Similar Stimuli and Misattribution

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Abstract

In this study I investigated the memory error known as misattribution. I examined how one may unconsciously transfer aspects of one memory into another. More specifically I looked at the occurrence of misattribution when there are similar details in the presented stimuli (two memories). Will those presented with similar details display misattribution more than those presented with non-similar details? Similar to a previous study, half of the participants were given two stories with the main character having the same name, while the other half received stories containing different names. Participants were then asked to perform a recognition task regarding the details from the stories. The results indicate that there was not a significant difference between the two groups. There was a small difference in the mean scores between the two groups, with those in the group with the same name actually scoring slightly higher. This reveals that the results are due to chance. The results indicate that misattribution will not occur when participants are asked to recognize details from a short memory that is two paragraphs in length.

Misattribution and Source Monitoring Errors

Memory is a significant part of human functioning and is believed to play a role in just about everything we do, whether it is through our long-term or our working memory. Our long-term memory is vital in remembering stimuli that we have come in contact with. It stores these memories over our lifetime. However, unlike a filing cabinet where one is able to request data and particular details at will, we find that this memory often fails (Roediger, Jacoby, & McDermott, 1996; Schacter & Dodson, 2001).

There are several memory errors that occur that define these "failures." Some of these include transience (the forgetting over time), suggestibility (false memories implanted by an external source), and absent-mindedness (inattentive or shallow processing that leads to improper encoding). Another one of these errors is known as misattribution. This involves the attributing a recollection or idea to the wrong source (Schacter & Dodson, 2001). Simply put, we may unconsciously transfer aspects of one memory into another memory.

One example of this is the case of the Oklahoma City bombing and Timothy McVeigh (Schacter & Dodson, 2001). McVeigh was convicted of the crime but a witness claimed that there was another person involved. McVeigh denied these accusations but the witness claimed that both men came in together to his place of business two days before the bombing. The witness had a detailed description of McVeigh's accomplice. After reviewing the video surveillance tapes in hopes of finding footage of the two men together, the investigators found something quite different. The man that the witness described was actually found to have been in the store the day before McVeigh and the witness simply combined aspects of these two memories.

There are a number of reasons why this phenomenon happens. We may combine features or components of several memories to create false memories (Reinitz, Lammers, & Cochran, 1992; Roediger et al., 1996). An example of this is known as a conjunction error (Marsh, Hicks, & Davis, 2002). For instance, if you are presented with the two words *rainbow* and *peacoat*, you may later recall the word *raincoat.* Jones and Jacoby (2001) argue that a higher level of familiarity with the stimulus increases the likelihood for error and may push one to believe that they have experienced the stimuli before. If you live in wet climate and you are familiar with the word *raincoat,* you are more likely to believe that the word was presented instead of the actual words that were presented.

Another concept that helps explain the phenomenon is known as miscombination. If a new stimulus has similar features to the previously experienced stimuli, we may believe that we have experienced this new stimulus before (Reinitz et al., 1992). Treisman and Schmidt (1982) studied perceptual miscombinations in visual features (illusory conjunctions). Gruppuso, Lindsay, and Masson (2007) also studied the concept using human faces. Their study demonstrated the experience of familiarity in the absence of recollection. The features of the stimulus are familiar yet there is no actual memory of the particular face. We may struggle to recall who this person is based on their facial familiarity and even create false memories of our "past experiences" with this person, even when no such experiences exist.

A concept that follows similar principles is the Deese-Roediger-McDermott paradigm. Roediger and McDermott (1995) presented a list of semantically related words (e.g., tired, bed, rest, dream, doze, snore, pillow) and found that many answered "yes" when asked if "sleep" was on the list. In fact, they found this to be quite consistent throughout much of the population.

Similar to my current study, we may likely find the occurrence of misattribution to be higher when the stimuli are similar to one another.

Source misattribution happens when the certain event does in fact occur but one mixes up the context in which it happened. In one study (Ceci, Loftus, Leichtman, & Bruck, 1994), researchers examined the concept of source misattribution in children. They found source misattributions are most likely to occur when the sources are similar to one another. For example, one may have two separate memories with two different individuals being the same gender, race and age, and children often confuse aspects of the memories with one another. They may place the wrong person in a different memory, creating one that actually did not occur.

This is found to be common when dealing with children and abuse (Ceci et al., 1994). Children are especially susceptible to this kind of memory error. Another example of this is when a friend tells you, "really exciting news that a friend told them." But in reality, you were the one who told them the news in the first place and they simply forgot that you were the original source.

Another contributing factor to misattribution may be explained as binding. This is the idea that every piece of memory is bound in one package. To support this idea, Gruppuso et al. (2007) conducted a study on the recognition of faces, the context of the faces and the combination of the two. Subjects were shown images of faces within a context. Some were asked to focus on the face, some were asked to focus on the context and others were asked to focus on both. They were then asked to recall the same elements that they were instructed to focus on.

They (Gruppuso et al., 2007) found that during recall, those who were asked to focus on the faces showed no significant difference in the level of recall when the face was presented in a different context than the original. However, they did find that the context was most significant

in recall only if the participant had been asked to focus on both the context and face. Those who were asked to focus on both had a more difficult time recalling faces in a different context.

This (Gruppuso et al., 2007) reveals the strong effects of binding (grouping aspects of memories) and retrieval of these memories. The term *déjà vu* may be similarly explained. We combine aspects of different memories, or form composites, which allows for our current situation to feel familiar, as if we have "been there before." This is only because we are compiling different pieces from our memories and they all happen to occur in one setting.

Considering the mentioned research conducted on misattribution, they (Ceci et al., 1994; Gruppuso et al., 2007; Jones et al., 2001; Marsh et al., 2002; Reinitz et al., 1992; Roediger et al., 1995; Roediger et al., 1996; Schacter et al., 2001; Treisman et al., 1982) find that people follow common patterns. Similarities and familiarities in stimuli (content, title, etc.) are seen to increase the likelihood of the occurrence of misattribution. They find this to be consistent across many different methods of conducting the research. However, they also imply that there are many different factors, such as content and context, which increases or decreases the intensity of misattribution. These are important factors to consider when conducting any research on misattribution.

In my current study, I am interested in seeing exactly what the effects are when subjects are presented with two stories with similar details and then asked to recall certain details. Considering the concepts above, I am looking to support the idea that if stimuli are similar, or familiar, subjects are more likely to transfer aspects of one memory (or story) to another. Will details such as having the same name, gender, or race in both stories allow for subjects to confuse details of each story? Will subjects be less able to appropriately categorize each story and its details if the main characters of the both stories share the same name?

On the other hand, there is the idea that subjects will recognize the similarity and draw intentional distinctions from each story to ensure proper encoding and recall. However, I predict that although this may take place, the occurrence of memory errors will far surpass these distinctions. I hypothesize that those in the group where the main characters have the same name will score lower on recognition tests than those recognizing stories with different names of the main character.

Study Description

In this study, I will be replicating some methods from the research done by Gibbons, Vogl, and Grimes (2003). They presented story lines of television shows with complex characters and examined how well subjects were able to recall details of each character. They also looked at how subjects combined or misplaced certain details for the characters. Similar to this study, I will have two groups of subjects that are presented with two stories.

In the first group, subjects will read a story and perform a distractor task (Gibbons, Vogl, & Grimes, 2003). They will then read another story, this time with the same name but indicated as a different person and then perform another distractor task. Subjects are led to believe that their response to the distractor task, which is a mental puzzle, is the data I will be examining. The second group will be similar; only the main characters of the story will have different names. After the stories and tasks are completed, each subject will then be asked to answer multiple choice questions about certain details of the stories. I will be looking to see which group answers more questions incorrectly to view the effects of misattribution.

Method

Participants

For this experiment there were 42 participants. All were students enrolled in an Introduction to Psychology course at a small liberal arts school in the Southwest. They received credit from their instructor for their participation in the study. There were 23 participants in the group that received stories containing different names (Group 1). There were 19 participants in the group that received stories containing the same name in both stories (Group 2).

Materials

Each participant was given one paper packet containing five pages. They were able to use pen or pencil to complete the packet. Each packet contained two stories, distractor tasks consisting of mental rotation and similar mental activities, and then questions used for memory recognition. There were two different groups involved so there were "Group 1" packets and "Group 2" packets. These packets varied only in the names of the main characters. The distractor tasks, questions, and stories (other than the names) were identical in both groups.

Design

The variable being measured in this research was the number of questions participants answered correctly in the memory recognition task. The independent variable had two levels: one being those who were exposed to the same name and the other being those who were exposed to different names. This was a between-participants experiment in which each individual was asked to complete only one packet from either Group 1 or Group 2, therefore exposing each person to only one level of the independent variable.

Procedure

Everyone that chose to participate in this experiment filled out an informed consent form stating that they may quit the experiment at any time without penalty. They were also informed that they would be receiving class credit from their instructor for their participation as a form of

compensation. The participants were sitting in individual desks lined up in rows in the classroom. The packets (Group 1 and Group 2) had been previously randomized.

Each participant was then given a paper packet and asked to wait for further instructions. They were instructed to proceed through the packet according to the directions and were told twice that they may not revert back to previous pages once they had proceeded to the next one. This was to ensure that the answers given in the recognition task were based on the same memory for all participants.

Subjects were then instructed to begin. The first page contained a two-paragraph neutral descriptive story of a man (Story 1). They were asked to read the story and move to the next page. The next page contained a distractor task consisting of three mental rotation tasks (see Figure 1). They were asked to circle the correct letter answer and then move to the next page.

The next page consisted of another neutral descriptive story (Story 2) that was the same length as the first story. This story varied between groups. In both groups, Story 1 was about a man named "John." In Story 2, Group 1 was about a man named "Dan" while Group 2 was about a man named "John." Story 2 was the same for Group 1 and Group 2, with the only difference being the names. At the top of this page (in both groups) it states that the character from Story 1 is a different character than from Story 2. The participants were then asked to proceed to the next page. This page consisted of similar distractor tasks such as mental rotation and visual illusions (see Figure 2).

The final page included seven questions concerning the two stories the participants read. These questions aimed to measure how much the participants remembered from the stories. Furthermore, the questions looked to see if participants would attribute details from a particular story to another story or combine details from the stories. Some of these questions included,

"Who was once in the army," "Who was going for an interview," "Who was German," and "Which story takes place on a Thursday?" Participants were asked to circle the correct letter answer and then turn the packet over and wait for further instructions. This experiment took 20 min to complete.

Results

I hypothesized that the participants in Group 1 would have a higher mean score on the recognition task in comparison to those in Group 2. It was found that those in Group 1, who read stories with different names (M=4.61, SD=1.67, N=23) did not score significantly higher compared to those in Group 2 who read stories with the same name (M=4.79, SD=1.44, N=19) (see Figure 3).

To analyze the data, I completed an independent samples t-test. With t(40)=.37, p=.71, I failed to reject the null hypothesis.

Discussion

The purpose of this study was to further examine the concept of misattribution. By using a memory recognition task to recall details from one's memory, I observed the relationship between similar stimuli and the occurrence of misattribution. In particular, I questioned whether including the same name in two different memories would allow for a higher occurrence of misattribution. I wanted to know if participants would confuse details about two characters if these characters shared the same first name. Also, would that particular similarity be strong enough to produce misattribution?

I found that this particular study did not reveal significant differences in response to similar stimuli when compared to non-similar stimuli. Simply put, those who read the stories with the same name did not confuse details any more than those who read the stories with two

different names. In fact, those who read stories with the same name scored slightly higher on the

recognition task. This reveals that the data results are due to chance.

There are several reasons to potentially explain the results of this research. One of these

is the idea that one may misattribute when the stimuli are familiar. Familiarity may alter the

cognitive process, and with premade mental ties and connections to the stimuli, it may be found

that people confuse memories more frequently. We may combine our old memories with the new

ones being created as we read the story and create an entirely new false memory (Jones et al.,

2001).

Ceci et al. (1994) examined the idea that particular similarities such as gender, age, name,

and context may affect the strength and likelihood of misattribution. In my study, where the

similarity was only in the name and gender, it is possible that this was not a strong enough

stimulus to produce such detail confusion. Perhaps misattribution is in fact more likely when

using similar occupations, setting, ethinicity or some other stimuli. Also, as my stories were only

two paragraphs long, there may not have been enough information introduced to the participant

that would allow for misattribution.

Gruppuso et al. (2007) studied the significance of the context in which the story takes

place. The occurrence of "binding" may have had something to do with the results. As some

people do when forming memories, they bind details (such as face and context) and when they

are asked to recall only one without the other being present, it is often difficult. With this being

said, it is evident that the settings, and quite simply, the details themselves, affect memory

encoding and retrieval.

This means that when researching this concept, we must take into account the

significance of the type of stories we present. By not doing so, we could unknowingly produce

possible confounds. If the participant is familiar with the story details, it can potentially affect the outcome. Also if we don't consider what details to make "similar" and their potential influence, we may easily end up with a Type II error.

One possible implication of this study includes the idea that familiarity with memory details will in fact affect our likelihood for misattribution. Because both stories contained details of older men, many students may not find these details familiar. Therefore, they may have been able to properly categorize the information as it was all new stimuli and it was not interfering with previously established memories. Also, if memories are short, two paragraphs long in this case, we may find it easier to encode and recall memories in the future. This also decreases the likelihood for misattribution.

There are a few limitations presented in this study. The length of each story may not have been great enough to appropriately recreate a realistic situation where misattribution may occur. The stories may not have contained enough detail to confuse details with one another. With longer stories or more detailed memories, one may find it more difficult to mentally keep track of details within the stories.

Another possible limitation may be the recognition task. Although the participants may not remember the stories verbatim (word for word), they may have gone with the gist (general idea) and chose the best answer. Without the participant having to produce the correct answer without any options, this may reveal more accurate results on what they truly remember instead of being able to "narrow it down."

With this being said, there will be several considerations in future studies. For example, a recollection task would be more accurate. Longer stories will allow for more details and possibly more real life like scenarios dealing with misattribution. A change in the "similar stimuli" and

possibly several more (different) degrees of the independent variable using concepts like age,

gender, occupation, etc. will allow for a broader study.

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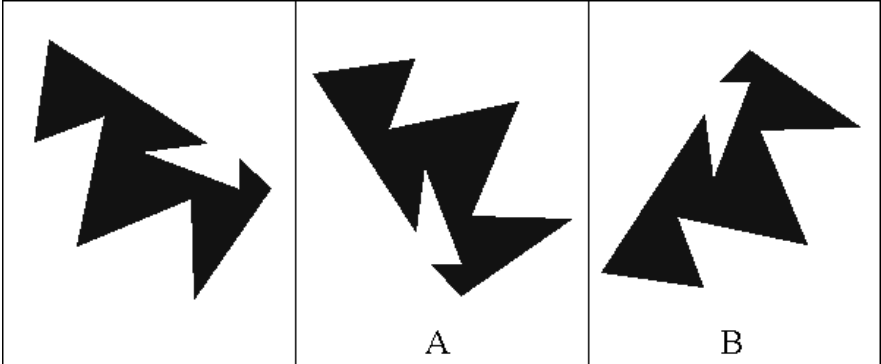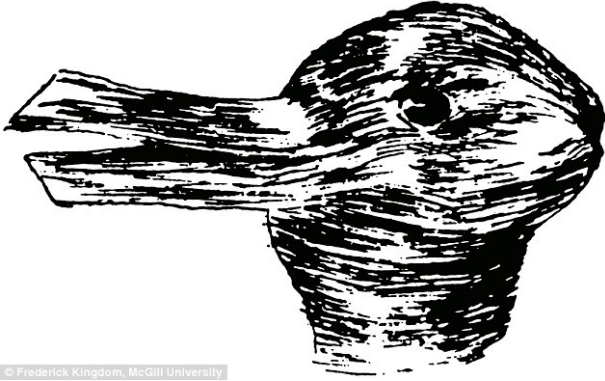   *Psychology, 14*, 107-141. doi: 10.1016/0010-0285(82)90006-8.

Figure 1. One of the three distractor tasks after Story 1.

Which did you see first: Duck or Rabbit?

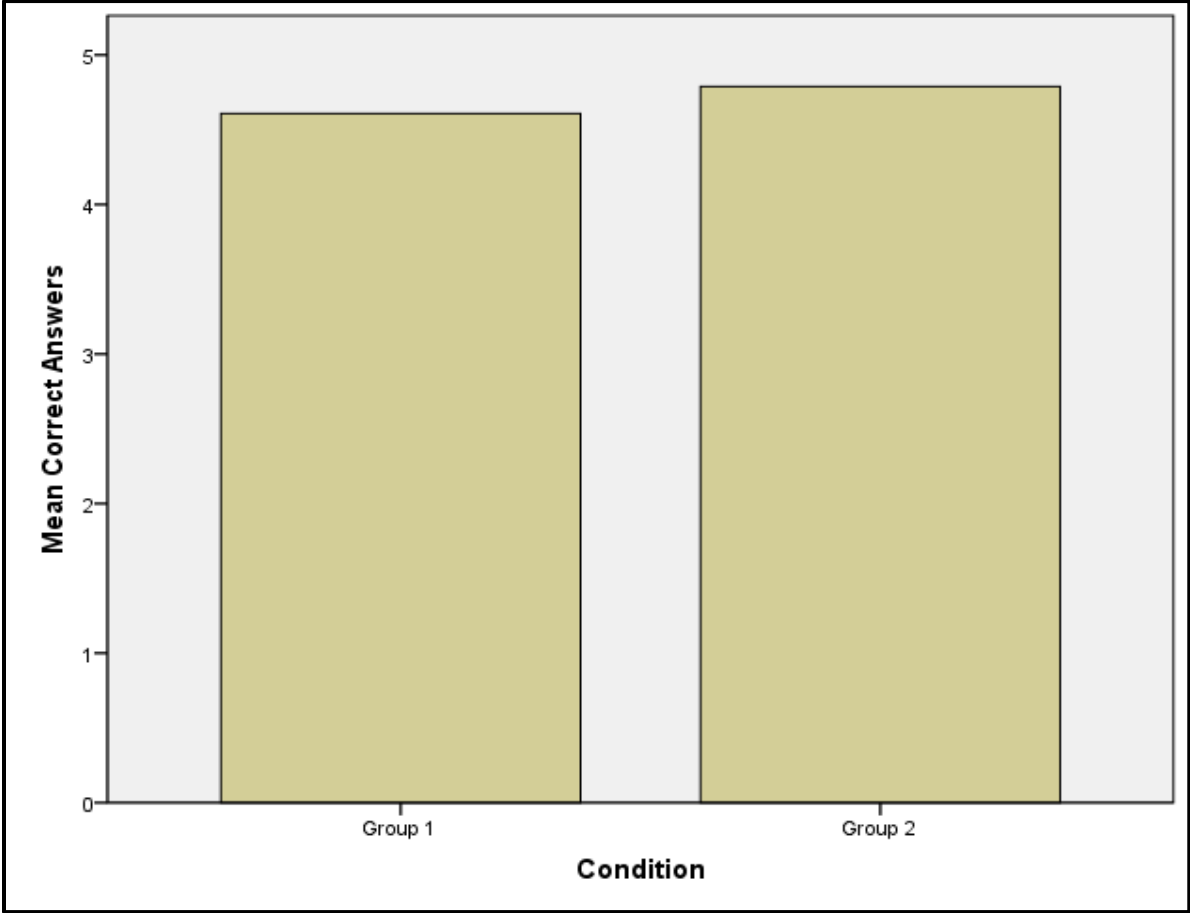A. Duck   B. Rabbit

Figure 2. One of the three distractor tasks after Story 2.

Figure 3. Mean correct answers for Group 1 and Group 2.