Mandella Effect Or Suggestion's Effect On False Memory

Abstract

This research investigates the Mandela Effect phenomenon, specifically examining the impact of suggestion on false memories. The Mandela Effect refers to the widespread false memories shared by individuals, often related to pop culture events. While previous studies have explored false memories and potential contributing factors, limited research has directly addressed suggestion's role in the Mandela Effect. This study aims to fill this gap by examining how direct and leading questions, akin to those used in Mandela Effect discussions, influence false memory reporting. Additionally, it explores the potential effect of language on memory, comparing the false memory rates of bilingual and monolingual participants. The study involves 58 participants from … State University, randomly assigned to either a suggestive survey (Survey A) or a non-suggestive survey (Survey B). Both surveys include questions related to Mandela Effects, with Survey A employing leading wording, and Survey B using neutral phrasing. Experimental control measures include random assignment and identical Mandela Effect questions in both surveys. Anticipated outcomes included more false memories in the suggestive survey group and less false memory rates for bilingual vs monolingual participants. The results were analyzed using Statistical Package for Social Sciences (SPSS), with an independent t-test and found that the participants given survey A had significantly more false memory errors than survey B. Additionally, a two-way analysis of variance (ANOVA) was conducted to assess the influence of language on false memory rates, and also found that monolingual participants had made significantly more false memory errors than bilingual participants.

Mandella Effect Or Suggestion's Effect On False Memory?

According to many people, Nelson Mandela died in prison in the 1980's. However, he actually passed away in 2013 (Prisco, 2023). This false memory phenomenon started circulating around the internet in 2009 and has spawned more and more instances like it ever since (Cuncic, 2023). Many people believe the iconic saying from the movie Snow White is *mirror, mirror, on the wall*, only to be shocked to find out the correct quote is *magic mirror on the wall*. Many people believe the fictional character Pikachu had a black tip on his tail when he never did; or the Monopoly man wore a monocle when there is no such piece (Cuncic, 2023). There are many more instances of this being the case where people share their false memories of certain pop culture events on the internet resulting in many other people claiming they remember the same or similar thing happened. These are what are referred to as Mandela Effects. In this study it will aim to discover if suggestion, has an effect on the development of these false memories, also to see whether bilingualism has an effect on them as well and to look at if there is an interaction between the type of questions being asked and whether someone is bilingual or not to see if there is an effect there as well.

History of Theories

People have begun to develop theories regarding the cause of the Mandela Effect since it was first discussed in 2008 (Prisco, 2023). How could mass numbers of people have false memories of something? Theories range from a collision of alternate timelines, conspiracy theories about the European Council for Nuclear Research which created a particle accelerator created in 2008, and other explanations ranging from wild conspiracy to tame explanations like people's memories just being imperfect Prisco, 2023). There was a theory on a Reddit thread titled "Mandela Effect and the Power of Suggestion" originating 5 years ago that hypothesized

that the Mandela Effect was a product of the psychological effect of suggestion. The body text has since been deleted but the comments remain. The comments range from people who claim to have psychological backgrounds who are baffled by the effect sceptics of the claims made by the original poster and, others who defend the original poster's points believing it to be suggestion. This experiment takes inspiration from that post and attempts to expand upon them scientifically testing suggestion's effect on false memory specifically in regard to the Mandela Effect.

False Memory

Memory is a fickle thing and many studies have tackled the topic of false memories. For instance, Raykov and colleagues (2023) concluded that memory can be influenced by the way people expect things to happen rather than how they really happen. In this study, participants watched a video and right before a climatic event happened, they stopped the video and found that people remembered the climatic event happening even though they never witnessed it. A different study found that attention plays a part in memory and when people are not fully focused, they will make connections that are not there (Reid & Katz, 2022). Another study found that false memories can be influenced by how fast a person can make generalizations, suggesting that some people are more susceptible than others to having false memories (de Araujo Sanchez & Zeithamova, 2023). With more research that talks about a similar concept of the way humans learn information the way things like rules, concepts and how humans categorize objects are learned have been suggested to have a negative correlation on having false memories. The better people in the study were at categorizing words, the more false memories they had (Hunt & Chittka, 2014) suggesting a possible link between creating shortcuts in the brain, and having false memory. There has even been research showing being bilingual can reduce false memories,

but this is believed to be due to the taxing act of translation (Grant et al., 2023). Again, attention may have played a part in false memory creation.

On the topic of attention, two experiments conducted by Knott and colleagues (2018) explored how having fewer attentional resources affects the creation of false memories, particularly for emotionally charged information. The study used the Deese/Roediger-McDermott (DRM) paradigm, which involves presenting lists of related words to induce false memories. Previous research has shown that people tend to remember emotional information better than neutral information. The authors investigated whether the attention people had while learning influenced false memories for emotional words. In Experiment 1, they had people study lists of negative, positive, and neutral words with full attention or divided attention. In Experiment 2, they focused on negative and neutral words but varied the speed of presentation. Results showed that, when attention was divided or words were presented quickly, people were more likely to create false memories for negative words compared to positive words (Experiment 1) and neutral words (Experiments 1 and 2). This suggests that making up false memories for negative information is linked to automatic processing in the brain, while false memories for positive and neutral information are tied to more controlled processing. This study may be the first (noted by the researchers) to show this connection between the type of brain processing and creating false memories based on the emotional nature of the information.

In a study conducted by Huang and colleagues (2023) they discovered that not only can artificial intelligence have and share false information but 77% of participants also believed this false information to be true. This study suggests that false memories are so prevalent that even machine learning algorithms can pick them up from their databases and then can influence real human beings based on false information. There is even a study conducted by Delaney and

colleagues (2023) that involved 1,184 participants from Germany and Ireland who were exposed to fabricated news stories that either reinforced positive or negative stereotypes about their respective countries. An interesting finding of this study was that participants with higher levels of cognitive ability and analytical reasoning were less prone to false memories. They were also better at distinguishing between true and false news stories which could suggest that cognitive ability and analytical reasoning also could play a role in developing false memory. This has even been shown to be the case with something as recent and widespread as the covid pandemic. People were suggested to be influenced by fake news and create false memories based around covid (Mangiulli, 2022). These studies suggest that memory can be influenced by a variety of factors, making it not so unreasonable that people can experience false memories.

Language's Effect On Memory Expanded

As previously stated in the study conducted by Grant and colleagues (2023), being bilingual is suggested to reduce instances of false memory. This was suggested to be due to the taxing act of translation. Another study had similar findings where bilingual participants performed worse in their dominant language as opposed to their non dominant language (Suarez & Beato, 2023. So along with testing the effects of suggestion on false memory and the Mandella effect this experiment also aims to test the effect of the difference between being bilingual versus monolingual. Another study conducted by Macbeth and colleagues (2021) scanned the brains of bilingual Spanish and English speakers and monolingual English speakers. The study conducted Magnetic resonance imaging (MRI) scans on the brains of all subjects and found noteworthy differences. Bilinguals in the study exhibited a thinner cortex in regions associated with memory control. This thinning, to the researchers, is seen as a positive indicator suggesting that the brains of bilinguals might have developed more efficient pathways for managing memory tasks.

Furthermore, the study explored white matter, the brain's communication network. Bilinguals demonstrated positive correlations between the integrity of white matter and their performance in resisting proactive interference. This suggests that the enhanced connectivity between different brain regions, facilitated by bilingualism, might contribute to better memory control. In theory, having these brain connections may serve as a barrier against creating false memories as seen from the Mandella Effect compared to a monolingual speaker. Additionally, a three-experiment study conducted by Bialystok and colleagues (2020) also found a correlation between bilingualism and false memory instances. In all three of the studies bilingual participants had less false memory errors than their monolingual counterparts.

The Mandela Effect in Research

The previously reviewed studies are based on individual reports and do not explain how so many people can have the same or similar false memory. There is not much literature and research conducted on the Madella effect so far. Prasad and Bainbridge (2022) conducted four different experiments to test the phenomena of the visual Mandela Effect. In the first study, researchers showed images to 100 adults and found that specific images led to consistent false memories. In the second study, the researchers used eye-tracking methods to see if people were physically looking at these images differently, but they found no significant differences in how people visually experienced the images. In the third study, it was concluded that there was no obvious visual explanation for the false memories. Most of the time, participants reported viewing the images the intended way. In the fourth study, the researchers discovered that false memories occurred spontaneously when people tried to recall the images they were exposed to in the past without visual reference. Ultimately, it was concluded that some images consistently lead many people to have the same incorrect memories, even though most of the time they see

the images correctly when presented to them. Another study found similar findings where some people believed they had false memories of a childhood event in a hot air balloon. The thing was the photos were doctored and they never actually were there in the pictures they were shown. Still 40 percent of the participants claimed they remembered the event (Johnson et al., 2023). This is not directly related to the Mandela effect but could possibly suggest why it occurs when a lot of the time Mandela effects are accompanied with a doctored image of what people “recall” it to be for example the fruit of the loom logo with a cornucopia drawn.

A related study conducted by Miller and colleagues (1998) involved a picture-based experiment to investigate false memories. They designed a scenario where participants were shown pictures of scenes (like a beach) with some items removed (such as a beach ball). Later, during an auditory recognition test, these removed items were used as "lures" to see if participants would falsely recognize them as being part of the original scene. The study involved 47 participants aged 18–25. The results showed that participants often falsely recognized the lures almost as frequently as the actual items from the scene. This means they claimed to remember seeing items that were never presented to them. The participants also reported a conscious recollection of these false memories, indicating a strong sense of having experienced those items. The study concluded that their picture-based paradigm was as effective as a word-based paradigm in generating false memories. This study is of particular interest because it suggests a reason the Mandella Effect could happen: “lures” can influence creation of false memories based upon media.

Purpose of the Present Study

While many studies on false memories focus on variables like attention, language, and even artificial intelligence, there is one component that seems to be missing in the discourse and

research for the Mandela Effect: Consider this question: “Do you remember the Fruit of the Loom logo having a cornucopia?” Researchers and online civilians tend to use direct and leading questions when examining the Mandela Effect, which could easily confuse respondents and create false memories itself. The first hypothesis is that respondents will report a higher number of false memories when provided with direct and leading questions. In other words, false memories and leading questions will positively correlate. The second hypothesis goes along with the literature about language and false memories and is that respondents that speak one language will report a higher number of false memories than bilingual respondents. In other words, number of languages spoken and number of false memories will negatively correlate.

Method

Participants

A total of 58 (REDACTED) students will participate in this study through convenience sampling by selecting participants who sign up for the study through the school. Participant sex was distributed with 15.3% being male (n=9) and 81.4% female (n=48) and 1.7% transgender (n=1). The study was open to all students 18 and older, with 94.9% of the participants being between the ages of 18 and 22 and the remaining being three participants 23, 25, and 47 years old. 1.7% of the participants were Asian (n=1), 22% Black or African American (n=13), 1.7% Native American / Alaskan Native (n=1), 1.7% Native Hawaiian or Pacific Islander (n=1), 55.9% White (n=33), and 13.6% other (n=8). 37.3% of the participants were Hispanic / Latino (n=22), 59.3% were not Hispanic / Latino, and 3.4% did not respond to the question (n=2). 52.5% of the participants were bilingual (n=31) and 45.8% monolingual (n=27).

Instrumentation

For this experiment, participants completed one of two surveys with random assignment. Twenty-nine participants were be placed into group A, completing survey A by using random assignment, while the other 29 were placed into group B and completed survey B.

Survey A (see Appendix A) uses suggestive wording for 10 questions related to events that have been documented as Mandela effects with the suggestive wording being the manipulation. For example, “Did Darth Vader say, ‘Luke I am your father’ in Star Wars episode 5?”. The word Luke was not present in the original scene but is commonly believed to be remembered as being said. The Mandella effects chosen for these 10 questions were pulled from two popular website articles, one written by the Today Show (2023) and one written by Good Housekeeping (2023).

Survey B (see Appendix B) had the same 10 Mandela effect questions as survey A but without any suggestive wording. The questions followed the format of asking about an image or saying in question, but without saying what the actual effect is. For example, the question will be phrased "What did Darth Vader say to Luke in the climactic scene in Star Wars episode 5?" with space provided to write out the answer.

Participants in survey A were given one of three response choices (*yes*) (*no*) and (*Not familiar*). For survey B, participants responded with an open-ended answer. Which then depending on their answer was graded into one of the three response choices. False memories in group 2 will be recorded along with the scoring guide for the questions (see Appendix C). Response differences were compared between surveys A and B. Scores for each category (false memory, true memory, no recollection) and were summed by taking the number of yes and no answers, scoring them 1 for yes and 2 for no and then divided by the number of questions applicable for each participant for totals in each category. Language type was collected for each participant on the demographics form (see Appendix F) and was determined by them marking yes or no to the question "Are you bilingual". Validity and reliability cannot be calculated due to this being an experiment, however, experimental control will be used by ensuring random assignment and having the questions ask about the same Mandela Effects in the same order.

Procedure

Participants were recruited through the (redacted) psychology department website. Participants signed up for this research project through email and were be directed to a Qualtrics link containing an informed consent form, which informed the participants of what the study entailed and to gain their consent (see Appendix D). Once they completed the informed consent form, participants were directed to complete a demographic form (see Appendix E) which

contains a form requiring them to specify their race, gender and if they are bilingual, and if so, what other language they speak.

Next, Participants were directed to Qualtrics a survey site containing either one of the tests. Each participant only took survey A or B, randomly assigned. This was determined by alternating the survey that got sent out for each person who signed up for the study. So for example if one person reached out they would get survey A then the next would get B and the next A and so on. After completing the randomized survey, participants received a debriefing form, in which they were notified of the study's purpose and directed to ask any questions by contacting the researcher (see Appendix F). The entire process should take no more than 15 minutes.

Results

The first hypothesis tested the effects of direct and leading questions on reporting false memories. The group with leading questions called the suggestion group was hypothesized for the participants to make more false memory errors than the group without leading questions called the no suggestion group. An independent groups T test was run and as predicted the participants in the suggestion group (M = 1.38, SD = .24) had significantly more false memory errors than the no suggestion group (M = 1.64, SD= .17), t(56) = -4.85, p = .002, 95% CI [-.37,-.15], d=.21 (see table 1) (see table 2) (see table 3).

The second hypothesis was on the effects of being bilingual on reporting false memories. It was predicted that monolingual participants will make significantly more false memory errors than bilingual participants. A two-way ANOVA was conducted and as predicted there was a significant main effect in the language groups. The group that was not bilingual (M= 1.42, SD =.20) made significantly more false memory errors than the bilingual group (M= 1.59,

SD=.23),F(1,54) =5.57,p =.022,ηp2 =.22. For the main effect of participant group type. As previously stated the suggestion group (M = 1.38, SD = .24) made significantly more false memory errors than the no suggestion group (M = 1.64, SD= .17),F(1,54) =21.75,p<.001,ηp2 =.84. For language type x group type there was not a significant interaction effect p=.022. (see table 4), (see table 5), (see table 6) (see table 7) (see graph 1).

Discussion

This study produced some interesting results in terms of better understanding the Mandela effect and the mechanisms behind it. With the suggestion group having significantly more false memories than the non-suggestion group there is a strong likelihood that the Mandella effect is most likely caused by the fallibility in human memory and its tendency to get deceived. While more out there conspiratorial reasonings may be fun to speculate about, this study will hopefully add some more scientific discourse in the conversations about the effect. With the Mandela effect being very distressing to some for the aforementioned conspiratorial reasons another benefit of this study could be to add data to the field of thought that this is based in explainable mental phenomena and not some supernatural / science fiction reasoning. Also, with the significance of the monolingual group having significantly more false memories than the bilingual group this study can add more to the research base of bilingual vs monolingual memory. This study, while interesting, was not without its limitations and the results must be interpreted with those in mind. The participants were of a large majority female 81% and 94.9% of the participants were between the ages of 18 and 22, and all college students at … University. The study is based off of the Mandella effect and only one participant was actually alive during the time people recall Nelson Mandela “dying” in prison in the 1980’s. While this is not the biggest problem because all of the other Mandela effects are things that the participants have

lived through / experienced a more nuanced and diverse sample would have been ideal when conducting this study. Possibly a follow-up study could improve on this in that way. Also, there was no interrater reliability for the rating of the participants' scores. While I tried to be as fair as possible with the scoring and believe I scored some items that were borderline against my favor understandably people could and should feel skeptical about the results due to this. So, if this study does get published, I would be more than happy to include the data with it so others may score it and run the tests with their scores to add more validity or disprove the findings. If the results are to be taken as the data represents however, I believe there are some interesting directions to take follow up research and future studies. A follow up study could look at if Mandela effects can be "created" through suggestion. By employing the same suggestive wording of the questions in this study to made up Mandela effects. For example, participants could be asked a question like "do you remember Iron man having a blue suit?". Something that Iron Man never wore and there is no existing Mandela effect about. Then if participants make a significant number of false memory errors about made up Mandella effects. The study could further strengthen the validity of these findings by giving more data to back suggestions being the factor in the creation of the Mandela effect. Also, a follow up study could be done that re-does this study eliminating the limitations discussed earlier. By having a more diverse sample and having a blind rater of the answers of the suggestion group if the follow up does back significant it would give even more data supporting the suggestion hypothesis. Overall, these findings contribute to the emerging area of understanding of the Mandela Effect phenomenon and highlight the complex interplay between suggestion and cognitive factors in shaping individual and collective memory. While there is still much to learn about the Mandela effect and the causes behind it, this study is a step in the right direction to understanding and explaining it

in a scientific way. Hopefully turning the conversation away from conspiracy and giving legitimacy to this being an effect of the mind and memory and not an unexplainable phenomenon.

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Table 1

Group Statistics

	Group Type	N	Mean	Std. Deviation	Std. Error Mean
Scores	Suggestion	29	1.3880	.24321	.04516
	No Suggestion	29	1.6448	.16655	.03093

Table 2

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
						Significance				95% Confidence Interval of the Difference	
		F	Sig.	t	df	One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
Scores	Equal variances assumed	11.781	.001	-4.691	56	<.001	<.001	-.25677	.05474	-.36642	-.14711
	Equal variances not assumed			-4.691	49.527	<.001	<.001	-.25677	.05474	-.36673	-.14680

Table 3

Independent Samples Effect Sizes

		Standardizer[a]	Point Estimate	95% Confidence Interval Lower	95% Confidence Interval Upper
Scores	Cohen's d	.20843	-1.232	-1.790	-.664
	Hedges' correction	.21128	-1.215	-1.766	-.656
	Glass's delta	.16655	-1.542	-2.186	-.880

a. The denominator used in estimating the effect sizes.
Cohen's d uses the pooled standard deviation.
Hedges' correction uses the pooled standard deviation, plus a correction factor.
Glass's delta uses the sample standard deviation of the control (i.e., the second) group.

Table 4

Between-Subjects Factors

		Value Label	N
Are you Bilingual or speak more than one language fluently?	1	Yes	31
	2	No	27
Group Type	1.00	Suggestion	29
	2.00	No Suggestion	29

Table 5

Descriptive Statistics

Dependent Variable: Scores

Are you Bilingual or speak more than one language fluently?	Group Type	Mean	Std. Deviation	N
Yes	Suggestion	1.4876	.24914	13
	No Suggestion	1.6670	.18362	18
	Total	1.5917	.22810	31
No	Suggestion	1.2982	.19740	16
	No Suggestion	1.6085	.13423	11
	Total	1.4246	.23143	27
Total	Suggestion	1.3831	.23804	29
	No Suggestion	1.6448	.16655	29
	Total	1.5140	.24266	58

Table 6

Tests of Between-Subjects Effects

Dependent Variable: Scores

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1.274[a]	3	.425	11.008	<.001
Intercept	128.510	1	128.510	3331.985	<.001
LanguageType	.215	1	.215	5.569	.022
GroupType	.839	1	.839	21.751	<.001
LanguageType * GroupType	.060	1	.060	1.556	.218
Error	2.083	54	.039		
Total	136.295	58			
Corrected Total	3.356	57			

a. R Squared = .379 (Adjusted R Squared = .345)

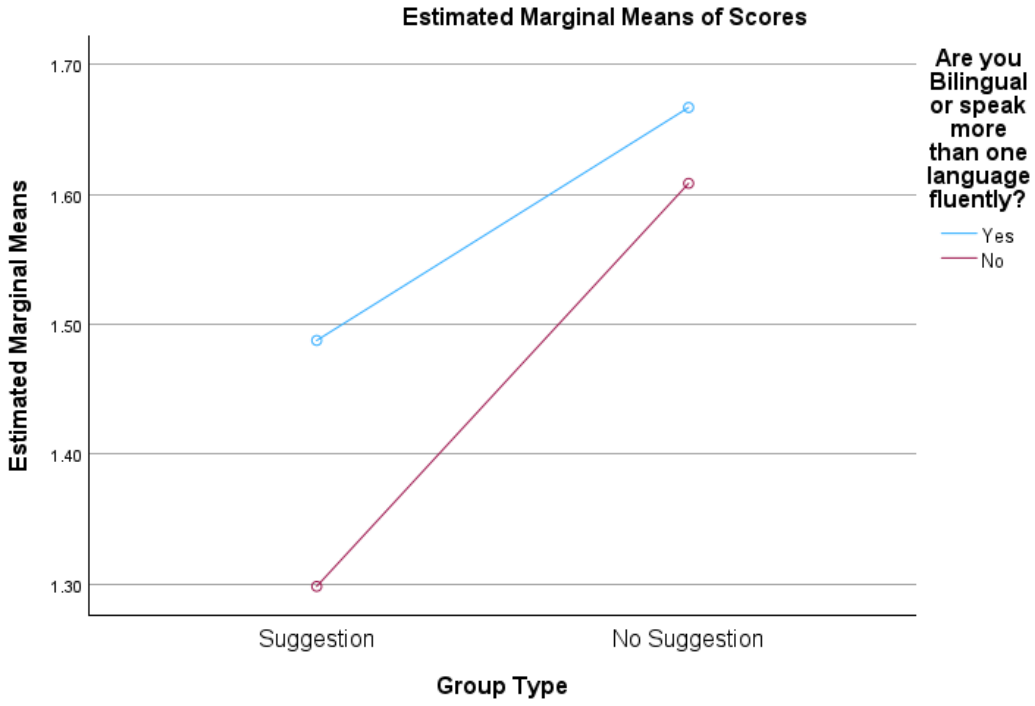
Table 7

Are you Bilingual or speak more than one language fluently? * Group Type

Dependent Variable: Scores

Are you Bilingual or speak more than one language fluently?	Group Type	Mean	Std. Error	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Yes	Suggestion	1.488	.054	1.378	1.597
	No Suggestion	1.667	.046	1.574	1.760
No	Suggestion	1.298	.049	1.200	1.397
	No Suggestion	1.609	.059	1.490	1.727

Graph 1


Estimated Marginal Means of Scores
Estimated Marginal Means
1.70
1.60
1.50
1.40
1.30
Suggestion
No Suggestion
Group Type
Are you Bilingual or speak more than one language fluently?
Yes
No

Appendix A

Memory and Pop Culture Study: In this experiment, we will explore how well individuals remember pop culture events and media. You will be presented with 10 questions related to various pop culture phenomena. Your task is to respond to each question by marking one of the following options:

- YES: If you remember the pop culture event in the described way.
- NO: If you do not remember the pop culture event in the described way.
- NOT FAMILIAR: If you are not familiar with the pop culture event.

Please read each question carefully and select the most appropriate response based on your memory.

Question	**Yes**	**No**	**Not Familiar**
Did the character Shaggy from Scooby Doo have a noticeable Adams apple?			
Do all mirrors on the sides of cars in the United States have “Objects in mirror may be closer than they appear” written on them?			
Does The United States of America have 51 states?			
Was there a brand called Jiffy Peanut Butter?			
In Star Wars Episode 5 does Darth Vader say, “Luke I am your father?”			
Does the monopoly man wear a monocle on his eye?			
Is the phrase from Snow White “Mirror Mirror on the wall, who’s the fairest of them all?”			
Does the fruit of the loom logo include a cornucopia?			

Does Pikachu have a black tail?			
Did Nelson Mandela Die in the 1980s?			

Appendix B

Memory and Pop Culture Study: In this experiment, we will explore how well individuals remember pop culture events and media. You will be presented with 10 questions related to various pop culture phenomena. Your task is to describe these events or media as accurately as possible. Write anything that you can recall about the event or media. The more the better. There are spaces provided for each question where you can write down anything that comes to mind. If you are not familiar with a particular pop culture event or media mentioned, please leave the answer blank or explicitly state that you are not familiar with it. Please read each question carefully and select the most appropriate response based on your memory.

Question	Your Space to Answer
Describe the physical appearance of the character Shaggy from Scooby Doo	
What text is written on sideview mirrors in every car in America?	
How many states does the United States of America have?	
Name peanut butter brands starting with the letter J. (discontinued or still active)	

In Star Wars Episode 5 what iconic phrase does Darth Vader say while battling Luke Skywalker?	
Describe the physical appearance of the monopoly man and the clothes he wears	
What does the Wicked Witch in Snow White say when looking at a mirror?	
Describe the Fruit of The Loom Logo	
What color is Pikachu's tail?	
What year did Nelson Mandela Die?	

Appendix C

Scoring guide for questions in group 2

Question 1.) Any response containing “Adams apple” will be marked as a 1 for false memory, other answers relating to Shaggy’s appearance will be marked as 2 for no false memory and if it is clear they are unfamiliar with the character or write that they are it will be marked as 3 for not familiar.

Question 2.) Any response containing “may be or may” with some form of objects in the mirror will be marked as 1 for false memory, other answers containing objects in the mirror but not “may or may be” will be marked as 2 for no false memory, and if is clear they are unfamiliar with the question or write explicitly that they are not will be marked as 3 for not familiar.

Question 3.) Any response containing “51” will be marked as 1 for false memory. Any answer containing “50” will be marked as 2 for no false memory. Any other answer will be marked as 3 for not familiar.

Question 4.) Any response containing “Jiffy” will be marked as a 1 for false memory. Any answer containing “Jiff, or Jif” will be marked as 2 for no false memory. Any other answer will be marked as 3 not familiar.

Question 5.) Any answer counting the word “Luke” will be marked as a 1 for false memory. Any answer containing “I am your father” with the absence of “Luke: will be marked as 2 for no false memory. Any other response will be marked as 3 for not familiar.

Question 6.) Any response containing the word “monocle” or any other description of a glasses type object on the monopoly man’s face will be marked as 1 for false memory. Any other response describing the monopoly man without the mention of monocle, or a glasses type object will be marked as 2 for no false memory. Any other response will be marked as 3 for not familiar.

Question 7.) Any response containing the phrase “mirror mirror or only mirror” will be marked as 1 for false memory. Any response that contained the phrase “magic mirror” will be marked as 2 for no false memory and any other response will be marked as 3 for not familiar.

Question 8.) Any response containing the phrase “cornucopia” or any word describing a basket or something holding the fruit of some sort will be marked as 1 for false memory. Any other description of the logo not fitting that criteria will be marked as 2 for no false memory. Any other responses will be marked as 3 for not familiar.

Question 9.) Any response containing the word “black” will be marked as 1 for false memory. Any response stating, “brown or yellow” and does not say black will be marked as 2 for no false memory. And anything else will be marked as 3 for not familiar.

Question 10.) Any response that says a year in the 1980's or just says 1980's will be marked as 1 for false memory. Any year near 2013, 2008 – 2018 will be marked as no false memory. Anything else will be marked as not familiar.

Appendix D

Informed Consent Form

My name is …, and I am a Research Methods student. You have been asked to participate in a psychological research study that will examine memory in regard to pop culture events. You must be at least 18 years of age to participate in this study.

The purpose of this study is to see how well you remember events and pop culture images / products. You will be asked to answer questions related to pop culture events images / products and respond how you see accordingly following the directions provided. It will also look at the effect that being bilingual or not has on these answers. No deception is involved in this study. The entire study will take approximately 15 minutes or less. I foresee no risks or discomforts to you as a result of participating in this study other than those normally encountered in day-to-day life. You will receive class credit for your participation in this study.

Your name will not be collected. Only group data will be used in the reporting of results; all personal information will be kept completely confidential. Your participation is voluntary, and you have the right to withdraw from the study or not answer questions at any time without penalty. Following the study, you will receive a debriefing form that will explain the reasons for the research to you.

If you have questions about your participation in this study, or if you would like to receive a summary of the study results, please contact me (@) or my professor (Email:).

If you have questions about your rights as a research participant, please contact, Chair of the Committee on the Use of Human Subjects in Research

By clicking “Next”, you acknowledge that you are at least 18 years of age, have read this consent form, understand it, and consent to the procedures set forth.

_____ _____

NEXT

Appendix E

Debriefing Form

The study you just participated in was designed to investigate suggestion's effects on false memory. Previous research has found that false memories can be developed from a variety of sources. This research is focusing on the suggestion aspect of it and looking at it as a possible explanation for the Mandela Effect. Your responses will be used to test the hypothesis that if suggestion is used in the wording of a question, then people will be more likely to remember something falsely. This may be an explanation for the Mandela Effect which is what this study aims to look at. Along with the effect that being bilingual may have upon it.

If you have any additional questions about this study or would like a summary of the results, please contact me,

Research Credits: 1 credit

When you click Submit, your browser will transfer you to another page where you will enter your name, email address, student ID number, and select the name of the instructor that you want to receive your research credit(s) listed above. Copy and paste or write down this code: so that you can enter it on the next page.

Appendix F

Demographics Questionnaire

This questionnaire will ask you some brief questions about yourself. Please answer the questions below to the best of your ability. The information obtained from this survey will be kept confidential and will be used for research purposes only. Thank you for your participation!

1. What is your gender identity?
    - □ Woman
    - □ Man
    - □ Transgender
    - □ Non-binary/non-conforming
    - □ Prefer not to respond
2. What is your age today? _____ years
3. What is your racial background? (select all that apply)
    - □ Asian
    - □ Black or African American
    - □ Native American/Alaskan Native
    - □ Native Hawaiian/Pacific Islander
    - □ White
    - □ Other: _____
4. What is your ethnic background?
    - □ Hispanic/Latino
    - □ Not Hispanic/Latino
5. What is your year in college?
    - □ First-year
    - □ Sophomore
    - □ Junior
    - □ Senior
    - □ Other: _____

Are you Bilingual?

- □ Yes
- □ No