

Did You See What He Saw?

A Comparison of Text-based and Audio Information on Memory

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Approval

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Abstract

Research has shown that the introduction of misinformation can alter what people remember about witnessed events. Further to this, when misinformation is socially introduced in text-based format or through verbal discussion memory accuracy for the witnessed events suffers. The present study assessed misinformation and memory accuracy across text-based and auditory mediums. Participants ($N = 94$) were shown a video. Following a distractor task, participants were randomly selected to be presented with misinformation (incongruent) or accurate information (congruent) about the video. This message was said to be another person's account of events and was presented in either text or auditory format. Findings indicated that, regardless of which message participants received, those in the text-based condition were more accurate when asked about the event. While previous research shows that exposure to congruent or incongruent information during a discussion alters what individuals will later remember, the present study suggests that non-conversational listening does not have the same effect. Actively engaging with information via reading may force individuals to attend to the message and thereby be more accurate in their judgements. Future research must further untangle how reading and hearing event details impacts witness accuracy.

Did You See What He Saw?

The plasticity of memory allows for the consolidation of concepts, and updating of existing knowledge (Steffens & Mecklenbräuker, 2007). As new information is encountered, it is linked and combined with existing knowledge and experiences. This enables individuals to learn and adapt to new and dynamic environments. However, the information one encounters may not always be accurately stored in memory. Memories can be erroneously updated or interfered with following exposure to contradictory or inaccurate information. Exposure to conflicting details about an event can impact what one later recalls (Loftus, Miller, & Burns, 1978). It appears that when inaccurate or conflicting details are encountered through social interaction they are more readily accepted as 'true' compared to those encountered passively (Gabbert, Memon, Allan, & Wright, 2004). While research has shown that face-to-face and handwritten information from another person can impact what is recalled, previous research had not considered how modern communication platforms influence memory (Gabbert, et al., 2004). This is increasingly important as many individuals engage in social interactions on social media websites, over text messaging services, and via email.

Not only do social media platforms provide a new medium by which misinformation can influence memory, but they often deliver the message in a one-way direction. Individuals update their Facebook statuses and post their thoughts on Twitter where their friends and followers can read them. Similarly, many people use voicemail when their friends and family members are not available. While still existing on a social level, these mediums of message delivery use different amounts of social presence

(Christopherson, 2007). To date, no research has tested how this type of one-way social information influences memory.

The Misinformation Effect

The language used to describe an event has been shown to influence the details one remembers (Loftus & Palmer, 1974). When attempting to decipher the meaning of a sentence or question, hints are taken from the words that are used (i.e., semantic cues) (Loftus & Palmer, 1974). Use of different words and descriptors, then can provide differing semantic cues about the underlying meaning of the message. After viewing an event, exposure to inaccurate or misleading information, in the form of these semantic cues, can change what one later recalls. In fact, studies show a significant decrease in the accuracy of event details following exposure to misinformation (Oeberst & Siedemann, 2014; Loftus et al., 1978).

For example, in a study by Loftus and Palmer (1974), altering the words used to describe an event influenced the details participants remembered. After being shown an image of a car collision, semantic cues were given in the questions posited to participants (Loftus & Palmer, 1974). Specifically, participants were asked questions regarding the damage sustained by the vehicles, and the estimated speed at which the vehicles were travelling (Loftus et al., 1978; Loftus & Palmer, 1974). The use of different descriptors (e.g., using smashed or crashed vs. hit or bumped), was related to how individuals rated the vehicles' speeds and the details of the collision (Loftus et al., 1978; Loftus & Palmer, 1974). Participants who received questions containing words such as smashed and crashed estimated the vehicles to be travelling faster than those who were questioned

using words such as bumped and hit (Loftus et al., 1978; Loftus & Palmer, 1974). Furthermore, researchers reported that words such as smashed and crashed which cued participants to report faster speeds also resulted in reports of false details (Loftus et al., 1978; Loftus & Palmer, 1974). Participants receiving these cues erroneously remembered aspects of the collision such as broken glass, a factor that was not actually present (Loftus et al., 1978; Loftus & Palmer, 1974).

In addition to misleading individuals with semantic cues, further research shows that it is possible to introduce completely inaccurate information into memory. When individuals encounter information that conflicts with their memory, false details may be integrated into their recall of the event (Loftus et al., 1978). This suggests that memories based around subjective judgements (e.g., speed) are not the only memories that can be influenced by encountering misinformation. Supporting this, Loftus et al. (1978) introduced inaccurate details to participants by asking questions loaded with misinformation. Experimenters presented participants with consecutive slides (images) depicting a vehicle-pedestrian accident involving a red car; the type of sign in the images was experimentally manipulated through random assignment to the participants. Participants were then asked about another car overtaking the red car at a 'stop sign' or 'yield sign'. Over half of the individuals prompted with the sign choice they did not see reported seeing it. This phenomenon is known as the misinformation effect and has been replicated in a variety of situations, showing that memory is quite malleable, often to a fault. These studies provide evidence that one-way communication via instructions from experimenters can act as a supplier of misinformation. However, the source of the message plays a larger role.

Mechanisms at Work

Several mechanisms have been used to explain the processes that result in the misinformation effect. For example, when individuals encounter information after witnessing an event, they experience retroactive interference (Loftus et al., 1978). Retroactive interference refers to the idea that newly encountered information (in this case the misinformation) hinders access to the earlier memories (Loftus et al., 1978; Tomlinson, Huber, Rieth, & Davelaar, 2009). For example, if one parks his/her car in a different spot every day, he/she may mistakenly access the memory for where the car was parked yesterday while trying to remember where it is parked today. It is thought that the cue to recall something (such as being asked where your car is parked) begins a search through one's memory; however, when attempting to access the specific target memory of the car's location today, a different option is chosen (Tomlinson et al., 2009)

It has also been suggested that the misinformation effect results from a mistake in attributing where one obtained the information (Zaragoza & Lane, 1994). Known as the source monitoring theory, it is thought that errors made are due to an inability or confusion in recognizing the source of the information. It is suggested that both the accurate and inaccurate information exist in memory, but one is unable to decipher which version of the event was learned from the original experience and which was obtained from an external source (Zaragoza & Lane, 1994). When attempting to recall an event, the inability to pinpoint where the information came from (a source attribution error) results in one accessing and reporting the incorrect information (Zaragoza & Lane, 1994). For example, research by Zaragoza and Lane found that when individuals were exposed

to similar information across two message mediums, many were unable to accurately state the source of information for specific components of the message.

It is possible that both mechanisms come into play. Perhaps information obtained after an event (retroactive) causes confusion when attempting to pinpoint the source of the information. Without access to the source of the subsequent information one may misattribute the post-event details to the original event. Then, the inability to pick apart the initial event from the subsequent details results in the misinformation effect.

Social Contagion Theory of Memory

Whether it is in person or online, we spend much of our time sharing our thoughts, opinions and experiences with others. This provides an opportunity to be exposed to both accurate and inaccurate information from social sources. In fact, research has shown that socially introduced post-event misinformation is significantly more influential than that which is obtained from a non-social source (Gabbert, et al., 2004). In an experiment that compared misinformation provided through a narrative to misinformation provided as a social discussion, those in the social discussion condition experienced a greater effect of misinformation (Gabbert, et al., 2004). Socially introduced misinformation being committed to memory is known as memory conformity or the Social Contagion Theory of Memory.

Conversing face-to-face provides an excellent opportunity to begin unravelling the social contagion theory of memory. In a series of experiments, subjects were shown an image of a household scene and subsequently engaged in conversation with another person (Meade & Roediger, 2002; Roediger et al., 2001). During the conversation,

participants encountered incorrect post-event details regarding the image they were shown. Unbeknownst to participants, their conversation partner was a confederate in the study who was disguised as another participant. By disguising the confederate as another participant, it should be assumed by the participant that the two are equally credible and knowledgeable about the witnessed event (Roediger et al., 2001). Following the two-way discussion, the pair took turns reporting items they could remember from the scene (Meade & Roediger, 2002). Later, the errors regarding the items present in the household scene that were introduced by the confederate were present in the statements made by the actual participants, demonstrating a significant decrease in memory accuracy (Meade & Roediger, 2002).

In a similar study, Gabbert, Memon, and Allan (2003), showed participants two different, yet similar videos, but participants were under the assumption they had witnessed the same scene. Post-event misinformation was introduced by having participants discuss what they witnessed with each other (Gabbert et al., 2003). Later, when asked about the scene, participants reported details that were not present in their scene but were present in the scene of their partner. The only access participants had to this information that they were exposed to was during the discussion process, illustrating the incorporation of post-event information into memory (Gabbert et al., 2003).

In both of the aforementioned studies, misinformation was introduced through two-way discussion. However, it is also possible for socially introduced misinformation to influence memory when there is merely an implied social factor and no conversation partner is in fact present (Meade & Roediger, 2002). Demonstrating this, using a handwritten note as a virtual confederate, Meade and Roediger provided participants with

an index card believed to be from another participant. After being shown an image participants were asked to recall the items they were previously shown; they were also asked to report the items recalled by the other person (provided by the index card) (Meade & Roediger, 2002). Misinformation was reported by participants who engaged with the virtual confederate (Meade & Roediger, 2002).

It appears that by marking information as being from a social source, the social contagion theory of memory still occurs (Meade & Roediger, 2002). To date, this is the closest researchers have gotten to assessing social contagion theory in a format similar to what is seen in social media and other modern technologies. However, it is impossible to know whether something similar would be seen when using voicemail/social media or if participants would more closely assess such messages and resist incorporating misinformation into their event reports.

Memory Error vs. Social Pressure

Researchers attest that the event related errors reported by participants are truly what participants remember about the event, suggesting that the post-event information is the cause of the error (Gabbert, et al., 2004; Meade & Roediger, 2002). Errors regarding event details and scene compositions have been made during both verbal discussions and on anonymous questionnaires (Meade & Roediger, 2002). This suggests that memory conformity is not simply the result of individuals agreeing with others for public appearance or social acceptance (Meade & Roediger, 2002). The memories reported anonymously provide evidence that following the exposure to socially introduced

misinformation (in face-to-face and virtual encounters), participants incorporate the errors into their own version of events (Meade & Roediger, 2002).

Studies showing misinformation and decreased accuracy when using anonymous measures support the likelihood that participants are reporting what they believe occurred and are not merely conforming to social pressures (Gabbert et al., 2003; Meade & Roediger, 2002). It is possible that the inability to tease apart where the information was obtained (a source monitoring error) results in the acceptance of the information as being an accurate part of one's memory (Gabbert et al., 2003). Considering the bombardment of information encountered on social media, it is possible that because of source monitoring errors individuals may inaccurately accept information shared by another person as being factual.

The Current Study

Broadly speaking, the purpose of the current study was to explore the limitations of socially introduced misinformation. Previous research has shown that one-way narratives, two-way discussion, and written misinformation can influence memory accuracy (Meade & Roediger, 2002; Gabbert, et al., 2003). Socially introduced misinformation results in a greater effect of misinformation, however the paradigm used to explore it primarily addresses in-person encounters (Meade & Roediger, 2002; Gabbert, et al., 2003). In contrast to this, many of our interactions now take place online, often in a one-way format. The use of email, text messaging and voicemail means that co-workers, friends, and family often share their thoughts and opinions that are marked as

being social, but that are delivered one-way. This method of message delivery results in an individual being ‘told’ things from a social source.

To assess the limitations of the Social Contagion Theory of Memory, participants were randomly assigned to receive a post-event message that was congruent or incongruent with what they witnessed. The message was delivered in a text-based or audio-based medium. The message mediums were chosen to act as one-way communications that mimic social interactions such as social media status updates and voicemail messages. It was hypothesized that:

1. Describing information as socially sourced would result in a significant effect of misinformation regardless of message medium. Previous research indicates that information described as being from a social source results in memory conformity (Gabbert, et al., 2003).
2. Those provided with misinformation in an auditory format would be more likely to experience the misinformation effect than those provided with the misinformation in the text-based format. Previous research has shown that conversationally introduced misinformation readily occurs (Gabbert, et al., 2004; Meade & Roediger, 2002; Roediger et al., 2001). It was thought that the use of a human voice would increase the feeling of socially sourced information compared to the text-based format.
3. The source of the misinformation would not be apparent. As seen in past research, individuals will engage in a source monitoring error and attribute their recall to the actual event and not the misinformation (Zaragoza & Lane, 1994).

Method

Participants

A convenience sample of participants completed an online questionnaire hosted on Survey Monkey. The link was shared on social media platforms and an advertisement was purchased for one week on Facebook. After excluding participants who did not complete questions that measured accuracy and the effect of misinformation, 94 participants remained. This consisted of 82 females, 4 males, 1 genderfluid, and 4 individuals who did not provide a gender. The age range for participants was 18-73 years-old ($M = 23.87$, $SD = 10.05$). The mean age of female participants was 23.77 ($SD = 10.41$) and the mean age of male participants was 22.43 ($SD = 4.28$).

Materials

Audio Test. Participants were given a 15-second audio clip and were instructed to adjust their speakers to a comfortable volume. The clip consisted of a male reading the sentence, “A is the first letter of the alphabet” three times. The audio clip was recorded on a Samsung Galaxy S3 cellphone using an Afterglow AG 9 Premium Wireless Over-Ear Headset.

Video Stimuli. The video clip used in this study was a 21-second excerpt from a dashcam recording by YouTube user Jay Dee. Permission to use an excerpt from the video for this study was obtained (See Appendix A). The video shows a vehicle taking a right turn into a parking lot and colliding with a car in the oncoming lane. All audio was removed from the clip.

Photo. Two images unrelated to car collisions were shown simultaneously to participants (See Appendix B). This was provided as a find-the-difference task and was used to distract individuals after watching the video. One image was altered with Corel Paint Shop Pro X8. Components of the photo were removed, added or the colours were changed to create a total of 13 differences between the original and altered image. Participants were told to find the differences between the two images. No time limit was given on this task.

Messages. Participants were randomly assigned a message regarding what occurred in the video. The message was stated to be another person's version of the events in the video. There were two possible versions of the events (congruent/accurate or incongruent/misinformation). The congruent message provided a narrative of the events that occur in the video. The incongruent message introduced two pieces of misinformation to the participants; this message stated that the dark car ran a red light and that it sustained large dents in both doors in the collision. Participants were randomly assigned whether the message was delivered in a text-based format or through an auditory clip. The text-based message was provided in the form of text imbedded in a video. The text was available for 20 seconds. Participants in the audio condition were given a blank (black screen) video with the audio clip imbedded in it. A male voiced the congruent (17 seconds) and incongruent statements (15 seconds) in the audio condition. The audio clips were recorded on a Samsung Galaxy S3 cellphone using an Afterglow AG 9 Premium Wireless Over-Ear Headset.

Survey. A survey was designed to assess participants' memory about the events in the video and to collect demographic information (See Appendix C). Statements about

the video were given in an agree/disagree and Likert-scale format. Participants answered on a scale from 1 (*completely agree*) to 5 (*completely disagree*). Open-ended questions were also used. Each question assessed what the participant remembered about specific details of the collision in the video.

Procedure

This study was approved through the ethics review process of the Psychology Program of Memorial University of Newfoundland, Grenfell Campus. Advertising of the study was done through social media platforms and classified ads. The survey was hosted by Survey Monkey.

After clicking on the link to the study, participants were taken to an informed consent form; by clicking continue, participants implied consent. All participants were taken to the audio test clip and were instructed to adjust their speakers to a comfortable volume. Following this, all participants were shown the video clip. After watching the video, participants were presented with a find-the-difference task between two photos before being randomly assigned into experimental conditions.

Participants next received one of two possible messages (congruent/accurate or incongruent/misinformation) in one of two possible mediums (text-based or audio clip) (See Appendix D). All participants were then directed to the questionnaire portion of the study where their memory, accuracy, and misinformation acceptance were assessed. Participants were given statements about the events in the video and were asked to agree or disagree with the events using one of two measures. For example, statements such as “The white car was at fault” used either an agree/disagree format or a Likert scale which

allowed participants to rank whether they agreed with the statement from 1 (*completely agree*) to 5 (*completely disagree*). After completing the questionnaire, participants were taken to a debriefing page that explained they may have been exposed to inaccurate information regarding the video. The purpose of the misdirection was briefly addressed and participants were thanked for their participation. The debriefing page provided contact information for the researchers and mental health services in case the study caused participants any distress (See Appendix C).

Results

The number of participants who agreed and disagreed with statements about the event in the video were compared to determine whether participants assessed event details differently with regards to on the experimental conditions. This involved comparing participants' overall accuracy about event details across each experimental condition (i.e., control, congruent message text, congruent message audio, incongruent message text, and incongruent message audio). Planned comparisons were made for specific statements to determine the effect of misinformation and whether there was a relationship between the statements participants agreed and disagreed with, the message received, and the medium of the message. The results are organized according to: overall accuracy, effect of message medium (text-based vs. audio based), and effect of message type (congruent vs. incongruent).

A 2 (message medium: text-based vs. audio-based) x 2 (message type: congruent/accurate vs. incongruent/misinformation) between-subjects analysis of variance was conducted to compare the overall accuracy of participants' responses about event details (see Table 1 for descriptive statistics). There was a significant difference in overall accuracy with respect to message medium, $F(1, 85) = 9.50, p = .003, \eta_p^2 = .11$. Pairwise comparison showed that participants who received the text-based message had a higher accuracy compared to those that received the audio clip message (mean difference = 0.65, $p = .003$, 95% CI [0.23, 1.07]). There was no difference in overall accuracy scores between the message types (congruent/accurate vs incongruent/misinformation) $F(1, 85) = 3.68, p = .059, \eta_p^2 = .04$. There was no significant interaction between message medium and message type (all p values > .05).

Chi-square analyses were conducted to assess differences in the reporting of accurate information versus misinformation by participants. The following results assess only the medium of the message (text-based vs. audio-based). More participants in the text-based condition accurately agreed with the factual statements “The black car struck the white car” $\chi^2(2, N = 90) = 7.50, p = .024, \Phi^2 = .08$, and “The black car was at fault”, $\chi^2(2, N = 89) = 7.82, p = .020, \Phi^2 = .07$, compared to participants in the audio message condition. Similarly, more participants in the text-based condition accurately disagreed with the inaccurate statements: “The white car struck the black car” $\chi^2(2, N = 87) = 6.92, p = .031, \Phi^2 = .08$, and “The white car was at fault” $\chi^2(2, N = 91) = 7.82, p = .019, \Phi^2 = .09$, compared to participants in the audio message condition.

When assessing participants in terms of message congruency, more participants who received the congruent message in the text-based medium agreed with the accurate statements: “The black car struck the white car” $\chi^2(1, N = 25) = 6.87, p = .009, \Phi^2 = .03$, and “The black car was at fault” $\chi^2(1, N = 25) = 6.51, p = .011, \Phi^2 = .03$, than participants who received the congruent message in the audio-based medium. Likewise, more congruent message participants who received the text-based format disagreed with the inaccurate statements: “The white car struck the black car” $\chi^2(1, N = 25) = 6.06, p = .014, \Phi^2 = .02$, and “The white car was at fault” $\chi^2(1, N = 25) = 6.87, p = .009, \Phi^2 = .03$, than congruent message participants who received the audio-based format. Analysis assessing participants who received the incongruent message showed that more people in the text-based condition disagreed with the statement, “The other person would give an accurate police statement” $\chi^2(1, N = 41) = 4.67, p = .031, \Phi^2 = .01$, than participants in the audio-based condition. As well, more participants disagreed with the statement “The other

person's version of events is accurate" if they received the incongruent message $\chi^2(1, N = 66) = 8.37, p = .004, \Phi^2 = .01$ than if they received the congruent message.

When assessing only participants who received the audio-based message, more people agreed with the accurate statement, "The black car was at fault" in the incongruent message condition than those in the congruent message condition $\chi^2(1, N = 32) = 6.36, p = .012, \Phi^2 = .02$. More individuals in the audio message condition disagreed with the statement "The other person's version of events is accurate" if they were in the incongruent message condition than if they were in the congruent message condition $\chi^2(1, N = 31) = 4.05, p = .044, \Phi^2 = .01$.

Discussion

It was assessed whether the medium (text vs audio) of socially sourced misinformation influenced the amount of misinformation reported. Overall accuracy was measured with respect to message medium and individual statements were assessed to decipher where differences in accuracy occurred.

The Medium of Misinformation

It was hypothesized that those who received misinformation via the audio-clip would be more susceptible to reporting errors. In support of this, when comparing the total number of correct answers regarding statements about the video, individuals in the auditory message condition scored lower than those in the text-based condition. Individuals able to read the message (text medium) may have been better able to consider the message and therefore make more accurate judgements. When asked to agree, or disagree with statements about the video, more participants were accurate in deciding whether or not statements about the video were true if they received the text-based message. This suggests that hearing misinformation may be more influential than reading misinformation.

Indeed, this was suggested in previous research that used the presence of verbal and textual cues to manipulate the degree of social presence in a social interaction (Christopherson, 2007). It is possible that in the present study, the use of a voice clip increased the social component of the message, making it more obvious. More overt social presence such as a voice clip are linked to increased conformity and less group polarization (Christopherson, 2007). Group polarization is the tendency for individuals

to make more extreme choices that align with their initial assessment when conflicting options are available (Christopherson, 2007). Christopherson found that lowering social presence by using text-based mediums resulted in more group polarization and less conformity. It is possible that the social contagion theory of memory acts in a similar mechanism. Perhaps the voice clip increased the social presence which then increased memory conformity.

The Source of Misinformation

According to the source monitoring theory, misinformation is reported because of an inability to determine where the information came from (Zaragoza & Lane, 1994). In essence, the details of the information can be recalled, but not where the information was obtained. It was hypothesized that the source of the misinformation would not be detected by participants. However, when comparing individuals in the congruent vs. incongruent message conditions, more people who received the incongruent message disagreed that the other person's statement was correct. This suggests that participants were able to detect that the incongruent message (regardless of medium) was providing inconsistent information about the event observed in the video. If the misinformation was identified by participants, they did not make a source monitoring error. Instead, participants appear to have noted that there was a discrepancy between what they saw and what the other person reported. Previous findings occurred in two-way conversations and not the one-way delivery system used in the current study. It is possible that the one-way delivery system or the short delay used in the present study allowed individuals to accurately pinpoint the source of the misinformation.

It should be noted that while the aforementioned differences were found, there was no significant effect of misinformation. That is, no participants reported the inaccurate details introduced in the post-event message. Previous research indicates that discussion based misinformation and text-based misinformation are both capable of inducing memory conformity (Gabbert, et al., 2004). This suggests that the null misinformation effect is likely the result of a limited sample size rather than the message mediums used. It should be noted that the short time delay utilized in this study may not have allowed enough time to pass for confusion and retroactive interference to occur.

Limitations and Future Research

One of the primary drawbacks of the current study is the small sample size. A limited number of significant results were found; however, no details introduced in the post-event messages were reported, therefore a main effect of misinformation was not obtained. Due to time constraints on data collection as well as an error with Survey Monkey that resulted in the loss of 60 participants, the sample size for this study is small. The small sample size may have reduced the likelihood of finding significant results.

In the current study an attempt was made to maintain ecological validity by utilizing an online delivery procedure. The hope was that this would mimic the naturalistic conditions in which individuals engage with socially introduced information over technology. The study was conducted online using Survey Monkey to remove the face-to-face factor associated with other memory conformity and Social Contagion Theory of Memory studies. It is common for people to state that they have spoke to a friend or family member recently but to be referring to technology-based interactions. Indeed, technology provides ample means to engage with social sources of information

without being physically present. Moving forward, researchers should assess the ways in which non-face-to-face social information impact memory.

Having participants take part in the study in their home more closely replicates the real-world way we engage with others online; however, it also leaves the door open to confounding variables. It is possible that individuals engaged with the stimuli more than once. Although individuals were not told that they would be asked questions regarding the video or message, there is no way to know how many times they watched the video or engaged with the messages. Measuring the amount of time individuals engage with information may help explain the role exposure duration has on the social contagion theory of memory. Further to this, there was no measure of the amount of time spent on the distraction task. Previous studies manipulated the amount of time spent between stimuli, message and recall by controlling the period of time spent on the distraction task. Using an online platform did not allow for this level of control and therefore there is no way to know if participants ignored the distraction task entirely or fully engaged with it. This could be addressed by leading individuals to believe that participation in the distractor task is required for a longer, set amount of time.

One purpose of the study was to assess limitations of the Social Contagion Theory of Memory. Numerous studies have been conducted assessing how questions and instructions (narratives) posed by experimenters influence memory accuracy (Gabbert, et al., 2004; Loftus & Palmer, 1974; Loftus et al., 1978). As social beings, we are exposed to a seemingly endless amount of information from our co-workers, friends, and family; these are considered social sources. Understandably, some of the information presented to us is not accurate. It is possible for socially encountered misinformation to be

committed to memory and reported as fact (Gabbert, et al., 2004; Meade & Roediger, 2002; Roediger et al., 2001).

The present study suggests that the medium of a socially introduced post-event information may influence one's memory accuracy about the event. More participants who received post-event information in the form of an audio clip were inaccurate when assessing statements about the video event they witnessed when compared to those who received a text-based message. Modern social interactions often occur in the form of one-way communications (e.g., text and voicemail). Perhaps when one receives a message in a text-based format they remember the information differently than if it is presented in an audio format. As social interactions change and individuals rely on technology for communication, the impact of technology on memory must be considered. The levels of anonymity and/or social presence perceived online may influence the way we attend to and remember information. Undoubtedly, virtual mediums are different than traditional face-to-face interactions and therefore they may influence memory differently.

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Tables

Table 1
Descriptive Statistics for Overall Accuracy

Message Type	Message Medium		
	Control	Text	Audio
Control	2.81	-	-
Congruent	-	2.93	2.00
Incongruent	-	3.05	2.68

Note. Accuracy refers to the number of correct statements out of eight possible correct statements.

Appendix A

Original message sent to Jay Dee through YouTube:

Hello,

I am writing to you from Grenfell Campus, Memorial University. I am contacting you find out if I can use your video as part of an honours project I am conducting as part of my course requirement. The video I am interested in using is the fender bender video you posted 3 years ago; link: <https://www.youtube.com/watch?v=nbliOBKLSYs> . All sounds and identifying information will be removed from the video and only a small excerpt will be chosen for the project.

If you would like more information please feel free to email me, Ashley Ryan at adryan@grenfell.mun.ca or my supervisor Dr. Dwayne Keough at dkeough@grenfell.mun.ca.

Thank you for your time, I look forward to hearing from you.

Jay Dee's response sent via email:

Jay Dee <jidinphilly@gmail.com>
Thu 11-03, 4:29 PM
Ryan, Ashley D.

Sure..you can use it. 👍

The excerpt from Jay Dee's video can be found at the following:
<https://dl.dropboxusercontent.com/u/5537171/fenderbenderedit.mp4>

Appendix B



Appendix C

Survey Package

Informed Consent Form

The purpose of this Informed Consent Form is to ensure you understand the nature of this study and your involvement in it. This consent form will provide information about the study, giving you the opportunity to decide if you want to participate. Please note that this research project will be used to satisfy the requirements for an honours degree in psychology at MUN, Grenfell Campus (Psych 4959).

Researchers: Ashley-Dawn Ryan is conducting this study under the supervision of Dr. Dwayne Keough.

Purpose: The study is designed to assess your opinions about the events of a short video and the content of a picture. The results obtained in this study will be used for the completion of an honours degree in psychology, and it may also be used in a larger research project to be published in the future.

Task Requirements: Instructions will be given throughout the duration of the study. You may be asked to view a video and an image and read or listen to a short passage. Afterwards, you will be given a series of questions to complete. Please know that you are free to omit responses you do not wish to give.

Duration: The questionnaire will take approximately 5-10 minutes to complete.

Risks and Benefits: There are no known risks associated with your participation in this study. However, the benefits involved with your participation in this study are to assist with our understanding of cognitive processes.

Anonymity and Confidentiality: Your responses are anonymous and confidential. All information will be analyzed and reported on a group basis. Thus, individual responses cannot be identified.

Data collected from you as part of your participation in this project will be hosted and/or stored electronically by the online survey company, Survey Monkey and is subject to their privacy policy, and to any relevant laws of the country in which their servers are located. Therefore, anonymity and confidentiality of data may not be guaranteed in the rare instance, for example, that government agencies obtain a court order compelling the provider to grant access to specific data stored on their servers. If you have questions or concerns about how your data will be collected or stored, please contact the researcher and/or visit the provider's website for more information before participating. The privacy and security policy of the third-party hosting data collection and/or storing data can be found at: http://www.SurveyMonkey.com/monkey_privacy.aspx

Right to Withdraw: Your participation in this research is totally voluntary and you are free to stop participating at any time. If you do not wish to continue after the study has begun, simply exit the browser.

Contact Information: If you have any questions or concerns about the study, please feel free to contact Ashley Dawn Ryan at adryan@grenfell.mun.ca, or her supervisor, Dr. Dwayne Keough dkeough@grenfell.mun.ca or at (709) 639-2740. If you are interested in knowing the results of the study, please contact the researchers after May, 2017.

This study has been approved by an ethics review process in the psychology program at Grenfell Campus, Memorial University of Newfoundland and has been found to be in compliance with Memorial University's ethics policy.

By proceeding to the next page, I acknowledge that I am at least 19-years-old and/or a college or university student and I have been informed of, and understand, the nature and purpose of the study, and I freely consent to participate.

Please refer to the video you watched while answering the following questions. Don't worry if you can't remember everything. We are only interested in what you do remember.

Prior to today, have you ever seen the video at the beginning of this survey?

Yes _____

No _____

Please list everything you remember about what happened in the video:

Describe the actions of the vehicles in the video (direction traveling, speed, etc)

Describe the cars in the video (appearance, condition, etc)

Describe the setting where the event happened:

I saw the same event as the other participant
 Agree Disagree

The other participant's version of events is accurate
 Agree Disagree

The black car struck the white car
 Agree Disagree

The white care struck the black car
 Agree Disagree

The white car was at fault
 Agree Disagree

The black car was at fault
 Agree Disagree

I feel I am would be able to give an accurate police statement about the events I
 witnessed
 Agree Disagree

The other participant would give an accurate police statement about the events
 Agree Disagree

The black car ran a red light
 Agree Disagree

The white car ran a red light

Agree

Disagree

The crash was loud

Agree

Disagree

For the following questions please use the scale provided:

1	2	3	4	5
Completely Agree	Somewhat Agree	Neither Agree nor Disagree	Somewhat Disagree	Completely Disagree

The car crash was avoidable:

1	2	3	4	5
---	---	---	---	---

The people in the car were injured:

1	2	3	4	5
---	---	---	---	---

Someone at the scene called emergency services:

1	2	3	4	5
---	---	---	---	---

There is a large dent in the white car:

1	2	3	4	5
---	---	---	---	---

There is a large dent in the black car:

1	2	3	4	5
---	---	---	---	---

The police showed following the accident:

1	2	3	4	5
---	---	---	---	---

Lots of people stopped to help the people in the accident:

1 2 3 4 5

An ambulance showed up following the accident:

1 2 3 4 5

I feel the need to agree with the other participant:

1 2 3 4 5

I remembered the events better after knowing what the other participant remembered:

1 2 3 4 5

The other participant's statement is accurate:

1 2 3 4 5

The other participant was wrong about the events:

1 2 3 4 5

I am confident about what happened in the video:

1 2 3 4 5

I remember the events in the video accurately:

1 2 3 4 5

I could describe the events in the video to another person:

1 2 3 4 5

I found all the differences between the two images:

1 2 3 4 5

The following information will be used to categorize your answers:

Gender: _____

Age: _____

Highest Level of Education Completed: No Schooling Completed, Elementary, High School (no diploma), High School (diploma/GED), Some University/College, Undergraduate Degree Completed, Some Graduate Level Course Work, Graduate Degree Completed, Professional Degree, Doctorate Awarded

Ethnicity: _____

Marital Status: Single, Married/Common-Law/Domestic Partnership, Widowed, Divorced, Separated

Where do you currently reside?

Ontario, Quebec, British Columbia, Alberta, Manitoba, Saskatchewan, Nova Scotia, Newfoundland and Labrador, New Brunswick, Prince Edward Island, Northwest Territories, Yukon, Nunavut, Other

Thank you for your participation.

Debriefing

This study was designed to investigate whether reading or listening to information may change the way you perceive and remember details of events.

Some of you were shown audio and/or video clips, however you were not told that you would be asked any questions about the details of the events. In addition to this, some of you may have read or heard information that contradicted the event. This was done to determine whether or not hearing or reading information that is different from what you saw would change what you remember.

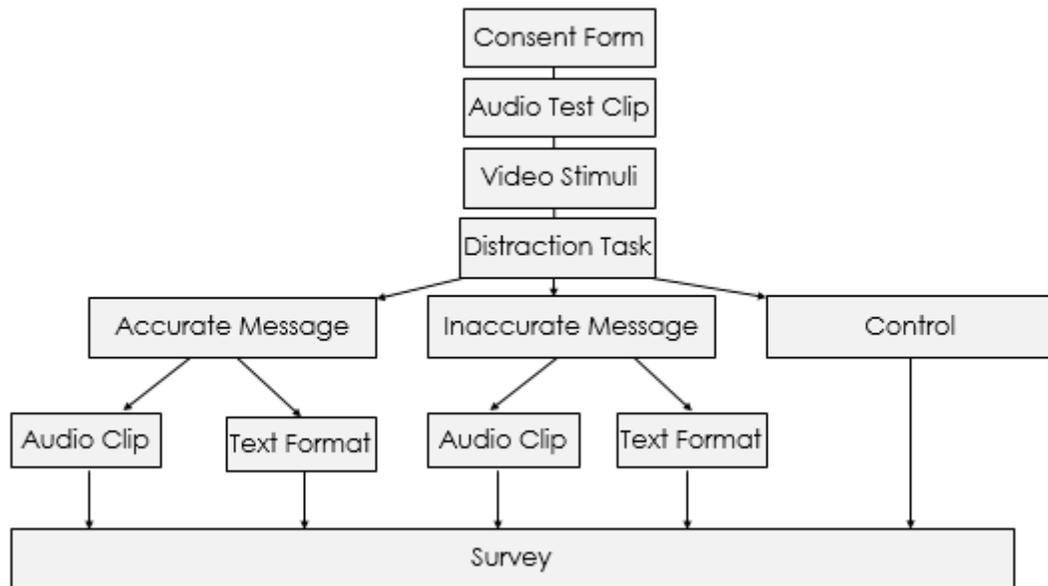
You were not told this because we did not want you to focus on the event more than you normally would in a real life scenario.

If you have any questions or concerns about this research, please contact Dr. Dwayne Keough (dkeough@grenfell.mun.ca).

If participation in this study has raised any issues or concerns for you, I encourage you to contact the mental health helpline at 1 (866) 531- 2600.

Thank you again for your participation in this study.

Appendix D



Congruent message: I saw a dark car travelling down the road. They made a turn to go into a parking lot, but they took the turn too early and hit a white car travelling in the opposite direction. The white car had a big dent in both doors and the dark car kept driving.

Incongruent message: I saw a dark car travelling down the road. They made a turn to go into a parking lot, but they ran a red light and hit a white car travelling in the opposite direction. The black car had a big dent in both doors and the white car kept driving.