there were significant differences among the six scenes.

Across all subjects, five of the six scenes elicited similar average numbers of items recalled (toolbox: 6.8, kitchen: 6.4, bedroom: 6.4, desk: 7.3, bathroom: 7.6), while the closet scene averaged substantially fewer items (4.4). Since this difference was likely due to the nature of the Closet picture and did not vary across confederate conditions, subsequent analyses collapsed across pictures and were based on one average number of true, made up, and percentage of false memories (out of six). True memory was similar whether participants were paired with a counselor or student confederate (6.8 vs. 6.6 items recalled; 2-tailed t-test $p = 0.7$). We next examined true memory performance as a function of whether suggested items were or were not provided by the confederate during collaborative recall. Scenes in which a confederate provided suggested items elicited slightly fewer true items recalled compared to scenes that did not have items suggested (6.4 vs. 7.1, 2-tailed t-test $p = 0.10$). Finally, correctly recalled items elicited a Remember response 75% of the time and a Know response 25% of the time.

We next analyzed the number of items made up by the participants (objects that were not actually in the pictures nor suggested, but that the subjects listed during their individual recall). This occurred relatively infrequently, averaging less than one item (0.7) per scene, and did not differ greatly across the six scenes (toolbox: 0.4, kitchen: 0.9, bedroom: 0.4, closet: 1.0, desk: 1.0, bathroom: 0.7). The number of made-up items did not differ whether participants were paired with a counselor or peer (0.7 vs. 0.8 made-up items per scene; 2-tailed t-test $p = 0.6$) and did not differ for scenes that did, compared to did not, have items suggested by the confederate (suggested: 0.8, no suggested: 0.7, 1-tailed t-test $p = 0.7$). Turning to participants' subjective reports about the quality of their memories for these made up items, 67% of them elicited a Know response (average 0.55 per scene) and 33% elicited a Remember response (average 0.20 per scene).

Of particular interest were the instances of false memory. As a reminder, during collaborative recall of three of the six scenes, the confederate suggested two items that were not in the scene. False memory was computed as the average number of suggested items that were subsequently recalled during the individual recall phase. Overall, the majority of the subjects recalled at least one implanted item (71.4%). On average, subjects recalled 25.2% of the implanted items throughout the experiment. We looked to see if there were differences among the six scenes in terms of number of implanted items falsely recalled (toolbox: 0.2, kitchen: 0.2, bedroom: 0.2, closet: 1.0, desk: 0.4, bathroom: 0.2). Again, the closet scene proved to deviate from the others. Subjective reports of the quality of these memories were overwhelmingly (93%) Know judgments.

Finally, we came to the focus of our study: the likelihood of falsely remembering a suggested item when the confederate was a counselor compared to a peer. When a counselor presented the false items, more subjects (82%) recalled at least one implanted item than when the items were presented by a peer (61%). Further, the average percentage of implanted items (out of a total of six) recalled during the study was higher with a counselor than with a student (32%, student: 19%; 1-tailed t-test $p = 0.04$).

DISCUSSION

True memory was not influenced by student and counselor confederates. However, false memory was more successfully implanted by counselor confederates than by peers. These findings may be caused by one or by many different factors. Perhaps it is the authority that the counselors have over students (simply part of the definition of their job as counselor) that caused the student subjects to give more weight to counselor's memory. It may be because the counselors have more credibility than students, simply because they are older, in college, and more educated. Perhaps it is the "cool" factor; no matter what students may think of individual counselors, students instinctively look up to them and would be more likely to believe, consciously or subconsciously, something the counselors said. Another possibility is that the counselors were simply more talented actors than the student confederates were.

True memory recall was found to be constant throughout the entire experiment. The groups (both those who had counselor confederates and those who had student confederates) recalled a similar amount of true items. This functions as a control, because it shows that both groups have similar natural abilities to remember. Neither group was innately smarter than the other.

Subjects recalled fewer true items from scenes in which suggestions were made by confederates. This makes sense because nonsuggested scenes had six true items mentioned by confederates, whereas scenes in which there were suggested items had four true items mentioned.

Subjects Remembered true items three times as often as they Knew them. This shows that subjects were fairly accurate in their assessment of whether objects were actually in a scene. This suggests that subjects actually recalled the true items from the scene itself, as opposed to simply recalling them because the confederate told them that the object was in the scene.

The number of completely made-up items was relatively small. (By "made-up", we mean objects that were neither in the pictures nor suggested but were listed on the individual recall sheets). Making up items did not occur frequently, with the average number of made-up items being less than one per scene. This is useful because it means that subjects followed instructions to be accurate and did not have a propensity to make-up items, and the items that were counted as "implanted" were, in fact, implanted, as opposed to just made-up.

The number of made-up items did not differ when participants were paired with a counselor or peer confederate. This also serves as a control because it demonstrates that the two groups have similar memory abilities. Also, the number of made-up items did not differ noticeably between the suggested and non-suggested scenes. Made-up items existed solely in the subject's head and thus were most likely not influenced by collaborative recall.

Overall, the majority of the subjects recalled at least one implanted item (71.4%). On average, subjects recalled 25.2% of the implanted items throughout the experiment. This is a fairly good proportion. In Meade's earlier conformity studies [6], subjects recalled 29% of the implanted items. The slightly lower percentage reported here might be due to the effect of the music during the study and collaborative recall phases, which may have lessened concentration and memory (including implanted memories.)

The implanted items were overwhelmingly reported as Know responses. Subjects may have been more likely to choose Know when they had heard an item rather than remembered it from the picture itself. The implanted items were not in the pictures and were simply suggested by the confederate, so a Know response makes sense in this case.

The results of our experiment may have been skewed by sources of error. For instance, the closet scene elicited significantly fewer competent responses than did the other scenes, both in true recollections and in recollections of implanted items. Subjects recalled far fewer true items from the closet scene than from the other five. The closet scene is cluttered, with little contrast. This may make it difficult to distinguish individual items. Also, the closet scene was oriented vertically, whereas the others were horizontal, so there may have been less time for the subject to view the picture because it first had to be rotated. More implanted memories were recalled during individual recall for the closet scene than for the other scenes. People were less likely to remember true items in the closet scene, so the closet scene was less distinct in their minds. Therefore, the implanted items may have been more easily recalled.

The results may have been distorted because of differences in the people who were involved in the experiments. The confederates themselves may have altered the results, depending on how their acting skills were or how they decided to play their role--clueless or confident. The rapport between the subject and the confederate may have also influenced the results. Although each experimenter followed the same script, they may have adlibbed or varied the lines slightly, or put more emphasis on different parts of the experiment.

The speed of the collaborative recall may have also affected the results. For instance, if the subject went through the six scenes quickly in the collaborative recall, then individual recall may have been better because the scenes were fresher in their minds. Also, the same part of the music may not have played at the same time for each subject. Some parts may have been more distracting than others, and some subjects (who collaboratively recalled certain scenes at the most distracting parts of the music) may not have remembered as well as subjects who listened to mellow parts of the music at the same stage.

Occasionally, a confederate said the false items in the wrong order. The items to be implanted were supposed to be mentioned fourth and sixth (for consistency), but sometimes false items were mentioned in some other order, which potentially influenced results.

Our findings suggest that people respond to minimal authority. The counselors are only a few years older than the students, but the role they play at Governor's School in the Sciences gives them an air of authority. Also, in terms of gullibility (i.e., remembering implanted items), Governor's School students do not differ in any large way from the general population (or at least the population tested in the other study). This could mean that intelligence plays little role on the effect of social contagion of memory. This may help us to understand other fields, such as anthropology, by explaining why many societies throughout history have created central governments. This can be ascribed to the tendency to follow authority. It serves to explain why we might put extra faith in the people who govern us simply because of their roles as authoritative leaders.

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APPENDIX A







