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The Effect of Individual Difference on the Continued Use of False Information:

Intelligence and Personality

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Honours Psychology Thesis

School of Behavioural and Social Sciences

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London, Ontario, Canada

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Abstract

The current study aimed to assess whether individual differences in fluid intelligence, as measured by abstract reasoning, emotional intelligence, and the Big Five personality traits would predict susceptibility to the continued influence effect. A total of 29 undergraduate students at Brescia University College read a news story that contained both misinformation and a retraction and were then tested on that news story. Participants also completed three additional questionnaires measuring personality traits, emotional intelligence, and abstract reasoning. It was predicted that individuals with lower levels of fluid and emotional intelligence, as well as those who scored higher in neuroticism and extraversion would be the most susceptible to the continued influence effect. Results indicated that fluid intelligence, emotional intelligence, and the personality traits were not significant predictors of susceptibility to the continued influence effect, although individuals who exhibited higher levels of fluid intelligence were more likely to remember the retraction.

Keywords: continued influence effect, individual differences, false information, personality, fluid intelligence, emotional intelligence

The Effect of Individual Differences on the Continued Use of False Information: Intelligence and Personality

Since the 1970's, studies concerning the misinformation effect – when false information is incorporated into an existing memory of an event – have tried to understand the experimental conditions that enable an individual to be more susceptible to its effects (see Loftus, 2005 for a review). For example, one commonly recognized experimental condition that has been known to influence susceptibility to misinformation effects is the manipulation and passage of time (Loftus, 2005). In her review of the literature, Elizabeth Loftus (2005) explained that misinformation is more likely to incorporate into an individual's memory of an event if the information is provided after the effects of time have allowed the original memory of the event to deteriorate. This was established in series of studies conducted by Loftus et al. (1978), in which half of the participants witnessed an accident that occurred at a stop sign while the other half witnessed the accident at a yield sign. Participants in the misinformation condition then completed a questionnaire that contained information inconsistent with the sign they had seen. Researchers found that participants provided with misinformation immediately after witnessing the event were significantly more likely to report seeing the wrong sign than participants who were given the misinformation two days or even a week later. Additionally, they found that participants who were tested weeks after witnessing the accident were also more likely to report seeing the wrong sign. These results suggest that the intervals of time between *when the event is witnessed*, *when the misinformation is provided*, and *when the participant is tested* are all crucial in understanding susceptibility to the misinformation effect.

Another experimental condition that that influences susceptibility to misinformation is the effectiveness of misinformation warnings. For example, Greene et al. (1982) examined the

effects of warnings by providing participants with warnings at varying periods of time to see if it would affect their reliance on false information. It was found that warnings given pre-misinformation resulted in a slight increase in resistance against incorporating false information, however post-misinformation warnings had no effect at all. Additionally, Eakin et al (2003) explored resistance to warnings by manipulating how many times the participants were exposed to the misinformation, thus making the false information more or less cognitively accessible. He found that when participants were exposed to misinformation once (low accessibility), providing *several* warnings significantly reduced misinformation effects, whereas repeatedly seeing the misinformation (high accessibility) made participants more likely to ignore warnings and therefore more susceptible to misinformation.

Other researchers have explored the effects of misinformation retractions, which have been found to create their own unique effect called the *continued influence effect* (CIE; Johnson & Seifert, 1994; Wilkes & Leatherbarrow, 1988; Ecker et al, 2011, 2014). The CIE occurs when an individual continues to use false information in thinking and reasoning processes even though it has been subsequently retracted or disproved (Johnson & Seifert, 1994; Wilkes & Leatherbarrow, 1988). The CIE is typically created and measured using a paradigm that was designed by Wilkes and Leatherbarrow (1988). Participants were provided with a fictitious story that contained misleading information, and then later in the story the misinformation was retracted. Next, participant's understanding of the story was tested using an open-ended questionnaire, and the strength of the CIE was determined by how much the participants relied on the initial misinformation when answering the questions.

Several studies have utilized this paradigm to understand the CIE (Johnson & Seifert, 1994; Wilkes & Leatherbarrow, 1988; Ecker et al, 2011, 2014) and their findings have led to the

development of two models that attempt to explain its cause. First, in their review of the literature, Lewandowsky et al. (2012) report that the way an individual develops and updates their mental models could explain the CIE; this is called the *mental-model hypothesis*. This theory suggests that people create mental models of occurring events, and when a piece of information, like a retraction, challenges their existing view, a gap is formed. This gap leads to a version of the event that no longer makes sense unless the individual relies on the initial misinformation, making the invalid model more preferential than the incomplete one. Second, Lewandowsky et al.(2012) report that that source-monitoring could also explain the CIE. That is, individuals might confuse or incorrectly attribute specific details of an event to the wrong source, leading to the continued use of the misinformation. For example, in a series of news reports about a crim, individuals could confuse false information from the first report with retraction information from a later one.

Similar to research on the misinformation effect, research exploring the CIE has been heavily focused on experimental conditions that increase an individual's susceptibility to the continued influence of misinformation, and it has been consistently found that two common factors can affect the strength of the CIE (Lewandowsky et al., 2012). First, the CIE is strengthened if the event is of high relevance to the individual (Johnson & Siefert, 1994; Jia et al., 2020). This may be explained by social judgement theory, which suggests that people find it more difficult to change their attitudes if their self-involvement in the topic is higher (Sherif et al., 1965).

Second, when considering the type of retraction, it has been found that a simple, brief retraction strengthens the effect of the CIE, whereas a detailed retraction that contains an alternative explanation diminishes the effect (Swire et al., 2017; Johnson & Seifert, 1994). For

example, a retraction that states “the police no longer consider X to be suspects, but they are now looking into Y because of Z” would be more effective than “the police no longer consider X to be suspects”. Additionally, the effectiveness of detail can also be applied to *warnings* against the CIE. Ecker et al. (2010) found that explicit detailed warnings that explained the effects of the CIE were significantly more likely to reduce participants’ reliance on misinformation than a brief general warning, although both did not completely eliminate the effect

Despite the fact that the literature regarding *when* individuals become susceptible to the CIE and the misinformation effect is very extensive (see Loftus, 2005 and Lewandowsky et al., 2012 for a review) the literature that explores *who* is susceptible to both effects is quite limited. First, researchers concentrated their efforts on understanding the role of memory functions and its influence on the CIE (Brydges et al., 2018; Jia et al., 2020). Specifically, early studies in this area of research focused on individual differences in short-term and working memory. For example, Brydges et al. (2018) argued that if the CIE is caused by faulty memory processes, such as failing to integrate and update a mental model, then a person’s working and short-term memory capacity should predict their level of susceptibility to the CIE. Indeed, Brydges et al. (2018) found that participants who exhibited lower working memory capacity were slightly more likely to rely on the misinformation rather than the retraction when tested, thus producing a stronger CIE. These results suggest that when an individual has a limited working memory, they also have a limited ability to integrate and update their existing mental model of an event when they are faced with inconsistent information.

Furthermore, Jia et al. (2020) expanded the findings of Brydges et al. (2018) on working memory by exploring the functions of the central executive and updating in connection to the CIE. The central executive function is central in controlling and regulating complicated cognitive

processes, while the updating function is crucial in facilitating the integration of new information into mental models (Baddeley, 2003; Kendeou et al., 2013). Additionally, Jia et al. (2020) manipulated the relevance of the misinformation (high vs. low) to investigate their impact on misinformation effects. It was found that the strength of the CIE increased as central executive functioning decreased but only when participants were provided with highly relevant information. Updating on the other hand was only marginally correlated with the CIE, meaning that participants with better updating abilities relied slightly less on the misinformation, than participants with lower updating abilities. However, this was only significant for low-relevant information. These findings support Brydges et al. (2018) conclusion that working memory is a significant component of the CIE and can negatively impact a person's susceptibility to misinformation effects.

Another individual difference that has been researched in regard to false information is intelligence. Several studies exploring misinformation effects have reported findings that suggest as overall intelligence decreases, an individual's vulnerability to false information increases (Eisen et al. 1998; Gudjonsson, 2003; Zhu et al., 2010). Unfortunately, little is known about whether intelligence would have the same effect in the context of the CIE. What is known however, originates from a study conducted by De keersmaecker and Roets (2017) in which they explored how cognitive ability, as measured using a 10-item subset from the Weschler Adult Intelligence Scale (WAIS), would affect an individual's ability to adjust their attitudes after finding out that they were formed using false information. More specifically, participants were first presented with a picture of a woman and a false description about her character and were then asked to rate her on 8 dimensions (e.g., warm vs. cold). Participants were then informed that the description was incorrect and were instructed to rate her again. They found that participants

who scored lower in cognitive ability were more likely to rely on the initial false description when making their second rating than participants who scored higher in cognitive ability. These findings indicate that there might be a relationship between intelligence and the CIE similar to that of intelligence and the misinformation effect however, as De keersmaecker and Roets (2017) suggest, this phenomenon needs to be explored in more detail. Additionally, they suggested that future researchers consider exploring the effects of divided intelligence (fluid vs. crystallized) and their individual influences on susceptibility to false information.

In addition to overall intelligence, researchers have explored how personality traits influence an individual's susceptibility to post-event misinformation. Frost et al. (2006) had participants watch a video which simulated an eyewitness event. Participants were then encouraged to fabricate events from the video in an interview and were offered varying types of feedback (confirmatory, neutral, or none). A week later, researchers found that participants who scored higher in extroversion on the Myers-Briggs Type Indicator (MBTI) and received confirmatory feedback were slightly more susceptible to these effects. Frost et al. (2006) theorized this is because extraverted individuals are more attentive to social cues and more concerned with their self-image than introverts, thus making them more likely to rely on confirmatory feedback even if it is wrong. Furthermore, Lai et al. (2020) also investigated the effect of the Big Five personality traits on susceptibility to false rumour belief in a national survey of 11,000 Chinese participants. In congruence with the findings of Frost et al. (2006) it was found that individuals who scored higher in extroversion and neuroticism exhibited the largest susceptibility to false rumors.

In addition to their findings on extraversion and neuroticism, Frost et al. (2006) briefly touched on the thinking-feeling dimension and its impact on misinformation. It was originally

hypothesized that feeling people (those who are more apt to think with their emotions rather than logic) were going to be more susceptible to misinformation effects than thinking people. Their findings supported their hypothesis; however, they recommend taking a closer look at the role of emotions to better understand why this phenomenon occurs.

While there has been extensive work done to understand the mechanisms behind how experimental conditions and individual differences in memory affect susceptibility to the CIE, there are several lines of research still left to explore. Firstly, when it comes to intelligence, there has been little research to date that explicitly investigates the effects of intelligence within the context of the CIE. All studies have focused on the misinformation effect (false memories) or related constructs such as interrogative suggestibility and attitudes.

Secondly, little is known about what specific functions of intelligence contribute to and maximize the effects of reliance on false information that has been subsequently retracted. One way to fill this gap is to explore Cattell's (1943) theory of divided intelligence which proposes that the general intelligence of adults can be divided into two subsets: (a) fluid intelligence, which encompasses the basic processes of reasoning, problem solving, and thinking logically; and (2) crystallized intelligence, which refers to learned procedures and knowledge that reflect an individual's experience and acculturation. Specifically examining the relationship between fluid intelligence and susceptibility to the CIE might be better suited as reasoning, problem solving, and logical thinking are all major mechanisms in the process of integrating new information and updating false information. Furthermore, these mechanisms have all been found to explain why the CIE occurs, making this an important line of research to explore (Lewandowsky et al., 2012).

Another way to explore the specific functions of intelligence is to investigate the influence of emotional intelligence, which has been applied limitedly to the CIE. Emotional intelligence is defined as “a set of skills hypothesized to contribute to the accurate appraisal and expression of emotion in oneself and in others, the effective regulation of emotion in self and others, and the use of feelings to motivate, plan, and achieve in one's life” (Salovey & Mayor, 1990). Salovey and Mayor (1990) claim that individuals with high levels of emotional intelligence can perceive emotions, use them in thought, understand their meaning, and manage emotions better than others. Exploring emotional intelligence might determine whether being in control of one's emotions acts as a risk factor or a protective factor either increasing or decreasing vulnerability to the CIE.

Lastly, there has been little research conducted on personality characteristics, specifically the Big Five personality traits, in the context of the CIE. As previously mentioned, some studies have found that extroverted individuals as well as those who score high in neuroticism are more likely to believe false rumours and be susceptible to misinformation effects (Frost et al., 2006; Lai et al., 2020), however some of these studies have used measures that are not valid, such as the MBTI. Exploring the Big Five in the context of the CIE could support previous findings in a new context with more validity.

The current study aimed to further explore *who* is susceptible to the effects of misinformation and its continued use by shifting the focus from individual differences in memory to individual differences in *intelligence and personality* within the context of the CIE. Overall intelligence was broken down into more specific functions which were fluid intelligence, as indicated by abstract reasoning ability, and emotional intelligence. Furthermore, the Big Five

personality traits (openness, conscientiousness, extroversion, agreeableness, and neuroticism) were also measured and assessed as predictors of the CIE.

Participants read a fictional story, modelled after Ecker et al. (2014), which depicted the events of a housefire in London, Ontario. Following the paradigm designed by Wilkes and Leatherbarrow (1988), the news story contained both misinformation and a retraction. Reliance on the misinformation when answering an open-ended questionnaire about the news story determined the strength of the CIE for each participant. Furthermore, participants were asked to fill out three additional measures that collected information on personality traits, emotional intelligence, and abstract reasoning ability in that order. We expected individuals who scored lower in the Matrix Reasoning Abstract Item Bank task (MaRs-IB; Chierchia et al., 2019), which suggested a lower level of fluid intelligence, would rely more heavily on misinformation, and thus produce a larger CIE. Furthermore, individuals who had a stronger control over their emotions, thus scoring higher on Schutte's Assessing Emotions Scale (SAES; Schutte et al., 1998), would rely less on misinformation, therefore diminishing the strength of the CIE. Alternatively, individuals who had a lower ability to regulate their emotions, as defined by low scores on SAES, would be more likely to rely on emotions to guide their reasoning, resulting in a larger CIE. Last, we hypothesized that participants who scored higher on extraversion and neuroticism, as measured by the Interpersonal Adjectives Scale- Big Five (ISAR-B5; Trapnell & Wiggins, 1990), would be more susceptible to the effects of the CIE. Due to the lack of literature regarding the association between the CIE and the other three Big Five personality factors (conscientiousness, agreeableness, and openness to experience) we did not speculate as to whether they would be a significant predictor of the CIE or not.

Method

Participants

Participants consisted of a small sample of 29 undergraduate students (27 females, 2 males; age range 18 – 24; mean age 19.73 years) who were recruited using SONA, Brescia's Psychology Research Participation System. All students in Psychology 1010A, 1015B, and 2855 at Brescia University College were eligible to participate in this study. Participants were compensated for their participation in this study and earned one credit in their Psychology 1010A, 1015B, or 2855 course at Brescia University College for participating.

Materials

Participants were given a fictitious news report (see Appendix A) that was modelled after a news report used in Ecker et al.'s 2014 study that explored the effect of prejudice on the CIE. The news report consisted of 14 messages, each presented on a separate page in Qualtrics, that provided an account of a fictitious house fire in a suburb of London, Ontario. The news report was designed to elicit the CIE by providing participants with misinformation about the cause of the housefire and then later retracting that same misinformation. To be more specific, Message 5 introduced the critical information that students at a frat party might have been the cause of the fire, while Message 11 introduced a police statement that states students were no longer suspects. Other factors such as reporting on information relevant to the sample, including a distractor period, and only providing a simple retraction as opposed to a detailed retraction with an alternative explanation were used to maximize the effect of the CIE.

Participants' reliance on the misinformation provided in Message 5 was assessed using an open-ended questionnaire, also modelled after Ecker et al. (2014). The questionnaire consisted of

9 inference questions, 8 fact-recall questions, and 2 retraction awareness questions. Inference questions required participants to make inferences about the circumstances surrounding the fire and were designed to evoke responses that were indirectly related to the original misinformation. For example, the question: “Why did the suspects appear to be wet?” could be answered by relying on misinformation (e.g., the suspects were at the beach-themed frat party next door) or could be answered by using factual details given in the news report (e.g., it was raining that night). Inference questions were given a score of 0 or 1. Any mention of students, the party, or anything that directly implied that students were the suspects of the house fire were counted as reference to the critical information in Message 5 and were given a score of 1. Alternatively, all other answers were given a score of 0, resulting in a maximum inference score of 9, with higher scores indicating a larger CIE. It is important to note, that like Ecker’s study, one inference question (“Who do you think the suspects were?”) was placed at the end of the fact-recall section so that it appeared to be a recall question, however it was scored as an inference question.

Fact-recall questions were used to test how much of the factual details given throughout the news report participants remembered. An example of a fact-recall question is: “On what night did the housefire occur?”. Fact-recall questions were scored 1 for correct responses and 0 for incorrect responses, resulting in a maximum fact-recall score of 8. The two retraction-awareness questions were used to assess participants’ memory of the retraction given in Message 11 and were scored 1 if participants remembered the retraction and 0 if they did not. Thus, the maximum retraction-awareness score was 2.

The IASR-B5 is a scale designed by Trapnell & Wiggins (1990) to measure each of the Big Five personality traits (neuroticism, openness to experience, agreeableness,

conscientiousness, and extroversion) by asking participants to rate whether a series of single adjectives accurately reflect their own typical behaviour on an 8-point Likert scale with “1” being extremely inaccurate and “8” being extremely accurate. For this study, a total of 25 adjectives, five for each trait, were chosen from the original 92 with each adjective exceeding a factor weight of $\pm.50$.

Emotional intelligence was measured using Schutte’s Assessing Emotions Scale (Schutte et al., 1998). The measure contains 33-items and required participants to read a single statement (e.g., “I know when to speak about my personal problems to others.”) and assess how much they self-identified with that statement on a 5-point Likert scale ranging from strongly disagree to strongly agree. Scores could range from 33 – 165, with higher scores indicating a higher level of emotional intelligence.

The MaRs-IB is an open-access 80-item measure of abstract reasoning designed by Chierchia et al. (2019). Thirty items, varying in difficulty, were chosen from the original 80 to be used in this study. Each item consists of an incomplete 3x3 matrix with abstract shapes in each cell. Participants were provided with four images and were asked to choose the image that completes the matrix. To complete this task participants must have deduced relationships and patterns across the eight cells of the original matrix, thus making their overall accuracy a good indicator of their ability to use abstract reasoning, which in turn, provided an indirect insight into their level of fluid intelligence

Procedure

Participants began by signing up for the study on SONA, Brescia’s Psychology Research Participation System. Once students signed into SONA, they were able to see the title of this

study and a research description outlining the research question and procedures. After they selected this study and sign-up was completed, a link was provided. When clicked, the link took students directly to the Qualtrics website where the survey was hosted.

Once the survey began, participants were asked to read the fictitious news report. Following the news report, participants provided demographic information and then completed the personality inventory (IASR-B5). Next, participants answered an open-ended questionnaire about the news report followed by the emotional intelligence scale (Assessing Emotions Scale), and then the abstract reasoning task (MaRs-IB). Finally, participants were provided with a debrief form explaining the purpose of the study.

Results

The mean inference score was 3.53 ($SD = 1.50$), with the maximum possible score being 9. The mean fact-recall score was 4.54 ($SD = 1.82$), with a maximum possible score of 8, and the mean retraction-awareness score was 0.57 ($SD = 0.63$), with the maximum possible score of 2.

To explore the relationship between the strength of the CIE and individual differences, a Pearson correlation was conducted between the outcome variable – inference scores – and the predictor variables: openness ($M = 27.62$, $SD = 5.72$), conscientiousness ($M = 28.45$, $SD = 5.05$), neuroticism ($M = 26.38$, $SD = 6.13$), extraversion ($M = 24.00$, $SD = 5.60$), agreeableness ($M = 30.79$, $SD = 5.01$), emotional intelligence ($M = 126.21$, $SD = 16.38$), and abstract reasoning ($M = 20.26$, $SD = 8.48$).

Results indicated that there were no significant correlations between any of the Big Five personality traits and inference scores. Neuroticism, $r(25) = .10$, $p = .605$, agreeableness, $r(25) = .06$, $p = .733$, and openness, $r(25) = .32$, $p = .100$, extraversion, $r(25) = -.09$, $p = .635$,

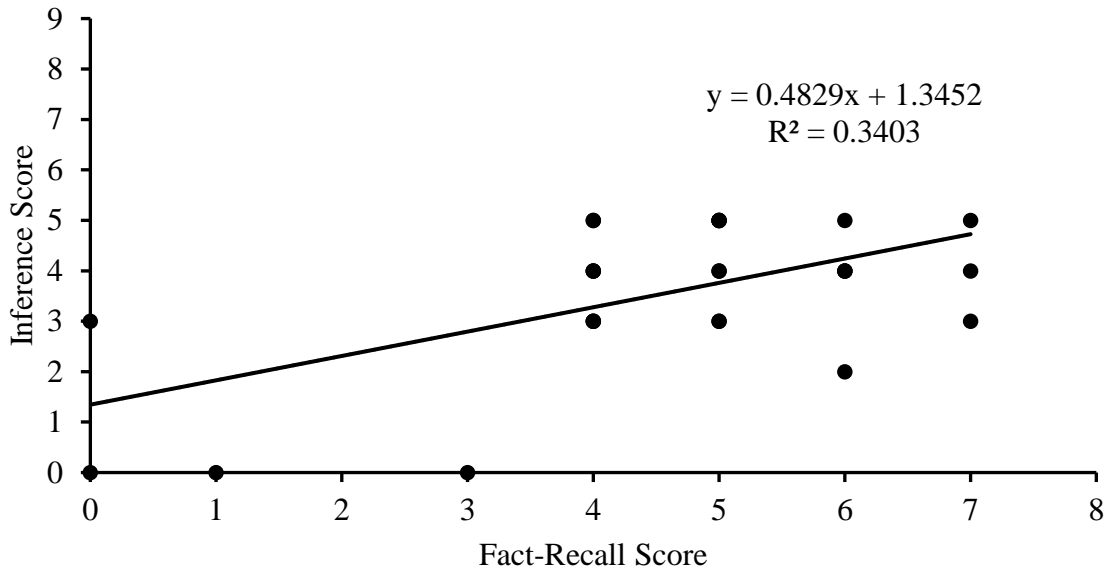
conscientiousness, $r(25) = .07, p = .724$, did not correlate with inference scores and were not significant. Additionally, emotional intelligence did not correlate with inference scores, $r(26) = .17, p = .397$, suggesting no relationship between emotional intelligence and strength of the CIE. Last, the correlation between abstract reasoning and inference scores was analyzed and results demonstrated a non-significant relationship between the two variables, indicating that a participant's ability to utilize abstract reasoning did not influence the strength of the CIE, $r(25) = .14, p = .485$.

To analyze whether individual differences were predictors of susceptibility to the CIE a multiple regression analysis was conducted. The overall model accounted for 19% of the variance in inference scores and was non-significant, $R^2 = .19, F(7, 19) = .65, p = .710$. It was found that openness, extraversion, conscientiousness, agreeableness, and neuroticism were not significant predictors of susceptibility to the CIE. Furthermore, emotional intelligence and abstract reasoning were also not significant enough to predict susceptibility to false information.

Secondary analyses revealed a moderate, positive, significant correlation between inference scores and fact-recall scores, $r(26) = .58, p = .001$, demonstrating that as participant's fact-recall scores increased, their inference scores increased as well (see Figure 1). When regressed with the other predictors, fact-recall scores were found to significantly predict inference scores, $\beta = .59, p = .004$. Additionally, a moderate, positive, significant correlation was found between abstract reasoning scores and retraction-awareness scores, $r(25) = .46, p = .015$, which illustrates that participants who scored higher in abstract reasoning, were more likely to be aware of the retraction (see Figure 2).

Figure 1

Association Between Inference Scores and Fact-Recall Scores



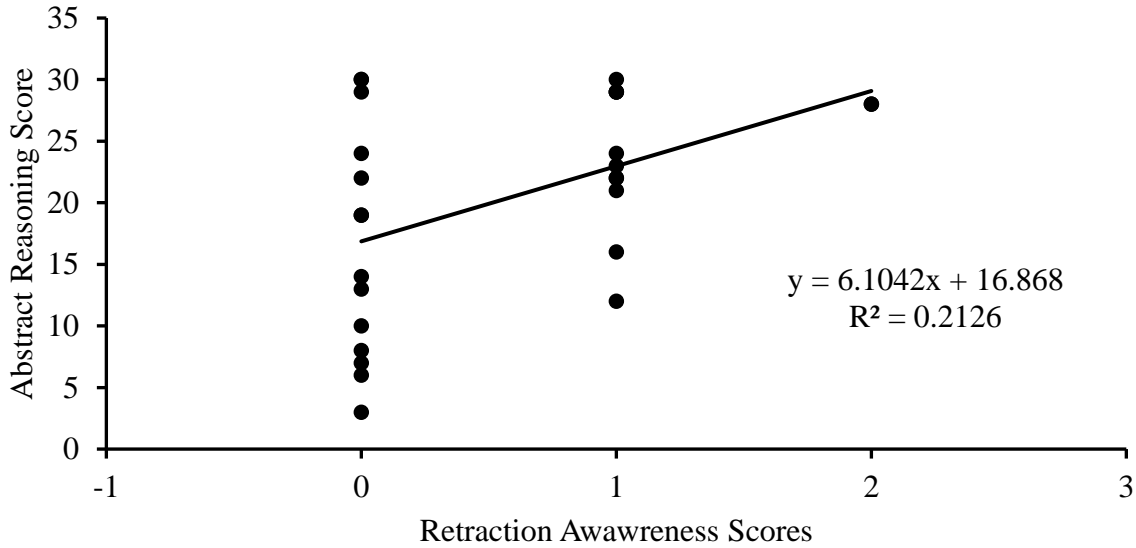
Note. The correlation between inference scores and fact-recall scores is shown. Results revealed a moderate, positive, significant correlation between the two variables suggesting that participants who were more susceptible to the effects of the CIE were also more likely to remember the facts of the news story.

Discussion

Overall, the results did not support any of the anticipated hypotheses. First, it was hypothesized that participants who scored lower on the MaRs-IB abstract reasoning task, which suggested a lower level of fluid intelligence, would be more likely to rely on the initial misinformation, thus producing a larger CIE. Results indicated that a participant's score on the MaRs-IB task was neither significantly correlated with nor predictive of their inference scores, suggesting that a participant's ability to reason, problem solve, and think logically did not make them more vulnerable to the CIE. Second, it was hypothesized that as emotional intelligence scores increased on the SAES, inference scores would decrease, and thus emotional intelligence

Figure 2

Association Between Abstract Reasoning Scores and Retraction-Awareness Scores



Note. The correlation between abstract reasoning scores and retraction-awareness scores is shown. Results revealed a moderate, positive, significant correlation between the two variables, suggesting that participants who had a higher level of abstract reasoning were more likely to remember the retraction.

would protect against vulnerability to the CIE. It was found that participant's emotional intelligence did not determine whether they would be more or less likely to rely on the false information provided in the news story. Last, it was hypothesized that individuals who scored high in neuroticism and extroversion would produce a larger CIE effect, however results indicated that there was no significant relationship between these two personality traits and the size of the CIE. Additionally, conscientiousness, agreeableness, and openness to experience were also not indicative of whether participants were more or less likely to be vulnerable to the effects of the CIE.

Secondary analyses revealed that a participant's fact-recall score was significantly related to and predictive of their inference score. This suggests that the more facts about the news story

participants remembered the more likely they were to rely on the misinformation, thus creating a larger CIE effect. One explanation for this finding is that participants were so focused on memorizing the facts of the story for later questioning, that they were less attentive to the retraction, thus relying more heavily on the initial misinformation. Furthermore, it was found that a participant's abstract reasoning score was significantly correlated with their retraction-awareness score. This means participants who scored higher in abstract reasoning, which suggests a higher level of fluid intelligence, were more likely to report remembering the retraction and what it was about.

These results both fit and contrast with the existing literature in several ways. First, the lack of relationship between abstract reasoning and inference scores suggests that fluid intelligence neither increases nor decreases susceptibility to the CIE. These results are consistent with a small number of studies that have found no significant association between intelligence and misinformation effects (Salthouse & Siedlecki, 2007; Powers et al. 1983). Second, the significant relationship between abstract reasoning scores and retraction-awareness scores suggests that there might be a connection between fluid intelligence and the CIE. That is, individuals who are better at abstract reasoning and thus have a higher level of fluid intelligence, are more likely to pay attention to and remember retractions. These findings are more consistent with the previous studies on intelligence and misinformation discussed earlier (Eisen et al., 1998; Gudjonsson, 1983; Zhu et al., 2010; De keersmaecker & Roets, 2017).

Third, the findings on the effect of personality traits on the CIE contrast with the existing literature. For example, earlier studies found that highly neurotic and extroverted individuals were more likely to be vulnerable to false rumors and memories (Frost et al., 2006; Lai et al., 2020), whereas our results suggest that there is a no connection between personality traits and the

CIE. This discrepancy might be because the misinformation effect and the CIE are different phenomena, therefore the way personality traits impact vulnerability to the misinformation effect, as demonstrated in the literature, might not impact vulnerability to the CIE in the same way. Furthermore, the discrepancy between our results and the literature could be due to several methodological limitations, such as not achieving a strong enough continued influence effect.

Last, the results that suggest emotional intelligence neither increases nor decreases susceptibility to the CIE, is a new contribution to the literature. Little is known about how emotional intelligence interacts with the CIE, however research on emotional intelligence suggests that being in control of one's emotions might protect against false information effects such as the CIE (Frost et al., 2006; Salvoy & Mayor, 1998). It is suggested that future researchers continue to examine the effects of emotional intelligence to better understand its impact on susceptibility to false information effects.

There are several methodological limitations that should be taken into consideration. First, is that the sample size was small. A power analysis with an alpha level of .05 and a power level of 0.80 revealed that the projected sample size needed to produce a medium effect size was approximately 103 participants (Zhang & Yuan, 2018). However, due to time constraints and participant recruiting we were only able to achieve an inadequate sample size of 29. Having a larger sample size might have revealed additional information that was not gleaned from the current sample size. Second, designing a novel news story while still modelling that of Ecker et al. (2014) may have diminished the size of the CIE rather than maximizing it. This resulted in a low inference scores and a small CIE effect, which may have impacted our results. It might be more effective in the future for researchers to utilize the exact news story and questionnaire used in several previous studies (Wilkes & Leatherbarrow, 1988; Ecker et al., 2011, 2014; Johnson &

Seifert, 1994) to achieve a larger CIE effect. Last, the type of population we tested might have created ceiling effects for the abstract reasoning task. More specifically, we tested a population that might have had an intellectual advantage due to the nature of the post-secondary environment which resulted in a large number of participants having extreme scores. Therefore, testing a population with a range of intelligences that did not reflect the general population may have impacted the how the relationship between the CIE and fluid intelligence turned out.

It is suggested that researchers continue to examine the relationship between divided intelligence and the CIE by using different measures. Due to cost and copyright constraints a fairly new open-access measure (MaRs-IB) was used to indirectly measure fluid intelligence. Future researchers could use a more well-established measure of fluid intelligence such as Raven's Progressive Matrices, which is well-known to be an effective and culture free measure of fluid intelligence. Additionally, if future research demonstrates that there is a negative relationship between intelligence and false information in the context of the CIE, it would be interesting to see how individuals with varying levels of intelligence respond to different types of warnings that caution against false information. Last, it is suggested that future research continue to explore how an individual's use and management of their emotions increases or decreases vulnerability to the CIE.

This current research aimed to examine fluid intelligence, as measured by abstract reasoning, emotional intelligence, and the Big Five personality traits as predictors of the CIE. The analyses revealed that all three predictor variables were not significantly correlated with or predictive of susceptibility to the CIE. Considering that the spreading of misinformation has become highly prominent in public society and that it has become increasingly easier to spread through modern technology, such as social media, the study of false information and its

relationship with individual differences has become highly relevant. By seeking to identify and understand which individuals are most susceptible to the persisting effects of false information, the current study attempts to better understand how incorrect information can impact modern day events, such as national elections and global pandemics.

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