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Ethics in Fake News:
Combatting the Illusory Truth Effect with Corrections

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Abstract

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Daniel R. Jackson

The illusory truth effect is the finding that when information is read multiple times, it appears as more truthful. The purpose of this study was to see if modifying the number of corrections issued to false news headlines had an effect on reducing this phenomenon. News headlines were displayed either one or two times and the number of times a correction was presented varied from zero to two. Participants read through corrections and headlines then rated headlines on familiarity and perceived accuracy. They also completed a memory test for headline and correction content. The illusory truth effect occurred in headlines presented multiple times with no corrections. This effect disappeared, however, when corrections were presented, signifying the possibility of corrections fostering an environment of skepticism. Implications and future research are discussed.

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Chapter One:

Introduction

Recently, the term “fake news” has been used to invalidate a dissenting viewpoint, deem a source as potentially untrustworthy, or accuse someone of having a malicious or manipulative ulterior motive. Whether the news story is indeed “fake news” should be evaluated on a case-by-case basis by assessing the individual facts of the story or lack thereof. However, a notable instance of actual “fake news” surfaced with the correction of the headline to Emma Grey Ellis’s 2017 WIRED article on popular YouTuber Felix Kjellberg, a.k.a. PewDiePie. The original headline read, “PewDiePie was Always Kinda Racist – But Now He’s a Hero to Nazis.” The headline was later changed to “PewDiePie’s Fall Shows the Limits of ‘LOL JK’.” While the corrected headline of the story remains at the time of writing, it is unclear how many individuals saw the original headline and took it as fact.

With the sizable amount of negative propaganda surrounding Kjellberg during February of 2017, many readers may have fallen victim to the *illusory truth effect* while being bombarded with headlines similar to the original misleading headline, thereby rendering the headline correction ineffective. The illusory truth effect is defined as when an individual judges a repeated statement as more truthful than a novel statement (Fazio, Brashier, Payne, & Marsh, 2015). The current study seeks to identify the effectiveness of issuing corrections in journalism in order to overcome the illusory truth effect, which would help to ensure that transparency and ethics are maintained. The illusory truth effect allows for the spread of false information in the form of headlines based on the nature of how media outlets are presented in a repetitive fashion. Combatting the spread of

misinformation with multiple instances of corrections has the potential to counteract the illusory truth effect, thereby spreading more truths rather than falsehoods.

The current paper will explain the literature surrounding the illusory truth effect and how the general paradigm functions within the laboratory. It will also touch on both misinformation and source monitoring and how the two intertwine to explain the illusory truth effect. Lastly, the current study seeks to identify whether issuing multiple corrections combats the illusory truth effect of misinformation in media headlines.

Illusory Truth Effect

The illusory truth paradigm, exhibited in the following studies, demonstrates the illusory truth effect. It consists of repeating a stimulus multiple times, waiting a period of time, and measuring individuals' perceived accuracy or validity of that stimulus. These measures are then compared to a control condition, where the stimulus was shown only once. As documented by the illusory truth effect, repeated stimuli are perceived as more accurate than those that were not repeated. This basic paradigm evolved with the establishment of new studies and eventually began to encompass news-related information, such as stories.

Starting with the beginning, Begg, Anas, and Farinacci (1992) exemplified the illusory truth effect within a study involving a series of experiments. They solidified the pattern that false, repeated information is viewed as more truthful than novel, correct information. Overall, the researchers identified that when statements were paired with either true or false sources, true statements were rated as most truthful, followed by false statements, which in turn were followed by new statements. The sources of these statements were explained to participants as either being credible or not being credible,

giving way to true and false sources. In the first experiment, researchers assigned statements to female and male names. In an earlier section of the experiment, participants learned half of the names associated with the statements and the other half were previously unlearned. Participants were then cued to view one gender as more truthful and the other as less truthful, functioning as source credibility. Another group of participants was cued to view known or unknown names as having different levels of truthfulness. A final group of participants was not cued at all. A series of new statements were introduced for the second portion of the experiment and assigned to either known or unknown voices, and participants rated the perceived truthfulness of each statement. Overall, researchers found a pattern that true statements were rated as more truthful than false statements, which were rated as more truthful than novel statements. This pattern of results occurred across all conditions of the experiment, both cued for gender and cued for known and unknown voices.

In their second experiment, Begg et al.'s (1992) participants listened to a series of statements spoken by either a male or female voice under the guise of a game of Trivial Pursuit. For each statement, participants rated their interest in that statement on a 7-point Likert scale. At the start of the study, participants in the experimental group were cued that one of the voices, male or female, would be telling the truth and the other would be lying. The control group did not experience any cueing. A series of new statements were added to the second part of the experiment, acting as the novel statements. For each statement, participants rated each statement's truthfulness on a Likert scale. They also completed a source monitoring recognition test, where they were to identify if the statement was new, old and spoken by a male voice, or old and spoken by a female voice.

In the cued condition, the pattern of results for truthfulness remained consistent from the first experiment, reiterating that true statements were rated as more truthful than false statements, which were rated as more truthful than novel statements. For the memory task, participants were able to identify true, false, and new statements with high accuracy, recognizing old statements (94% for true, 93% for false) much more than new statements (10%).

In their third experiment, Begg et al. (1992) varied the participants' exposure to the statement validity declarations; some participants were told beforehand that one gender would be truthful and the other not (precued), some participants were told after hearing the statements (postcued), and some were not told at all, forming the control group. Truthfulness differed between precued and postcued participants. Precued participants exhibited the same pattern as in the previous experiments of true statements as rated more truthful than false statements, which were rated as more truthful than new statements. However, participants in the postcued condition rated the truthfulness of true and false statements equally and both as more truthful than novel statements. Begg and his colleagues' fourth experiment added an extra condition involving completing mental arithmetic, serving as an attention distractor between each statement. In the distractor condition, true statements were rated as more truthful than false and new statements, which did not significantly differ in their measures of truthfulness. The same pattern held for the precued and postcued condition, demonstrating a lessening of participants' abilities to rate perceived truth. Begg et al.'s research solidifies that the illusory truth effect emerges from both familiarity of the content in question and intentional source

monitoring, maintaining the pattern that true statements appeared more truthful than false statements, which were more truthful than new statements.

Hasher, Goldstein, and Toppino (1997) further explained the idea behind the illusory truth effect. In their study, participants judged whether a series of statements were true or false. Then, participants listened to 140 total statements, half true and half false; the statements were divided between three sessions, each separated by a two-week period. Twenty statements were randomly selected to repeat across each of the three sessions; these were the critical statements. Hasher et al. identified that repeated statements were rated with higher validity than those, which were not repeated.

Polage (2012) expanded upon the illusory truth effect and examined participants' abilities to assess a story's plausibility and source with repeated exposure to that story. Participants read five true stories and five false stories and asked to identify a possible source, formulate a title for the story, and approximate a publication date. Half of the participants were exposed to critical false stories. Along with the critical stories, participants were exposed to a series of new stories after the five-week interval. They then rated each story based on plausibility and whether the story came from an outside source. Polage found that the critical-stories group rated the stories with higher plausibility than those that did not receive the critical stories. Also, Polage found that participants who received the critical stories were much more likely to perceive those stories as coming from a source external to the experiment. These results demonstrate the illusory truth effect, as participants exposed to the same headlines multiple times were more likely to label them as more plausible. Polage's research also begins the discussion of false memories for news story sources in association with the illusory truth effect, as

repeated exposure to stories led participants to identify them as coming from an external source on a scale rating.

Fazio et al. (2015) tested whether prior knowledge of a topic would moderate the illusory truth effect. Similar to Begg et al. (1992), Fazio et al.'s participants rated the truthfulness of new and old statements that varied in terms of their accuracy. Half of the used statements were widely-known (labeled "known" and could be correctly assessed for accuracy by more than half of the population), and half were not widely-known (labeled "unknown" with correct assessments from around 5% of the population). For each statement, researchers created a false counterpart, yielding four categories of statements: known truths, known falsehoods, unknown truths, and unknown falsehoods. During the exposure phase, participants rated their interest for each statement. Participants then immediately completed the truth-rating phase, where they read through another series of statements, some of which were from the previous phase. Half of the statements from the exposure phase were used in the truth-rating phase. Participants were told that some statements would be repeated. Fazio et al. found that repeated false statements were perceived as more truthful than non-repeated false statements, even when statements were known to be false. Fazio et al. then replicated their first experiment but participants deduced truthfulness on a dichotomous scale. The researchers found that the illusory truth effect replicated, with old statements rated as more truthful than novel statements overall. The results from these two experiments by Fazio et al. led to the idea that the illusory truth effect can overpower an individual even when they are knowledgeable of truths and falsehoods.

In association with research on falsehoods, Pennycook, Cannon, and Rand (2017) analyzed the effects of fake news with the illusory truth effect. Pennycook et al. used fake news flags, i.e., notifications under the statements that warn participants of their potential lack of authenticity, much like Begg et al.'s (1992) use of the precued condition. The flags were used to differentiate between low-level processing based on the use of familiarity as justification for truth and higher-level processing using analytics, reasoning, and critical thinking when reading articles and news. They also used politicized news, either favoring a Republican or Democrat platform, to assess motivated reasoning with political news. In their first experiment, participants observed a series of headlines, composed of six factually true and six factually false headlines, in a similar fashion as to how Facebook displays articles, with half of the articles favoring Republican views and the other half favoring Democrat views. Participants then assessed their likelihood of sharing or reposting each article. In the next phase of the experiment, participants completed a distraction task consisting of demographic questions. In the final stage, participants read 24 headlines and assessed these headlines for both accuracy and familiarity. The 24 headlines were comprised of 12 novel headlines and 12 old headlines presented earlier in the study. Pennycook et al. found that participants who saw the fake news flag under the articles were much less likely to participate in reposting the article compared to those that did not. They also viewed stories with a fake news flag as less accurate than their flagless counterparts. Pennycook et al. also found that the illusory truth effect was exhibited, in that headlines repeated across the first and last stages of the experiment were rated as more accurate than novel headlines despite their actual

accuracy. The illusory truth effect occurred even when the old headlines had fake news flags and novel headlines did not.

In their second experiment, Pennycook et al. (2017) prolonged the time period between when participants were first exposed to the headlines and when they made accuracy and familiarity judgments. They also added an additional condition to the time period variable consisting of a one-week retention period to further test the effects of the illusory truth effect and familiarity. Pennycook and colleagues found, again, that headlines seen previously, despite whether they were true or false, were perceived as more accurate than new headlines. They found the same results after a week-long period, with more exposure to certain headlines leading to an increase in perceived accuracy for those headlines. An important point from this study to note is that an extended period between exposure and re-exposure is not necessary to trigger the illusory truth effect. The notion that the fake news warnings were not effective in decreasing perceived accuracy with repeated headlines is also worth mentioning, furthering the need to establish a method for identifying and correcting misinformation in headlines.

The basic illusory truth paradigm consisting of providing a stimulus multiple times to evoke a feeling of familiarity and truthfulness of that stimulus (Begg et al., 1992; Fazio et al., 2015; Hasher et al., 1997; Pennycook et al., 2017; Polage, 2012) was used in this study to analyze how to best correct misinformation in headlines. Also, this study borrowed the idea of using stories in congruence with the illusory truth paradigm from Polage's research. This study analyzed measures of perceived familiarity and perceived accuracy of headlines similar to those used in Pennycook et al.'s (2017). Also based on the minimal differences in short and extended periods between exposures to stimuli found

by Pennycook et al., this study borrowed shortened retention periods with the use of video advertisements as distractor tasks between exposure to headlines.

Correcting Memory

Misinformation, or inaccurate information, and the illusory truth effect interact with one another, creating a dangerous combination of maintaining false information in memory and believing it is true over time. There has been much research devoted to minimizing the effects of misinformation, and some past research focuses on how misinformation interacts with explanations and identification of facts and myths and also how incongruent headlines and articles create misinformation. Additionally, research has looked into the relationship between cognitive ability and misinformation. Lastly, a series of meta-analyses analyzing the misinformation literature and how to combat misinformation will be discussed (Chan, Jones, Jamieson, & Albarracín, 2017; Lewandowsky, Ecker, Seifert, Schwarz, & Cook, 2012).

In a meta-analysis, Lewandowsky et al. (2012) evaluated how misinformation is spread, how people process misinformation, and how to combat misinformation. Within their analysis, they addressed how to correct for certain problems associated with misinformation. Relevant to the current study, they suggested that the continued dependence on incorrect information even when a correction has been issued could be combatted by either providing information that fills in the gaps or by increasing the number of times the correction is issued. They also suggested that to combat the attractiveness of believing myths, simplistic and short corrections should be used, much like how corrections are made in many media organizations.

Looking at misinformation in the news, Ecker, Lewandowsky, Chang, and Pillai (2014) conducted a study analyzing misinformation in headlines. In their primary experiment, they analyzed the relationship between fact-based and opinion-based headlines and whether those headlines were congruent or incongruent toward the corresponding article on participants' recall. Fact and opinion-based refers to whether a headline is factual or an opinion piece, like an op-ed. Congruent headlines matched the content of the article, whereas incongruent headlines did not. They fabricated several factual and opinion articles with corresponding congruent and incongruent headlines. Participants read each of the articles and answered article content questions and inference questions. Ecker et al. found that incongruent headlines, or headlines that did not match the content of their article, diminished memory for fact-based articles but not opinion-based articles. This demonstrates that conflicting headlines and articles create misinformation among readers, inhibiting memory for facts in the process and possibly affecting perceptions of truth and believability.

Continuing the research discriminating fact from opinion, Swire, Ecker, and Lewandowsky (2017) analyzed misinformation via participants' abilities to discern between fact and myth with varying levels of follow-up, affirmative or counter-information. They also varied time between exposure and assessment. In their first experiment, participants judged the believability of several facts and myths. Participants either read a brief explanation or a detailed explanation for why each fact was true or why each myth was false. Each fact or myth also had a corresponding inference question, which assessed participants' comprehension of the explanations. Participants were divided into three groups based on the different distraction period intervals, 0 minutes, 30

minutes, and one week. All participants were exposed to each of the facts and myths and asked to rate their believability. They then read either a brief or detailed explanation correcting or affirming each statement. After, participants were assigned to one of three conditions. In the first condition, they only completed the inference task and final believability questions. In the second condition, they completed a distraction task for 30 minutes and then answered the inference and believability questions. In the third condition, participants left the experiment and completed the questions on their own one week later. Swire et al. found that after the explanations, facts were perceived as more believable and myths were treated as less believable. This effect of the explanations on believability was the same across all the delay conditions. They also identified that myths were more likely to regress toward their original believability as the delay interval increased, with the one-week interval having the highest believability ratings. An analysis of the brief and detailed explanations revealed that detailed explanations allowed for individuals to incorporate more changes into their beliefs.

In their second experiment, Swire et al. (2017) replicated their previous experiment with older adults. The only other change to the study was the addition of another delay interval, a three-week period, to test any effects of extended retention of the facts and myths. The researchers identified similar results to their first experiment with the older population. After the explanations, facts were more believable and myths were less so. For the three-week period, however, truths and myths appeared to backtrack toward their original believability. This regression held for both one-week and three-week conditions of the myths only. Inference scores once again mirrored belief ratings, and detailed explanations again were better at changing beliefs than brief explanations.

These two studies demonstrate the prevalence of familiarity in our beliefs. They also exemplify how myths become continuously more believable after an extended amount of time. However, explanations can counter these myths, making them less believable.

Chan et al. (2017) also conducted a meta-analysis on combatting misinformation. They offered three main recommendations to accommodate for the increase of misinformation in our society. The first recommendation was that when combatting misinformation, provide fewer explanations about the incorrect information and focus on the correction to the mistake. The second recommendation focused on creating an environment where skepticism and argumentation is welcome and that corrections should be simple to comprehend. The final recommendation emphasized that corrections to misinformation should provide detail rather than just denying the validity of the misinformation, which relates back to Swire et al.'s (2017) finding that explanations to myths and facts can aid in correcting misinformation.

Lastly, De keersmaecker and Roets (2017) completed a study analyzing participants' ability to adjust incorrect information, misinformation, with the presence of new, correct information. They found that when issuing corrections to statements, people overall adjusted their views to match the correct information. However, cognitive ability, measured via a subset of WAIS items, was a moderator for the extent to which they changed their views. Individuals with lower cognitive ability changed their views less than those with higher cognitive ability, which were in line with the control group, only viewing the correct information.

Lewandowsky et al.'s (2012) meta-analysis suggested that repeating the correct information multiple times could be a solution to best combat misinformation. Therefore,

the current study manipulated the number of corrections given to participants to determine their effect on the misinformation of the headlines. Lewandowsky et al. also suggested the stating of correct information should be brief, a method implemented in the current study as well. The notion of explanations serving as methods to combatting misinformation from Swire et al.'s (2017) research is the foundation for using media corrections to combat misinformation in headlines in the current study. Lastly, the meta-analysis by Chan et al. (2017) revealed that correction to misinformation should be fact-based and not denials of said information. The current study uses this method, having detail-based corrections to misinformation in headlines as opposed to refutations.

Source Monitoring

Much previous research associates misinformation with source monitoring problems. Source monitoring is defined as one's ability to maintain, or fail to maintain, certain characteristics about the origin of a specific item in memory (Johnson, Hashtroudi, & Lindsay, 1993). Source monitoring helps to explain how misinformation in headlines interferes with identifying correct information from incorrect information. With decreasing accuracy in source monitoring, it becomes more difficult for individuals to differentiate between what is truth and what is myth, leading to further problems when evaluating headlines or other media sources. However, effective source monitoring can enable us to critically evaluate the sources of those truths and myths in order to assess what is authentic and what is not. This section will explain source monitoring in the context of extended retention periods and misinformation, with varying levels of misinformation, and with testing correct information to combat misinformation.

Frost, Ingraham, and Wilson (2002) conducted a series of experiments focusing on a delayed effect of misinformation and source monitoring. Participants were exposed to a visual scene and misinformation and then later completed a memory test either 10 minutes later or one week later. Researchers found that in the one-week condition, participants both declared they had been exposed to misinformation and falsely identified the source of that information more often. This research corresponds nicely with Polage's (2012) research focusing on the illusory truth effect and the false memories for source attribution that can follow from it. Polage found that repeatedly viewed headlines increased participants' likelihoods of misidentifying the sources of those headlines as well as believing those headlines. This identifies the possibility that if misinformation were to be repeated multiple times, it could cause individuals to develop false memories for its source, make it more plausible, and become aware of conflicting information. Furthermore, it could possibly allow participants to doubt the validity of any information they may have encountered.

Additionally, Huff, Weinsheimer, and Bodner (2016) explored the misinformation effect and how to prevent it from interfering with an individual's source monitoring ability. Participants viewed pictures, and some performed a recall task, where they recalled items they saw in those pictures. Either directly after initial testing or two days later, some participants were exposed to misinformation about the pictures, and then participants recalled items again and completed a source monitoring task. They found that initial testing improved participants' abilities to recall items and improved source monitoring abilities. This has applications in combatting misinformation through the testing of correct information, as testing information was demonstrated to both improve

recall and improve source monitoring. But this testing method has limitations as they found, however, that multiple testing instances did not improve participants' abilities.

Furthering the source monitoring and misinformation literature, Pena, Klemfuss, Loftus, and Mindthoff (2017) investigated source monitoring with respect to varying levels of misinformation. Participants viewed a video of a crime and then were exposed to varying levels of misinformation associated with that crime. The misinformation was presented in the given narrative of the crime, and the amount of misinformation varied from 20%, 50%, and 80% of the sentences in the narrative. Pena et al. found that with the increase of misinformation, participants' memories were increasingly hindered in accuracy, and participants became more skeptical of the original crime viewpoint, measured via 5-point scales. They also found that skepticism was related to source monitoring accuracy, which was defined as participants' abilities to correctly identify the source of information in a series of recall items. As participants became more skeptical of the narrative, their source monitoring accuracy increased. This demonstrates that as the amount of misinformation increased, participants became more skeptical of the details of the crime, which then raised their abilities to accurately decipher the source of information.

Based on the source monitoring literature, the current study takes inspiration from Huff et al. (2016), where they analyzed the testing of correct material over misinformation. Providing participants with a memory task for the correction-based information in the current study could have lasting effects of them remembering the correction's content over the headline's incorrect content.

The Present Study

As presented in previous research (Begg et al., 1992; Fazio et al., 2015; Hasher et al., 1997; Pennycook et al., 2017; Polage, 2012), the illusory truth effect paradigm consists of presenting statements or headlines at one time period, waiting for a retention period, and presenting new and old statements, creating higher accuracy ratings for items presented multiple times. This study adopted this paradigm with the use of media-like headlines as stimuli. Polage's research uses stories as stimuli, which provides support for this decision. The finding that people read and scroll past headlines far more often than stopping to interact with and click them (Gabelkov, Ramachandran, Chaintreau, & Legout, 2016) further supports the use of headlines (as opposed to full articles) in this study. Based on Pennycook et al.'s research, an extended retention period is not necessary to enact the illusory truth effect, so a simple distraction task consisting of video advertisements appears in the current study as opposed to a weeklong delay. Pennycook et al. also conducted their experiments with measures of perceived accuracy and perceived familiarity, both of which develop in the current study. Perceived accuracy measured whether the presentation of corrections had an effect on participant perception of headlines. Perceived familiarity measured if participants paid attention to the tasks.

The current study uses correction to combat misinformation in headlines, inspired by Swire et al.'s (2017) use of brief and detailed explanations in combatting incorrect information. Both types of explanations led to increased believability of facts. Based on the nature of online news media, the study used brief corrections. The notion of using multiple instances of short and simple corrections to combat the illusory truth effect for misinformation in headlines developed from the recommendation from Lewandowsky et

al. (2012). That is, misinformation should be combatable by increasing the number of times a correction is presented and that any sort of correction should be brief, easy to understand, and to the point. The corrections were detail-oriented as opposed to solely claiming falsehood in the headline, per Chan et al.'s (2017) suggestions for combatting misinformation. Lastly, based on the effectiveness of testing correct material to combat misinformation found in Huff et al.'s (2016) research, this study used a memory task for headline and correction content.

The present study is a 2 (Headline Type: non-repeated vs. repeated) x 3 (Number of Corrections: 0 vs. 1 vs. 2) within-subjects design. Participants were presented with a series of headlines at different times. Some headlines were repeated across presentations (repeated headlines) and others not (non-repeated headlines). Participants also viewed a series of corrections, one for each headline, repeated from a range of zero to two times across presentations. Corrections were presented before (correction presentation 1) and repeated after (correction presentation 2) the second headline presentation. Distractor video advertisements also appeared between tasks. After viewing the headlines and corrections, participants completed measures of memory for each headline and correction as well as measures of perceived accuracy. A diagram of the flow of the current study is present in Figure 1.

This study was designed with an emphasis on external validity, as to closely mimic how news is presented in real-world situations. This devotion to external validity is demonstrated through the use of non-interactive corrections and uniquely created headlines. Throughout presentations of corrections, participants do not complete any tasks directly associated with the corrections. This mirrors how the media does not

emphasize corrections to news articles as much as they do their headlines. Additionally, headlines were not created using a structural template, meaning the wording of each headline was formed sporadically. This accentuates external validity, as headlines in the real world are not uniform in their wording, even within the same news agency.

In predicting the results for perceived accuracy, participants would rate the repeated headlines as more accurate than non-repeated headlines based on the results of studies using the illusory truth paradigm (Hasher et al., 1997; Begg et al., 1992; Fazio et al., 2015; Polage, 2012; Pennycook et al., 2017). With respect to the number of corrections, as the number of corrections per headline increases, perceived accuracy for the original headline would decrease, consistent with increased skepticism seen in Pena et al.'s (2017) studies.

For memory accuracy, as the number of corrections increases, memory accuracy should increase, based on suggestions from the meta-analysis conducted by Lewandowsky et al. (2012). For headlines with zero corrections, participants would select the headline-based answer to the memory task more often than chance. This would result in poor memory accuracy, as the correct answers to items correspond to information found in corrections. As for the repeated headlines versus non-repeated headlines, non-repeated headlines should result in improved memory accuracy when a correction is present. Based on the illusory truth paradigm (Hasher et al., 1997; Begg et al., 1992; Fazio et al., 2015; Polage, 2012; Pennycook et al., 2017), repeated headlines should appear more truthful and thus cause lower memory accuracy.

It was also predicted that familiarity would be rated higher for repeated headlines, as they are presented to participants more often than non-repeated headlines,

demonstrating successful implementation of the treatment via manipulation check. This was supported by a similar familiarity result identified by Pennycook et al. (2017).

Chapter Two:

Method

Design and Participants

This study is a 2 (Headline Type: non-repeated vs. repeated) x 3 (Number of Corrections: 0 vs. 1 vs. 2) within-subjects design. Sixty-five participants (35.38% male, $M_{\text{age}} = 19.51$, $SD_{\text{age}} = 2.03$, age range = 18-29) were gathered through the Towson University Psychology Research Pool and received class credit for participation. The participants' racial demographics were as follows: 15 African American/Black, 7 Asian/Pacific Islander, 30 Caucasian/White, 5 Hispanic/Latino/Latina, and 8 Other/Biracial/Multiracial. Additionally, 61 participants (93.85%) identified English as their first language.

Materials

All measures and materials were presented via the Qualtrics platform (qualtrics.com). Qualtrics is an online survey company, whose survey software offers various options of presenting information and assessments to participants. With the exception of the consent form, participants completed each section of the study online in the laboratory environment.

Headlines. Researchers fabricated 54 fake news story headlines involving politics, sports, and other relevant news topics (see Appendix B). To pilot test these headlines for believability, 18 participants rated each headline on a 6-point scale, ranging from 1 (*Strongly Unbelievable*) to 6 (*Strongly Believable*) [see Appendix C]. Based on these ratings, 27 headlines that were rated as highly and consistently believable (i.e., a mean value between 4 and 6 with the lowest standard deviations) for use in the current

study. Headlines were randomly assigned to one of three categories: filler, non-repeated, or repeated headline. Filler headlines are headlines that are present only during the first headline presentation of the experiment and, for the purpose of this experiment, serve no significant value, as they were not used for any analyses. Non-repeated headlines are present only during the second headline presentation, and repeated headlines are present during both presentations. All headlines were presented in a random order.

Headline corrections. Researchers also created headline corrections. Corrections pointed out minor “errors” to the headline, citing an error on part of the news outlet and providing corrected details about the headline (see Appendix B). Each headline presented during the second presentation (i.e., both non-repeated and repeated headlines) was assigned a number of corrections, ranging from zero to two. Therefore, 18 of the 27 headlines were assigned to have a correction. For headlines with only one correction, the correction was shown after the second headline presentation. For headlines with two corrections, the correction was shown both before and after the second headline presentation. All corrections were presented in a random order.

Distractor videos. In Appendix D are links to a series of distractor videos. These videos consist of media-appropriate advertisements, featuring short, roughly 30 s commercials about a product, smart phone application, or service. Videos were obtained from YouTube.

Memory test. Participants completed an 18-item, multiple-choice memory test. Each of these questions corresponded to one of the fabricated headlines that appeared during the second headline presentation and asked a content-based question about a specific headline. Correct answers to the memory questions corresponded to the

information provided by the headline correction, or lack thereof. Foil answers included an answer with information provided by the headline and extraneous information-based answers. Questions and answers were randomized during presentation. Appendix B contains a full list of memory questions, with correct answers. These questions were used to analyze whether the number of corrections present influenced participants' memory for the news headline.

Procedure

Before participants arrive, the researcher set up each computer, one for each participant, with the Qualtrics survey for the study using an Internet browser. Participants entered the laboratory and were seated at computers. Instructions on the computer screen stated for participants to wait for the researcher's instructions before proceeding. Informed consent was then be presented to participants by the researcher and all participant questions were answered (see Appendix A). Participants were told that they were completing this study in order to test the effectiveness of a new online-media company. They were also told that the online survey would present them with headlines to articles and video advertisements.

After informed consent, participants progressed through the experiment at their own pace. Upon beginning the survey, participants viewed the filler and repeated headline presentation. On-screen instructions informed participants to read through each headline carefully and rate their opinion of each. Participants were presented with a listing of headlines during the first headline presentation similar to how headlines would be presented on an online media outlet, as seen in Figure 2. Headlines appeared randomly three at a time. For each headline presented, participants answered an assessment of their

opinion of the headline. The first headline presentation opinion assessments used a Likert scale to assess participant's opinions about each headline presented. The scale ranged from 1 (*Strongly Dislike*) to 7 (*Strongly Like*) [see Appendix C]. The purpose of this measure was for participants to become introduced to the headlines and actively engage with them, as opposed to passively reading or skimming the headlines. Participants were not told that headlines would be assessed. After each headline and Likert scale was presented, participants viewed a distractor advertisement video with instructions to watch each video. Participants were told that material from the video would be assessed later in the survey. Participants were unable to progress with the study until the video finished playing.

Participants then viewed the first correction presentation with instructions to read each statement carefully. Corrections were a list of statements presented by the fabricated news media outlet, provided under the guise of amendments to previously issued news stories. After reading through each correction, participants were presented with another advertisement video. Corrections were presented randomly in series of three. Subsequently, the second headline presentation involved the presentation of all repeated and non-repeated headlines in a list-like fashion similar to the first presentation. Participants were presented with the non-repeated and repeated headlines with instructions to read through each headline carefully and to rate their familiarity to it on a 6-point scale, ranging from 1 (*Very Unfamiliar*) to 6 (*Very Familiar*) [see Appendix C]. After rating all the headlines, participants viewed another distractor advertisement video before progressing. Participants then viewed the second round of corrections with instructions identical to the first corrections presentation. Correction presentation 2 was

presented in the same manner, only subsequent to the second presentation of headlines. Another distraction advertisement then played.

After viewing the video, participants were displayed with each non-repeated and repeated headline and a 6-point scale measuring perceived accuracy for each, ranging from 1 (*Very Inaccurate*) to 6 (*Very Accurate*) [see Appendix C]. Directions for this task instructed participants to rate how accurate they believed each headline to be on the scale. After assessing perceived accuracy, participants then viewed the final video advertisement. Participants then answered a series of multiple-choice questions about the content of the headlines and corrections. Response options reflected the headline, the correction, and extraneous answers. Participants then completed a demographic survey (see Appendix E) inquiring participant age, gender, race, whether they were a native English speaker or not, and whether they were in a research methods course used for pilot testing. Onscreen instructions then stated for participants to wait until everyone else had finished the task. Finally, the researcher debriefed participants about the true nature of the study. According to Godden (2012), belief perseverance can occur when an individual encounters incorrect information and continues to believe said information, even when they are informed of its falsehoods. In order to combat this effect, the debriefing statement clearly described belief perseverance, informed participants they could fall victim to it and how, and identified repeatedly that nothing presented during the study was factual.

Chapter Three:

Results

With regard to the hypotheses, researchers expected familiarity ratings to increase for repeated headlines and remain constant for non-repeated headlines. For perceived accuracy measures, we predicted that repeated headlines would have higher ratings than non-repeated headlines and perceived accuracy would decrease as the number of presented corrections increased. Lastly, for memory accuracy, researchers expected that as the number of corrections presented increases, memory accuracy should increase, and non-repeated headlines should yield better memory accuracy than repeated headlines.

All but two conditions produced results deviating from the normal distribution. Additionally, several conditions produced skewed data. A training and verification sample model (cf. Hair, Black, Babin, & Anderson, 2009) was implemented to handle the data. A further explanation and all results of the verification analyses are provided in Appendix F. The results from the intended parametric statistics for the training sample are reported below. Cronbach's α values for familiarity (Table 1) and perceived accuracy (Table 2) are available in the supplemental materials.

Familiarity

A 2 (Headline Type: non-repeated vs. repeated) x 3 (Number of Corrections: 0 vs. 1 vs. 2) repeated-measures factorial ANOVA was conducted on ratings of headline familiarity (1-6), the manipulation check. For each condition, the Familiarity ratings for all three headlines were averaged to create an overall familiarity score for each participant. The sample was approximately 50-50 split randomly into training ($N = 29$) and verification ($N = 36$) samples. Sphericity was not assumed, Mauchley's $W = 0.41$, $p <$

.001. Greenhouse-Geisser F -values were used because sphericity was not assumed in both samples. The main effect of Headline Type was significant, $F(1,28) = 94.29$, $p < .001$, $\eta^2 = .77$, power = 1.00 [95% CI: .58, .85]. Overall, repeated headlines ($M = 5.11$, $SD = 1.05$) yielded higher ratings of familiarity than non-repeated headlines ($M = 2.43$, $SD = 1.00$). The main effect of Number of Corrections was significant, $F(1.26,35.26) = 14.50$, $p < .001$, $\eta^2 = .34$, power = 0.98 [95% CI: .10, .52]. Overall, the two-correction condition ($M = 4.13$, $SD = 1.14$) yielded higher familiarity ratings than the zero ($M = 3.62$, $SD = 0.85$) and one-correction ($M = 3.57$, $SD = 1.08$) conditions, which did not differ significantly from each other. A significant Headline Type x Number of Corrections interaction was found, $F(1.54,43.00) = 16.26$, $p < .001$, $\eta^2 = .37$, power = 1.00 [95% CI: .14, .53] (see Figure 3). Simple effects F -tests indicated that within the non-repeated headline condition, zero-correction headlines ($M = 1.91$, $SD = 0.91$) were rated lower in familiarity than one-correction headlines ($M = 2.21$, $SD = 1.02$), which were lower still than two-correction headlines ($M = 3.17$, $SD = 1.09$), $F(2,27) = 12.87$, $p < .001$, $\eta^2 = .49$, power = 0.99 [95% CI: .17, .64]. However, for repeated headlines, zero-correction headlines ($M = 5.32$, $SD = 0.79$), one-correction headlines ($M = 4.93$, $SD = 1.15$), and two-correction headlines ($M = 5.01$, $SD = 1.20$) did not differ from each other in both training and verification samples (see Appendix F), $F(2,27) = 7.81$, $p = .002$, $\eta^2 = .37$, power = 0.93 [95% CI: .07, .55].

Perceived Accuracy

A 2 (Headline Type: non-repeated vs. repeated) x 3 (Number of Corrections: 0 vs. 1 vs. 2) repeated-measures factorial ANOVA was conducted on ratings of headline perceived accuracy (1-6). For each condition, the perceived accuracy ratings for all three

headlines were averaged to create an overall condition score for each participant. The same training and verification samples were used as previously. Sphericity was not assumed, Mauchley's $W = 0.64$, $p = .003$. Greenhouse-Geisser F -values were used because sphericity was not assumed in both samples. The main effect of Headline Type was significant, $F(1,28) = 25.36$, $p < .001$, $\eta^2 = .48$, power = 1.00 [95% CI: .19, .64]. Overall, repeated headlines ($M = 4.28$, $SD = 0.86$) were rated as more accurate than non-repeated headlines ($M = 3.66$, $SD = 0.98$). The main effect of Number of Corrections was not significant, $F(1.48,41.29) = 2.63$, $p = .098$, $\eta^2 = .09$, power = 0.43 [95% CI: .00, .26]. Overall, as both training and verification samples did not replicate, there was no significant difference between the zero-corrections ($M = 4.16$, $SD = 0.83$), one-correction ($M = 3.92$, $SD = 0.96$), and two-corrections ($M = 2.83$, $SD = 1.96$) conditions. A significant Headline Type x Number of Corrections interaction was found, $F(1.84,51.55) = 15.96$, $p < .001$, $\eta^2 = .36$, power = 1.00 [95% CI: .15, .51] (see Figure 4). Simple effects F -tests indicated that within zero-correction headlines, non-repeated headlines ($M = 3.31$, $SD = 0.91$) resulted in lower accuracy than repeated headlines ($M = 5.01$, $SD = 0.74$), $F(1,28) = 54.13$, $p < .001$, $\eta^2 = .66$, power = 1.00 [95% CI: .41, .77]. However, for one-correction headlines, non-repeated ($M = 4.03$, $SD = 0.91$) and repeated ($M = 3.81$, $SD = 1.01$) headlines did not differ from each other, $F(1,28) = 1.00$, $p = .326$, $\eta^2 = .03$, power = 0.16 [95% CI: .00, .23]. Additionally, for two-corrections headlines, non-repeated ($M = 3.63$, $SD = 1.13$) and repeated ($M = 4.02$, $SD = 0.83$) headlines did not differ from each other, $F(1,28) = 2.50$, $p = .125$, $\eta^2 = .08$, power = 0.33 [95% CI: .00, .30].

Memory Accuracy

A 2 (Headline Type: non-repeated vs. repeated) x 3 (Number of Corrections: 0 vs. 1 vs. 2) repeated-measures factorial ANOVA was conducted on memory accuracy scores (0-3). Memory accuracy items were recoded so that answers corresponding to headlines and filler answers were coded as zero (incorrect) and answers corresponding to corrections were coded as one (correct). Items were then summed by condition to create six memory accuracy scores, ranging from zero to three. Contrasts in headline-based answers and filler answers were not analyzed, as memory accuracy item frequencies demonstrated filler items were chosen less than 11% of the time for each item and less than 5% of the time for 83.33% of the items. The same training and verification samples were used as previously. Sphericity was assumed, Mauchley's $W = 0.94$, $p = .435$. The main effect of Headline Type was not significant, $F(1,26) = 0.12$, $p = .732$, $\eta^2 = .00$, power = 0.06 [95% CI: .00, .15]. Overall, the repeated ($M = 0.90$, $SD = 0.70$) and non-repeated ($M = 0.93$, $SD = 0.75$) headline conditions did not significantly differ from each other. The main effect of Number of Corrections was significant, $F(2,56) = 49.51$, $p < .001$, $\eta^2 = .64$, power = 1.00 [95% CI: .47, .73]. Overall, the zero-corrections condition yielded lower memory accuracy scores ($M = 0.07$, $SD = 0.22$) than the one-correction ($M = 1.31$, $SD = 0.88$) and two-correction ($M = 1.36$, $SD = 1.06$) conditions, which did not differ significantly from each other. The Headline Type x Number of Correction interaction was not significant, $F(2,56) = 0.22$, $p = .805$, $\eta^2 = .01$, power = 0.08 [95% CI: .00, .07] (see Figure 5).

Chapter Four:

Discussion

Overall, the current study demonstrated that the illusory truth effect occurred (i.e., repeated headlines rated as more accurate than non-repeated headlines) and that implementing corrections had an effect on an individual's perceived accuracy of media headlines. Regarding the familiarity manipulation check, participants perceived repeated headlines as more familiar than those that were not repeated. This finding aligns with the familiarity hypothesis, stating that repeated headlines should appear more familiar as they are repeated multiple times. Interestingly, participants rated headlines that had a correction presented twice as more familiar than headlines that did not, but this effect was qualified by an interaction between the type of headline and the number of corrections. Because headlines with two corrections had corrections presented before familiarity ratings, participants saw information pertaining to those headlines more than other headlines, and thus rated that information as a whole as more familiar, regardless of the accuracy of the headlines or its corrections. Within the interaction, non-repeated headlines with two presented corrections were rated as more familiar than non-repeated headlines with one or no corrections. In essence, familiarity ratings served as an attentional check, demonstrating that participants actively engaged with the task of reading headlines and corrections, whether intentional or not.

Illusory Truth Effect and Its Correction

Perceived accuracy ratings provided evidence for the illusory truth effect and evidence for reducing the effect with headline corrections. Overall, repeated headlines appeared more accurate than those that were not repeated. This demonstrated the illusory

truth effect; that is, if an item is repeated multiple times, it is more likely to be perceived as true. The hypothesis that as the number of corrections increases, perceived accuracy should decrease was not supported by the findings. However, when corrections were absent, those repeated and non-repeated headlines produced deviating results; headlines that were repeated were perceived as more accurate than those that were not. This provides support for the past illusory truth research, all of which found that repeated stimuli were perceived as more accurate than non-repeated stimuli (Begg et al., 1992; Fazio et al., 2015; Hasher et al., 1997; Pennycook et al., 2017; Polage, 2012). Headlines with any number of corrections did not exhibit this pattern; there was no difference in perceived accuracy between repeated and non-repeated headlines. This illustrates that the illusory truth effect affects information when no counter information is present. However, when alternative information is presented in the form of corrected headlines, the illusory truth effect disappears. It is plausible that the introduction of corrections causes individuals to question the authenticity of the information presented in repeated headlines, thereby lowering the perceived accuracy ratings of that information. Chan et al. (2017) suggested the creation of an atmosphere where skepticism and argumentation are accepted in order to combat misinformation. The current research featuring the introduction of corrections to incorrect information could be a step toward fostering such an environment, as demonstrated by the disappearance of the illusory truth effect.

For memory accuracy, our hypothesis was confirmed when participants had difficulty answering memory items correctly for headlines with zero-corrections, as they were never exposed to the correct information. This effect disappears when corrections are present, as they then have the information necessary to select the correct answer,

which technically confirms the hypothesis that as the number of corrections increase, memory accuracy would increase. However, accuracy did not differ between one and two corrections, meaning accuracy did not continue to increase as the number of corrections presented increased. Such results provide counterevidence to Lewandowsky et al.'s (2012) suggestion that repeating corrections should improve changing memory about misinformation. While the corrections created for this study were short and simple, it is possible that they did not follow the full suggestions of Lewandowsky et al., as they might not have been frequent enough to effectively combat misinformation. Ecker et al. (2014) did find that conflicting information for factual information, which is comparable to the headlines and corrections in this study, negatively impacted memory, possibly explaining the lack of memory accuracy despite increases in corrections. As for our predictions that non-repeated headlines should increase memory accuracy and repeated headlines should decrease memory accuracy, both were unsupported by the current findings. Memory accuracy did not differ if a headline was repeated or not. This does demonstrate, however, that the illusory truth effect has little effect on participants' ability to identify correct information among incorrect information. The same notion is supported by the perceived accuracy findings, as the illusory truth effect disappeared with the presentation of corrections. This provides evidence for the power of corrections to inspire suspicion.

While the illusory truth effect did disappear when corrections were added to headlines, participants seemed to have difficulty with source monitoring, as the average memory accuracy score when corrections were presented was below 50%. The conflicting information between corrections and headlines appeared to inhibit

participants' ability to appropriately monitor the source of correct information in memory accuracy items.

Limitations and Future Directions

The current study has several limitations that could impact the results. Primarily, Cronbach's α values for perceived accuracy were very low, demonstrating low internal consistency within conditions. To improve this, more headlines could be added in future studies to diversify the measures. Also, seeing headline corrections prior to the task contaminated familiarity ratings. This caused familiarity ratings of non-repeated headlines with two corrections to be artificially inflated, as seeing corrections to those headlines made the headline content more familiar overall. Future studies could alter the presentation of stimuli to account for familiarity ratings and contamination from other tasks. Additionally, there were several discrepancies between training and verification samples, demonstrating a possibility of weakness in the overall model of the study. Lastly, the majority of conditions produced non-normality and skewness within the data. To combat this, the training and verification model was used as a substitute for transformations because of the nature of the data.

Several conditions of Headline Type and Number of Corrections were severely skewed. However, the direction of the skewness in particular conditions provides evidence for main effects of the study. Multiple non-repeated headline conditions and all repeated headline conditions produced skewness in familiarity. Non-repeated headlines showed positively skewed trends and repeated headlines showed negative trends in familiarity. Positive skew in the non-repeated headlines demonstrates that novel information is not familiar in general, thus the extreme low scores resulting in the skew

were expected for familiarity ratings. Conversely, repeated information via the repeated headlines would produce extreme high scores in familiarity, as the more times information is presented, the more familiar it should appear. For perceived accuracy, the zero-correction, repeated headline condition was severely negatively skewed. This signifies a strong effect of the illusory truth effect with no opposing information, leading to extreme high scores or higher beliefs of accuracy. Lastly, headlines in the zero-correction, non-repeated condition produced severe positive skew on the memory accuracy task, demonstrating a lack of information present. Participants had incredibly low chances of selecting the correct answer in this condition, as they were not presented with the necessary information, thus explaining extreme near-zero scores.

An additional limitation of the current study is the lack of participant interaction with corrections. While the lack of interaction aided in the development of external validity, with evidence from low memory accuracy scores, it is probable that participants did not fully read the information during the correction presentations. This explains how source monitoring was weak during the memory accuracy task, as failing to intake the correct information inhibited participants' abilities to successfully identify that information. Additionally, the lack of participants actively paying attention may also have dampened the internal consistency of perceived accuracy through such problems with source monitoring.

The current study has implications for future research in the illusory truth and misinformation fields. Without counter information, the illusory truth effect creates the illusion that news headlines read multiple times are more truthful than those that are not. However, with the presence of corrections, the illusory truth effect disappears, possibly

creating cause for speculation and skepticism in the reader. Future research could expand upon this finding in conjunction with Pennycook et al.'s (2017) use of fake news flags. Using corrections and indications of possible fake news or incorrect information could possibly better instruct individuals to be more cautious and skeptical of the news they read. Flags of this nature should be used with caution, however, as they have the possibility of encouraging censorship. Returning to suggestions from Chan et al.'s (2017) meta-analysis, the use of corrections could foster the suggested environment focused on skepticism and argumentation. Issuing predominant corrections in the news may help individuals become more skeptical overall, but more research is necessary to flesh out the link between corrections and the fostering of skepticism.

Additional future research could experiment with increasing the number of corrections presented to participants. As memory accuracy was below 50% for both one and two-correction conditions, increasing the number of corrections to five or more may demonstrate increased source monitoring, and thus improved memory accuracy. It is also possible that a "reverse" illusory truth effect could be enacted as increasing amounts of correct information is repeated to participants. The repetition of correct information more times than the repetition of headlines could produce this effect, however, future research is needed to test this hypothesis. Should this increase in corrections lead to an increase in memory accuracy, Lewandowsky et al.'s (2012) suggestion of repeating corrections to combat misinformation would be further validated.

Lastly, while a major focus of this study was external validity, it is worth focusing on internal validity to tease out the true effect of corrections on the illusory truth effect. Future research could force participants to interact with corrections via implementing

familiarity ratings to be sure participants are exposed to the information necessary to correctly answer memory items. Additionally, the headlines and corrections used in this study could be recreated with a template design in future studies. This would create more uniformity within headlines and corrections, boosting internal consistency and internal validity.

Conclusions

With the growing use of social media platforms like Twitter, users should be especially aware of the illusory truth effect. The current research can be applied to tweets and other social media posts, as they are usually comparable in length to headlines, provide similar information, and are often re-posted across the platform. Tweets from media agencies commonly display the headline of and link to a news article. Should a tweet or post contain incorrect information and be retweeted multiple times, the illusory truth effect could occur in those that read the re-posts. Often, corrections to these erroneous posts are not viewed as often as the originals, lessening any effect the correction may have. Thus, corrections should be issued in direct connection with the erroneous information to foster skepticism and hopefully combat the illusory truth effect.

In today's world, where the illusory truth effect has the capacity to plague our news media, journalists should take great caution when dealing with "fake news," whether doing so knowingly or absentmindedly. Those doing so knowingly should be cautioned against misusing knowledge of the illusory truth effect and use foresight as to how the public will respond if their misdoings surface. Reputable news agencies should use the current research to counter the false assertions from these bad characters and enable their readers to overcome the effects of illusory truth. Individuals who

absentmindedly promote “fake news” should also use this research and future research on the illusory truth effect to better inform their readers through the use of corrections and skepticism, promoting the distribution of correct, sound news-worthy information.

Appendix A

Informed Consent

PRINCIPAL INVESTIGATOR: Daniel Jackson EMAIL: djacks21@students.towson.edu

Purpose of the study:

The purpose of the current study is to help us evaluate the effectiveness of a startup media company by reading through headlines and watching advertisements. To be eligible to participate in this study, you must be 18 years of age or older and have no significant audial or visual impairments.

Procedures:

First, you will be asked to read headlines and rate them on a variety of measures. Additionally, you will be asked to view a series of online video advertisements. Your expected time commitment for the laboratory study is approximately 50 minutes and you will receive two research credits.

Risks/Discomfort:

There are no known risks for participating in our study. Any discomfort that you experience during our study will be no different from that experienced in everyday life activities.

Benefits:

You will learn about a startup media company and how laboratory research is conducted. The results of our study will benefit society in that they will help us to further understand how online resources can best present news in the most effective manner.

Alternatives to Participation:

Participation in this study is voluntary. You are free to withdraw or discontinue participation at any time. Withdrawal of participation at any time will not result in penalty or loss of benefits entitled to you. Non-participation will not impact your class standing. There are no circumstances under which the researcher will terminate one's participation.

Confidentiality:

Your privacy will be protected because you will not be identified by name as a participant in this project.

All records from this study will be kept confidential. Your responses will be kept private and we will not include any information that will make it possible to identify you in any report we might publish. Research records will be stored securely in a locked Towson psychology laboratory and on password-protected computers. If you agree to join this study, please initial the statements and sign your name below.

_____ I have read and understood the information on this form.

_____ I have had the information on this form explained to me.

_____	_____
Participant's Signature	Date
_____	_____
Participant's Printed Name	Email Address
_____	_____
Witness to Consent Procedures	Date

If you have any questions regarding this study please contact Daniel Jackson at djacks21@students.towson.edu, Dr. Kerri Goodwin at (410) 704-3202, or the Institutional Review Board Chairperson, Dr. Elizabeth Katz, Office of University Research Services, 8000 York Road, Towson University, Towson, Maryland 21252; phone (410) 704-2236.

THIS PROJECT HAS BEEN REVIEWED BY THE INSTITUTIONAL REVIEW BOARD FOR THE PROTECTION OF HUMAN PARTICIPANTS AT TOWSON UNIVERSITY.

**If investigator is not the person who will witness participant's signature, then the person administering the informed consent should write his/her name and title on the "witness" line.

Appendix B

Headlines, Corrections, and Multiple-Choice Questions

Filler Headlines

Couples consider Valentine's Day to be of lesser importance, study says

CORRECTION: Study says couples view their anniversary as less important

What day did couples view as less important according to the study?

- a. Valentine's Day
- b. Their anniversary**
- c. Veteran's Day
- d. Thanksgiving

Local Ontario archery master finally lands his 100th bull's eye

CORRECTION: Ontario archery master finally lands his 10,000th bull's eye

How many bull's eyes has the Ontario archery master accomplished?

- a. 100
- b. 10,000**
- c. 1,000
- d. 1,000,000

Local Texas dog named hero after saving 5-month-old from drowning

CORRECTION: Texas dog named hero for saving child from suffocation

What did Texas dog save a 5-month-old from?

- a. Drowning
- b. Suffocation**
- c. Heatstroke
- d. Frostbite

Scientists say Aloe vera can be repurposed to aid burn victims

CORRECTION: Scientists claim Aloe vera can soothe poison ivy irritation

What do scientists claim Aloe vera can be used for?

- a. Burns
- b. Poison ivy**
- c. Skunk smell
- d. Electric shock

Washington D.C. Smithsonian acquires ancient Egyptian artwork

CORRECTION: Washington D.C. Smithsonian acquires ancient Aztec artwork

What type of artwork has the Washington D.C. Smithsonian recently acquired?

- a. Egyptian
- b. Aztec**
- c. Incan
- d. Mayan

Rare gems: Scientists create artificial substitute for diamonds; market worries

CORRECTION: Scientists create artificial substitute for sapphires

For which rare gem have scientists created an artificial substitute?

- a. Diamonds
- b. Sapphires**
- c. Rubies
- d. Pearls

Terror in Greece: 42-year-old man involved in attempted stabbing in Crete

CORRECTION: Crete man involved in stabbing is 37 years of age.

How old was the attempted stabber in Crete, Greece?

- a. 42
- b. 37**
- c. 45
- d. 32

National poll shows United States prefers sweatshirts to sweaters this winter

CORRECTION: Poll shows U.S. prefers down jackets to sweaters

What did the national poll state the United States prefers to sweaters in the winter?

- a. Sweatshirts
- b. Down jackets**
- c. Shawls
- d. Rain jackets

Local Kentucky paper company faces scrutiny after factory burns down

CORRECTION: Kentucky candle company faces outrage after factory goes up in flames

What type of company in Kentucky had a factory burn down?

- a. Paper company
- b. Candle company**
- c. Linen company
- d. Appliance company

Non-repeated, Zero-corrections Headlines

Local Arizona man convicted for disturbing the peace in wizard costume

CORRECTION: Arizona man convicted for disturbing the peace in a dragon costume

What type of costume was the Arizona man wearing when he disturbed the peace?

- a. Wizard
- b. Dragon**
- c. Dinosaur
- d. Viking

Local Alabama woman found dead in public park; foul play suspected

CORRECTION: Deceased Alabama woman found in public swimming pool; culprits on the loose

Where was the deceased Alabama woman found by authorities?

- a. Public park

b. Public swimming pool

- c. Public restroom
- d. Public monument

Oatmeal not only helps your heart, it also combats dementia, doctor says

CORRECTION: Oatmeal also fights the onset of diabetes, along with promoting heart health

What does oatmeal combat besides heart health?

- a. Dementia
- b. Diabetes**
- c. Depression
- d. Rosacea

Non-repeated, One-correction Headlines

Terror in Europe: 5 dead in shooting around downtown London

CORRECTION: Reports say 10 dead in London shooting

How many did reports say were found dead in the London shooting?

- a. 5
- b. 10**
- c. 20
- d. 3

Georgia woman appears on side of road after missing for 11 months

CORRECTION: Georgia woman found after missing for 11 days

For how long was the Georgia woman missing?

- a. 11 months
- b. 11 days**
- c. 11 years
- d. 11 hours

Florida man saves family from rogue alligator in Miami

CORRECTION: Florida man saves family from crocodile

What did the Florida man save his family from?

- a. Alligator
- b. Crocodile**
- c. Snapping turtle
- d. Piranha

Non-repeated, Two-corrections Headlines

Apple seeks to outperform Samsung in the Japanese market

CORRECTION: Apple to step-up competition with Samsung in Korean market

In which country is Apple seeking to outperform Samsung?

- a. Japan

- b. Korea**
- c. Vietnam
- d. China

Scientists document existence of new species of spider monkey

CORRECTION: Scientists find new species of chimpanzee

What type of new species did scientists identify?

- a. Spider monkey
- b. Chimpanzee**
- c. Orangutan
- d. Gorilla

Queen Elizabeth II in hospital for cardiac event, sources say

CORRECTION: Queen Elizabeth II in hospital for indigestion

Why was Queen Elizabeth II in the hospital?

- a. A cardiac event
- b. Indigestion**
- c. Cancer
- d. A toothache

Repeated, Zero-corrections Headlines

Statisticians claim United States population has lesser understanding of statistics than

China

CORRECTION: U.S. population understands statistics less than Finland, statisticians claim

Which country has a greater understanding of statistics than the United States?

- a. China
- b. Finland**
- c. England
- d. Japan

Studies show time spent on Facebook correlated with depression

CORRECTION: Studies show Facebook usage correlates with ADHD

What do studies claim correlates with Facebook usage?

- a. Depression
- b. ADHD**
- c. Happiness
- d. Aggressive behavior

Netflix partners with Nickelodeon in effort to create more kid-friendly content

CORRECTION: Netflix partners with Cartoon Network to create kid-friendly content

What television network is Netflix partnering with to create kid-friendly content?

- a. Nickelodeon
- b. Cartoon Network**
- c. Disney
- d. PBS Kids

Repeated, One-correction Headlines

World-famous painter Arthur Pintolav dies at age 89

CORRECTION: World-famous painter Arthur Pintolav dies at age 99

At which age did world-famous painter Arthur Pintolav die?

- a. Age 89
- b. Age 99**
- c. Age 109
- d. Age 79

Class action lawsuits filed against condiment company for tainted peanut butter

CORRECTION: Lawsuit filed against condiment company for tainted jelly

For which product was the class action lawsuit against the condiment company filed?

- a. Peanut butter
- b. Jelly**
- c. Maple syrup
- d. Chocolate sauce

Egypt to consider new measures combatting terrorism after bomb scare

CORRECTION: Egypt considers new anti-terrorism methods after contamination scare

What type of threat sparked new anti-terrorism considerations in Egypt?

- a. Bomb scare
- b. Contamination scare**

- c. Sniper scare
- d. Assassination scare

Repeated, Two-corrections Headlines

Stocks: Sharpie to be bought by Bic; sparks outrage in workers

CORRECTION: Paper Mate to buy Sharpie

What company intends to purchase Sharpie?

- a. Bic
- b. Paper Mate**
- c. Crayola
- d. Expo

Human skull found during deep-sea voyage, details still unknown

CORRECTION: Human skull found during jungle expedition, details still unknown

Where was the human skull found?

- a. Under the sea
- b. In the jungle**
- c. In the desert
- d. On a mountain

Flood in Cambodia leaves several thousands without housing for weeks

CORRECTION: Flood in Cambodia leaves several thousands without food and water for weeks

What did the flood in Cambodia prevent thousands from obtaining?

- a. Housing
- b. Food and water**
- c. Clothing
- d. Electricity

Headlines Excluded via Pilot Testing

Wildlife protection: Governor to sign law making it illegal to kill any scorpion in New Mexico

CORRECTION: N.M. governor's law makes it illegal to kill scorpions outside of home; inside is free-range

Where would it be illegal to kill scorpions under N.M. governor's new law?

- a. Anywhere
- b. Outside**
- c. In the home
- d. Outside the state

Keeping up with the Senate: Kim Kardashian to run for public office in next election

CORRECTION: Kardashian plans to run for House of Representatives position in election

For which public office is Kim Kardashian planning to run in the next election cycle?

- a. Senate
- b. House of Representatives**
- c. State governor
- d. President

California man dressed as Batman spotted fending off bank robbers; residents in disbelief

CORRECTION: California's Batman seen apprehending bakery thieves

Who did man dressed as Batman apprehend in California?

- a. Bank robbers
- b. Bakery thieves**
- c. Flower shop thieves
- d. Drug store robbers

Wildfires in Utah devastate animal life; governor declares state of emergency

CORRECTION: Utah wildfires devastate plant life, most animals unharmed

What did wildfires in Utah damage?

- a. Animal life
- b. Plant life**

- c. Human life
- d. Public property

Bear attacks on the rise in Virginia; local woman leads anti-bear group: Bearers of Truth

CORRECTION: Anti-bear group in Virginia named Bearers of Vigilance

What is the name of the Virginian anti-bear group?

- a. Bearers of Truth
- b. Bearers of Vigilance**
- c. Bearers of Intellect
- d. Bearers of Ambition

Alaska woman last seen on the quest to find group of local polar bears

CORRECTION: Alaska woman on quest to locate group of wolves; locals concerned

What group was Alaska woman on a quest to find?

- a. Group of polar bears
- b. Group of wolves**
- c. Group of seals
- d. Group of Eskimos

Australia to name dingo as new national animal

CORRECTION: Australia to name Koala as new national animal

What is Australia to name its new national animal?

- a. Dingo
- b. Koala**
- c. Jackal
- d. Kangaroo

Indian government official claims elephant-based imagery in Russia offensive, insensitive

CORRECTION: India claims elephant imagery used in Turkey to be offensive

Which country offended India by using elephant-based imagery?

- a. Russia
- b. Turkey**
- c. Scotland
- d. Syria

Attack on free speech: New York University bans liberal speaker from campus; outrage ensues

CORRECTION: New York University bars conservative speaker from campus

From which group was the speaker who was banned by New York University?

- a. Liberal
- b. Conservative**

- c. Tea Party
- d. Libertarian

Scientists claim artichokes help fight the common cold

CORRECTION: Scientists claim beets help fight the common cold

What do scientists claim aids in the fight against the common cold?

- a. Artichokes
- b. Beets**
- c. Carrots
- d. Potatoes

Study finds graduate students more dependent on hard drugs than other groups

CORRECTION: Study finds graduate students depend more on alcohol

What did the study find graduate students were dependent on?

- a. Hard drugs
- b. Alcohol**
- c. Marijuana
- d. Cigarettes

New species of plant discovered: Said to have curative properties by scientists

CORRECTION: New species of fungus said to have beneficial properties

What new type of species did scientists say had curative properties?

- a. Plant

- b. Fungus**
- c. Invertebrates
- d. Vertebrate

Polish government advocates for changing the calendar by adding one day to February

CORRECTION: German government advocates for the change in the calendar structure

Which government desires to change the structure of the calendar?

- a. Polish
- b. German**
- c. British
- d. Italian

Scientists claim using DNA from starfish will allow humans to regenerate limbs

CORRECTION: Snail DNA to be used for human limb regeneration

Which organism's DNA is to be used for limb regeneration in humans?

- a. Starfish
- b. Snail**
- c. Jellyfish
- d. Sea urchin

Hornet proposed to be the most dangerous insect known to man

CORRECTION: Black Widow proposed as most dangerous insect

Which insect was proposed to be the most dangerous?

- a. Hornet
- b. Black Widow**
- c. Scorpion
- d. Fire ant

House fire in Baltimore costs city hundreds of thousands of dollars, sources say

CORRECTION: Apartment building fire in Baltimore causes city major economic losses

Which type of building fire cost Baltimore city thousands in damages?

- a. House
- b. Apartment building**
- c. Office building
- d. Diplomatic building

China has started using dried palm leaves as a substitute for paper

CORRECTION: People in China have started using silk as a paper substitute

What are the people of China using as a substitute for paper?

- a. Dried palm leaves
- b. Silk**
- c. Recycled plastic
- d. Recycled dry wall

College attendance is at record low, according to nonpartisan study

CORRECTION: College attendance at record high, according to study

What did the study on collage attendance say?

- a. Attendance was low
- b. Attendance was high**
- c. Attendance was average
- d. Attendance was immeasurable

Group messaging apps have been used as teaching aids in college classes, huge crackdown

CORRECTION: Group messaging apps have been used for cheating in college classes

How are group messaging apps used in some college classes?

- a. As teaching aids
- b. For cheating**
- c. For grading
- d. For attendance

Microsoft admits to siphoning funds from Windows 10 sales

CORRECTION: Microsoft admits to misleading customers over Windows 10 functionality

What did Microsoft admit regarding Windows 10?

- a. Siphoning funds
- b. Misleading customers**
- c. Bugging software
- d. Cutting corners in software development

Studies show popularity of U.S. flag has decreased among elderly

CORRECTION: Studies show popularity of U.S. flag has decreased among millennials

Among which population has popularity of the U.S. flag decreased?

- a. Elderly
- b. Millennials**
- c. Middle-aged
- d. Children

Studies show that homeowners value outdoor porches less as of 2017

CORRECTION: Studies show homeowners value outdoor gardens less

What do homeowners value less as of 2017?

- a. Porches
- b. Gardens**
- c. Gazebos
- d. Shrubbery

Millennials much less likely to wear gloves than previous generations, study shows

CORRECTION: Millennials much less likely to wear watches than previous generations

What do millennials wear less of than previous generations?

- a. Gloves
- b. Watches**
- c. Scarves

- d. Cardigans

Great Britain to ban use of police fire hoses on protestors

CORRECTION: Great Britain to ban the use of police batons on protestors

What has Great Britain forbid police from using on protestors?

- a. Fire hoses
- b. Batons**
- c. Guns
- d. Pepper spray

Studies show marble countertops more popular among chefs

CORRECTION: Granite countertops more popular among chefs, studies claim

What type of countertop is most popular among chefs?

- a. Marble
- b. Granite**
- c. Tile
- d. Ceramic

Restaurant critic gives excellent remarks to TGI Fridays, of all places

CORRECTION: Restaurant critic gives excellent praise to Outback Steakhouse

To which restaurant has a critic given excellent praise?

- a. TGI Fridays
- b. Outback Steakhouse**

- c. Chili's
- d. Olive Garden

Studies show favorite dog breed in the U.S. is the dachshund

CORRECTION: Favorite dog breed in the U.S. is the golden retriever, studies say

What is the favorite dog breed in the U.S.?

- a. Dachshund
- b. Golden retriever**
- c. Cocker Spaniel
- d. Beagle

Appendix C

Scales

Pilot Testing Believability: 1 (*Strongly Unbelievable*), 2 (*Unbelievable*), 3 (*Slightly Unbelievable*), 4 (*Slightly Believable*), 5 (*Believable*), 6 (*Strongly Believable*)

First Headline Presentation Likability: 1 (*Strongly Dislike*), 2 (*Dislike*), 3 (*Slightly Dislike*), 4 (*Neutral*), 5 (*Slightly Like*), 6 (*Like*), 7 (*Strongly Like*)

Second Headline Presentation Familiarity: 1 (*Very Unfamiliar*), 2 (*Unfamiliar*), 3 (*Slightly Unfamiliar*), 4 (*Slightly Familiar*), 5 (*Familiar*), 6 (*Very Familiar*)

Posttest Accuracy: 1 (*Very Inaccurate*), 2 (*Inaccurate*), 3 (*Slightly Inaccurate*), 4 (*Slightly Accurate*), 5 (*Accurate*), 6 (*Very Accurate*)

Appendix D

Distraction Videos

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Appendix E
Demographic Survey

Age: _____

Gender:

- a. Male
- b. Female
- c. Other

Race:

- a. African American/Black
- b. Asian/Pacific Islander
- c. Caucasian/White
- d. Hispanic/Latino/Latina
- e. Native American
- f. Middle Eastern
- g. Other, Biracial, Multiracial

Is English your first language?

- a. Yes
- b. No

Are you currently in Dr. Goodwin's Research Methods class (PSYC 314)?

- a. Yes
- b. No

Appendix F

Verification Sample Statistics

Non-repeated, zero and one-correction headlines were positively skewed on familiarity, and each repeated headline, regardless of correction condition, resulted in severely negatively skewed familiarity. In the zero-correction condition of perceived accuracy, repeated headlines were severely negative skewed. Lastly, zero-correction, non-repeated headlines were severely positively skewed on memory accuracy. Each of these instances of skew had a logical explanation; therefore, to account for these discrepancies, in addition to the severe deviations from normality, a training and verification sample model was implemented (Hair et al., 2009). The training and verification sample model is used to accommodate for insufficiencies in meeting assumptions. The method functions by splitting the sample into two samples and running all analyses on both, serving as a form of replication. Results are then compared. Should they hold, the model is considered strong and reliable. However, if they do not hold, the model is weak and potentially unreliable. The results of the verification sample analyses are listed below.

Familiarity

Sphericity: Mauchley's $W = 0.98, p = .742$

Headline Type: $F(1,35) = 91.65, p < .001, \eta^2 = .72, \text{power} = 1.00$ [95% CI: .54, .81]

Repeated $M = 4.76, SD = 1.41$; Non-repeated $M = 2.18, SD = 0.88$

Number of Corrections: $F(1.97,68.80) = 5.08, p = .009, \eta^2 = .13, \text{power} = 0.80$ [95% CI: .01, .26]

Two-correction $M = 3.67, SD = 1.25$; Zero-correction $M = 3.37, SD = 1.02$; One-correction $M = 3.38, SD = 1.23$)

Headline Type x Number of Corrections: $F(1.91,66.74) = 16.54, p < .001, \eta^2 = .32,$
power = 1.00 [95% CI: .14, .46]

Simple effects *F*-test Non-repeated: $F(2,34) = 19.37, p < .001, \eta^2 = .53,$ power = 1.00
[95% CI: .26, .67]

Zero-correction $M = 1.77, SD = 0.78$; One-correction $M = 2.07, SD = 0.99$; Two-
correction $M = 2.69, SD = 0.88$)

Simple effects *F*-test Repeated: $F(2,34) = 2.18, p = .129, \eta^2 = .11,$ power = 0.41 [95% CI:
.00, .29]

Zero-correction $M = 4.96, SD = 1.26$; One-correction $M = 4.69, SD = 1.46$; Two-
correction $M = 4.64, SD = 1.50$)

Perceived Accuracy

Sphericity: Mauchley's $W = 0.99, p = .821$

Headline Type: $F(1,35) = 23.61, p < .001, \eta^2 = .40,$ power = 1.00 [95% CI: .15, .58]

Repeated $M = 4.28, SD = 0.96$; Non-repeated $M = 3.74, SD = 1.01$

Number of Corrections: $F(1.98,69.20) = 5.10, p = .009, \eta^2 = .13,$ power = 0.80 [95% CI:
.01, .26]

Zero-corrections $M = 4.25, SD = 1.03$; One-corrections $M = 4.01, SD = 0.99$;
Two-corrections $M = 3.78, SD = 0.92$

Headline Type x Number of Corrections: $F(1.73,60.53) = 11.96, p < .001, \eta^2 = .26,$
power = 0.99 [95% CI: .08, .41]

Simple effects *F*-test Zero-correction: $F(1,35) = 25.87, p < .001, \eta^2 = .43,$ power = 1.00
[95% CI: .17, .59]

Non-repeated $M = 3.70$, $SD = 1.13$; Repeated $M = 4.80$, $SD = 0.93$

Simple effects F -test One-correction: $F(1,35) = 1.40$, $p = .244$, $\eta^2 = .04$, power = 0.21

[95% CI: .00, .21]

Non-repeated $M = 4.13$, $SD = 0.98$; Repeated $M = 3.88$, $SD = 1.00$

Simple effects F -test Two-correction: $F(1,35) = 20.89$, $p < .001$, $\eta^2 = .37$, power = 0.99

[95% CI: .13, .55]

Non-repeated $M = 3.39$, $SD = 0.91$; Repeated $M = 4.18$, $SD = 0.94$)

Memory Accuracy

Sphericity: Mauchley's $W = 0.96$, $p = .518$

Headline Type: $F(1,35) = 1.66$, $p = .206$, $\eta^2 = .05$, power = 0.24 [95% CI: .00, .22]

Repeated $M = 0.91$, $SD = 0.70$; Non-repeated $M = 1.04$, $SD = 0.79$

Number of Corrections: $F(2,70) = 51.85$, $p < .001$, $\eta^2 = .60$, power = 1.00 [95% CI: .44, .69]

Zero-corrections $M = 0.11$, $SD = 0.21$; One-corrections $M = 1.22$, $SD = 0.97$;

Two-corrections $M = 1.58$, $SD = 1.05$

Headline Type x Number of Corrections: $F(2,70) = 0.61$, $p = .545$, $\eta^2 = .02$, power = 0.15

[95% CI: .00, .10]

Appendix G

IRB APPROVAL FORM

IRB March 9, 2018 at 1:30 PM
To: Jackson, Daniel Cc: IRB, Goodwin, Kerri A. All Mail - Towson 
IRB Approval 1801030072 

The IRB has approved your protocol "Ethics in Fake News: Combatting the Illusory Truth Effect with Corrections," **effective 3/9/2018 and expiring 3/8/2019.**

Your IRB protocol can now be viewed in MyOSPR. **Student investigators - protocols can be viewed by your faculty advisor.** For more information, please visit the [MyOSPR Desktop Grant Software webpage](#).

Since your application has been approved via standard review, your protocol requires annual continuing review and renewal. Please submit a completed copy of the [form](#) prior to your expiration date. If you complete your research prior to the renewal date, please return a completed copy of the [IRB Protocol Closure Form](#) to the IRB so your protocol may be officially closed out.

Please Note: *Formal approval letters are provided upon request. If you would like to have one drafted, please notify the IRB staff.*

If you should encounter any new risks, reactions, or injuries to subjects while conducting your research, or require changes to your current protocol, please notify IRB@towson.edu. Should there be substantive changes in your research protocol, you will need to submit another application.

We wish you much success in your research endeavors.

Sincerely,

Towson IRB

Table 1

Cronbach's α Values for Familiarity Ratings

Corrections	Headline	Cronbach's α
0	Non-repeated	0.65
	Repeated	0.79
1	Non-repeated	0.77
	Repeated	0.80
2	Non-repeated	0.44
	Repeated	0.84

Table 2

Cronbach's α Values for Perceived Accuracy Ratings

Corrections	Headline	Cronbach's α
0	Non-repeated	0.51
	Repeated	0.65
1	Non-repeated	0.29
	Repeated	0.40
2	Non-repeated	0.39
	Repeated	0.30

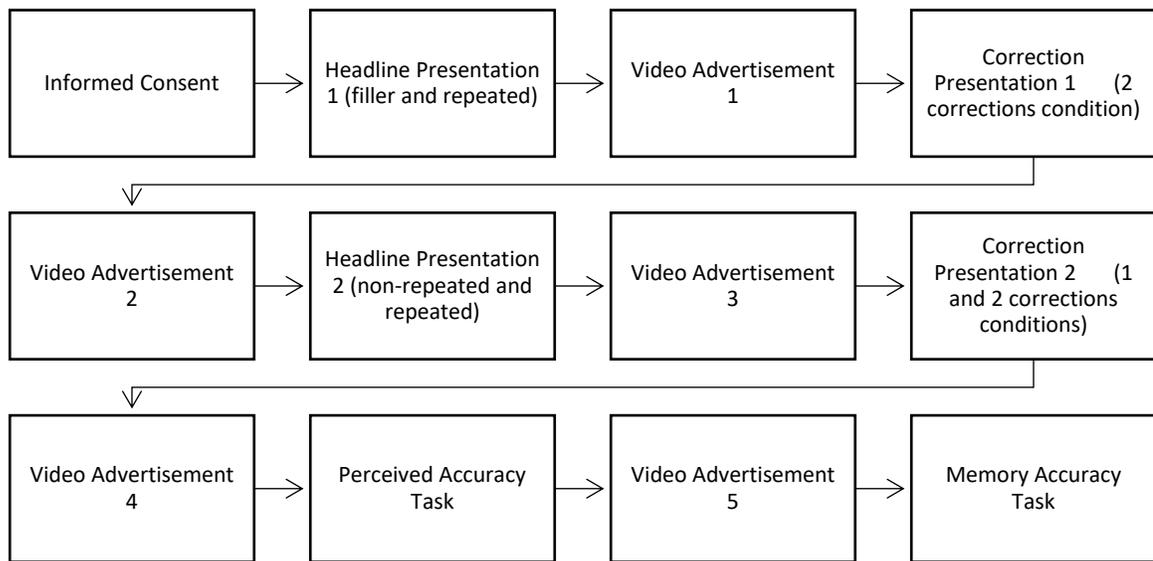


Figure 1. Flow of study

Please rate your opinion of the following headline.

Local Texas dog named hero after saving 5-month-old from drowning

Strongly
Dislike

Dislike

Slightly
Dislike

Neutral

Slightly
Like

Like

Strongly
Like



Figure 2. Sample headline survey display

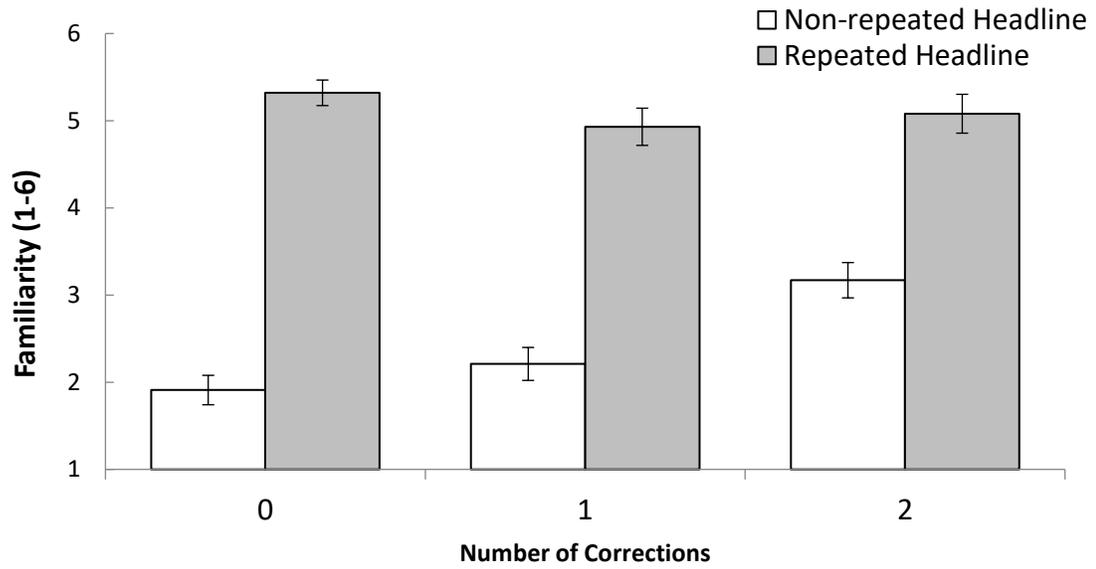


Figure 3. Non-repeated and repeated headlines rated on familiarity (1-6) across 0, 1, and 2 corrections for training sample

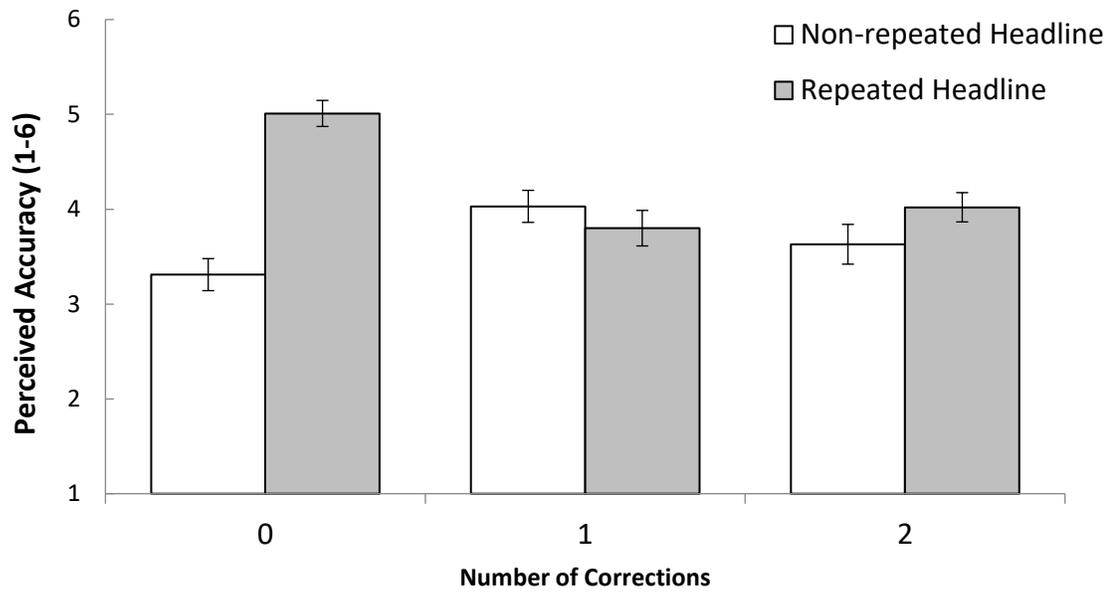


Figure 4. Non-repeated and repeated headlines rated on perceived accuracy (1-6) across 0, 1, and 2 corrections for training sample

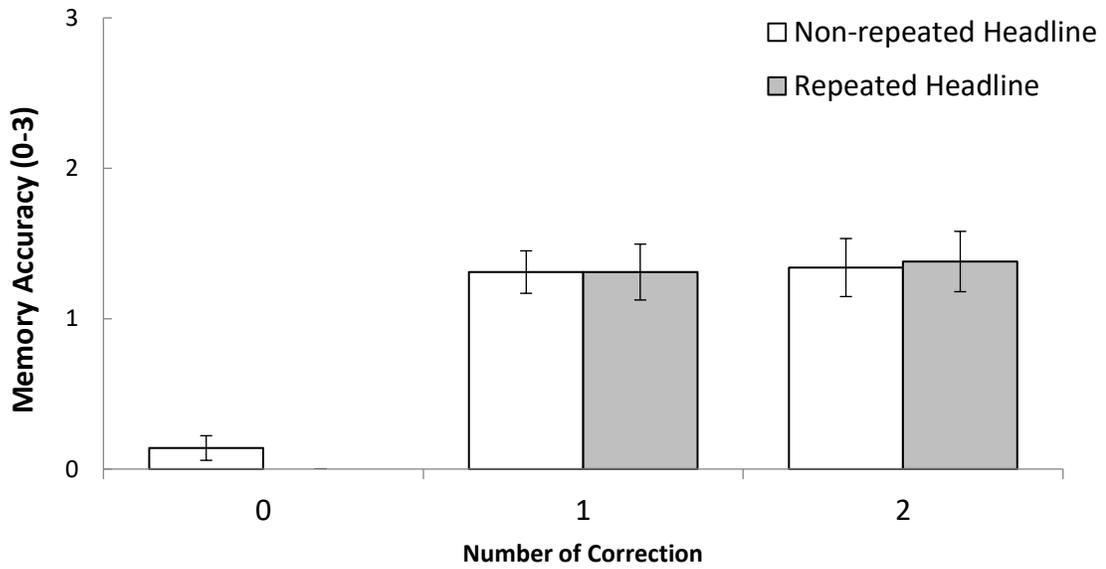


Figure 5. Non-repeated and repeated headlines on memory accuracy score (0-3) across 0, 1, and 2 corrections for training sample

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Daniel R. Jackson

EDUCATION

- Current **M.A., Experimental Psychology**, Towson University
 Cumulative GPA: 3.872
 Thesis: *Ethics in Fake News: Combatting the Illusory Truth Effect with Corrections*
 Advisor: Dr. Kerri Goodwin
- May 2016 **B.S., Psychology and Mathematics**, James Madison University
 Cumulative GPA: 3.654 Psychology GPA: 3.938 Mathematics GPA: 3.247

ACADEMIC HONORS & AWARDS

- 2018 Psychology Graduate Student Association
- 2017-18 Graduate Teaching Assistantship, Towson University
- 2016 Undergraduate Research: Departmental Award, James Madison University
- 2015 President's List (Fall), James Madison University
- 2015 Psi Chi, The International Honors Society in Psychology
- 2015 Dean's List (Spring), James Madison University
- 2014 Dean's List (Spring), James Madison University
- 2014 Pi Mu Epsilon, The U.S. Honorary National Mathematics Society, Secretary (-2016)
- 2013 Dean's List (Spring), James Madison University
- 2012 Dean's List (Fall), James Madison University

RESEARCH EXPERIENCE

- Current Towson University Psychology Department, Memory Lab, *Research Assistant*
- 2015-16 James Madison University Psychology Department, Vision Lab, *Research Assistant*

SKILLS

Technical: SPSS Statistics, Technical writing, Data analysis and entry, Experimental design, Experience with R Statistics and SAS, Qualtrics, Biopac and Acqknowledge, Proficiency in Microsoft Office Suite, Proficiency in Microsoft Windows and Apple OS X

Communication: Presentational skills, Teaching skills, Verbal and written communication, Group communication and facilitation

PRESENTATIONS

Andrade, F., **Jackson, D. R.**, Leigh, A., & McGinley, J. (2018, April). *"I Feel You:" Intellectual Humility and Physiological Reactions to Counter-Attitudinal Views about Immigration*. Poster presented at Towson University Psychology Graduate Student Association Conference, Towson, MD.

Jackson, D. R. (2017, May). *Working Memory and the Virtual Water Maze*. Poster presented at Towson University Research Seminar Poster Presentation, Towson, MD.

Jackson, D. R. (2017, April). *Working Memory and the Virtual Water Maze*. Talk presented at Towson University, Towson, MD.

Jackson, D. R. & Andre, J. T. (2016, April). *Exploring the Characteristics of Change Blindness*. Poster presented at James Madison University Psychology Symposium, Harrisonburg, VA.

Jackson, D. R. (2016, February). *Life Cycles: Infants to Adolescents*. Lecture with technology presented at James Madison University, Harrisonburg, VA.

TEACHING EXPERIENCE

2018	Teaching Assistant, Sensation & Perception, Towson University (PSYC 317)
2017	Teaching Assistant, Sensation & Perception, Towson University (PSYC 317) Teaching Assistant, Introduction to Psychology, Towson University (PSYC 101) Teaching Assistant, Sensation & Perception, Towson University (PSYC 317)
2016	Teaching Assistant, Sensation & Perception, Towson University (PSYC 317)

RELEVANT WORK EXPERIENCE

2105	Student Assistant, James Madison University
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SCHOLARLY PRODUCTS

Jackson, D. R. (2016, May). Is "gaydar" valid? *Social Psychology Newsletter: Highlights of Recent Research in the Field of Social Psychology*, 2.

