How Discrete Emotions Affect Misinformation Reported in Eyewitness Testimonies

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Eyewitness testimonies are significantly important in the forensic and legal domain; however, the emphasis on discrete emotions on the amount of misinformation reported by eyewitnesses remains relatively niche, warranting further scrutiny. The emotion fear in particular, has received scant attention and The Positive and Negative Affect Schedule (PANAS), has several limitations in capturing self-reports of discrete emotions. Therefore, this study aimed to investigate the effect of discrete emotions on the amount of misinformation reported. One hundred and eighty-eight undergraduate students were recruited and assigned to either the happy, sad, fearful or neutral condition. Participant's responses were recorded on the Discrete Emotions Questionnaire (DEQ) before and after the emotion induction, and subsequently presented with a misinformation paradigm. Generally, it was proposed that; participants in the fearful condition would report the most amount of misinformation, followed by the neutral, sad and happy conditions, and participants across all conditions would report more misinformation on peripheral compared to central details. Experimental data analysis revealed there was no significant effect of discrete emotions on amount of misinformation reported. Hence, none of the hypotheses were supported. Despite these findings, this study captures the interesting facets of discrete emotions and provides a compelling forefront for future research.

Keywords: discrete emotions, misinformation effect, eyewitness testimonies, memory, cognition

Eyewitness testimonies are highly solicited in legal hearings and often regarded as compelling pieces of evidence. These testimonies have provided the police force a better insight into reconstructing the events of a crime scene, when physical evidence was lacking (Itsukushima, Nomura, & Usui, 2002). Whilst these testimonies have aided in preliminary investigations, memories are however subject to distortion, and not as ultimately accurate and reliable as believed (Wixted, Mickes, & Fisher, 2018). Recent literature also demonstrates that confidence in one's memory is not a reliable predictor of memory accuracy (Gustafsson, Lindholm, & Jönsson, 2019). This is because these confidence judgments may not be based on the veracity of the memory itself, but rather based on heuristics or external cues instead. The reality of an eyewitness's fallible memory is further affirmed by the leading number of false convictions from inaccurate eyewitness identifications (Garrett, 2011).

Despite research capitalizing on the effect of confidence in correctly recalled memories, just how are the statistics precariously displaying otherwise? Elizabeth Loftus, a pioneer in cognitive psychology provides a better insight into the intricate nuances of eyewitness

testimonies. In an experiment conducted by Loftus, Miller and Burns (1978), participants were initially shown a stop sign, but erroneously reported seeing a yield sign on a memory test when presented with a misleading question after.

In another similar experiment by Loftus (1975), participants were shown traffic video footage and presented with a memory test subsequently, where subtle alterations in the wordings elicited a higher speed estimate. These reports further substantiate the manifestation of the misinformation effect, where post event information interferes with the memory of the original event, occurring in a 3-step paradigm; 1) Participants witness an event, 2) Participants are presented with misleading information about an event and 3) Participants take a memory test of the original event (Loftus & Palmer, 1974). Ensuing Loftus's work here, several theories surfaced in providing an explanation, one of it being the blocking hypothesis, where the misleading information overwrites the memory of the original event (Ayers & Reder, 1998).

Another basis of explanation – the fuzzy trace theory (FTT) posits that the misinformation effect occurs because individuals relied on gist traces in order to fill in the gaps in their memory (Wright & Loftus, 1998). However, the most contemporary theory is based on the source monitoring framework (SMF). A failure in this framework leads to erroneous memory errors, where the misleading post-event information is mistakenly attributed as the original event. As these source monitoring attributions occur rapidly and unconsciously, memory errors are unavoidable, substantiating the fact that people routinely remember a gist of experiences they may have never experienced.

To further surmise, not all information is remembered equally and information can be further classified into either central – salient details that are relevant to the event, or peripheral – irrelevant information to the main focus of an event (Luna & Migueles, 2009). In reference to FTT, an individual may remember the gist of an event such as being robbed, but be wrong about the details of the color of a shirt or a car in the background. Considering the present debate on the fallibility of eyewitness memory, the prevailing view currently is that more research should be dedicated towards improving the reliability and accuracy of eyewitnesses' testimonies as it has serious ramifications for the criminal justice system.

This is especially crucial, since police interview settings provide a platform for forced confabulations as eyewitnesses are often pressured to answer a question, even when they are uncertain. Suggestive interviewing is also a technique that is commonly employed and combined with other pressuring strategies, the witness whom is under duress is highly likely to generate false memories. To remedy such effects, a flourishing number of studies have emerged over the past decade, from suggesting sequential line-ups (Wetmore, McAdoo, Gronlund, & Neuschatz, 2017) to probing into the influences of emotion (Corson & Verrier, 2007), with the purpose of improving the accuracy of eyewitness testimonies. Interestingly, the latter has caught much attention, directing a paramount number of studies to conclude that emotions play a vital role in affecting the encoding and retrieval of memories (Corson & Verrier, 2007; Storbeck & Clore, 2011; Zhang, Gross, & Hayne, 2018).

Forming the basis of these claims, the affect as information hypothesis proposed by Storbeck and Clore (2005), offers a deeper insight in to the influence of valence on false memories. The findings displayed that individuals whom experience positive emotions were more prone to report false memories, whereas experiences of negative emotions allowed for more vigilant processing, thereby improving memory

accuracy. Supplementary studies however claim that negative moods impair memory recall, while positive moods enhance it (Fredrickson, 2013; Levine, Burgess, & Laney, 2008). Other research has shown that arousal, as opposed to valence, is accountable for the influence on false memories (Corson & Verrier, 2007). The findings revealed high arousal emotions (anger, happiness), produced higher levels of false recall compared to low arousal emotions (sadness, serenity, calmness). Despite these disparity in findings, broad literature has still succumbed to merely investigating positive and negative affect in general without considering the possibility that discrete emotions may have a differing effect on memory. Therefore, it is rather imperious to imply that negative and positive affect can be oversimplified into single constructs as a whole.

While some research has begun to probe on false memory across various domains, the emphasis on discrete emotions and its influence on the misinformation effect, specifically in terms of central and peripheral details, remains relatively niche among eyewitness testimonies. Further emphasis also rests on the fact that emotions are led by appraisals and have an adaptive nature, and therefore is unable to be captured by a valence specific scale, due to its multidimensional nature and varying degrees of functionality (Van Damme & Seynaeve, 2013). The need to look beyond valence and arousal effects, dovetails with this study's interest in expounding upon the limited body of literature available on discrete emotions and the misinformation effect.

To illustrate, apart from a study which linked fear to tunnel memory (LaBar, 2007), this emotion in particular has not been as extensively researched and theoretical accounts alone are insufficient in extending these conclusions upon eyewitness testimonies in real life settings. Moreover, previous studies investigating discrete emotions primarily relied on the use of the PANAS which has its own limitations such as social desirability, and is only effective in measuring activated emotional states – negating the multidimensional characteristics of discrete emotions (Harmon-Jones, Bastian, & Harmon-Jones, 2016).

Other measures of discrete emotions have been produced, but does not reliably measure a larger set of emotions, which is unfortunate for emotion science. To current knowledge, this is the one of the first studies that shall be utilizing the Discrete Emotions Questionnaire (DEQ), which better captures the accuracy of self-reports on discrete emotions. It is important that emotions, being vital psychological constructs are measured as precisely as possible, in order to yield a richer understanding towards its influences on memory accuracy.

Therefore, the present study aims to examine the effect of discrete emotions on amount of misinformation reported with the leading research question of, 'What is the effect of discrete emotions on amount of misinformation reported?'. Participants were randomly assigned to one of four conditions of the emotion induction; happy, sad, fearful or neutral and was administered the DEQ prior to and after the induction phase. Subsequently, in order to investigate the misinformation effect, participants were presented with a video, a narrative summarizing the original events (containing misinformation), and finally presented with a memory test. Four hypotheses for this study are proposed; 1) Participants who are in the happy condition will report the least amount of misinformation compared to those in the sad, fearful and neutral condition; 2) Participants who are in the fearful condition will report the highest amount of misinformation compared to those in the other conditions; 3) Participants who are in the sad condition will report a fewer amount of misinformation compared to participants who are in the neutral condition; 4)

Participants across all four conditions will report more misinformation on peripheral details compared to central details.

Implications wise theoretically, understanding that emotions cannot be explained solely in terms of valence and arousal, spurs further understanding into the intricacies of susceptibility towards misinformation and the dimensions within discrete emotions itself. The practical implications for the forensic setting are diverse; eyewitnesses are often asked to recall important elements of a crime, hence police officials should take greater care in ensuring that the witness is not exposed to misinformation during line-up identifications or during the interviews, where the highly intense process may leave the witness distressed. This would give memory-based evidence its proper weight, as opposed to being discredited entirely.

Method

Participants

Thirty undergraduate psychology participants were recruited for the pilot study (*N*=30) with an age range of 18- 25 years old (See Table 1). For the experimental sample, a total of one hundred and eighty- eight undergraduate psychology participants (*n*=47 for each condition) were recruited with the same age range (See Table 1). The sample size employed was based on a G-Power Analysis with a small effect size of .25 and statistical power of .80. For both samples, participants were recruited using haphazard sampling, whereby participants whom fulfilled the eligibility criteria of; 18-25 years old; a Malaysian citizen and do not possess any visual impairments, were recruited via the university's online experimental portal (IPSY), as well as rewarded with 0.25% extra credit for their participation.

Table 1

Socio-demographic Characteristics Oof Participants in Pilot and Experimental Sample

	Pilot Sample	Experimental Sample
Male	5	32
Female	25	156
Age: Mean years (standard deviation)	21.03(± 1.27)	21.24(± 1.16)

Design

This was an experimental single-factor between-subjects pre-test- post-test design, with one independent variable — discrete emotions, and four levels (happy, sad, fearful and neutral). As this was a between-subjects design, each level was administered to a separate group of participants, and recorded using the Discrete Emotions Questionnaire (Harmon-Jones et al., 2016), before and after the emotion induction. The dependent variable, was the amount of misinformation reported, and operationally defined as the number of responses matching the misinformation on the memory test (misinformation recall), whereby a higher number indicates a higher amount of misinformation reported.

Procedure

Participants in the pilot study were asked to complete a demographic questionnaire, before being presented with the crime event video. Subsequently, participants were given 10 minutes to list down on a blank piece of paper, in as much detail as possible, the events remembered from the video. Participants were then thanked for their participation. Findings from the pilot study revealed that participants remembered central items as details pertaining to the perpetrator's apparel (upper and lower half) and number of chocolate boxes stolen. Details relating to peripheral items were remembered by participants in regards to the footwear and accessory worn by the perpetrator, as well as his movement when exiting the store. Lastly, in regards to the neutral items, details relating to the color of floor in the aisle and the perpetrator's bag were listed down by the participants.

As for the experimental conditions, the order of the sessions conducted pertaining to the four levels; happy, sad, fearful and neutral, were randomized using an online random assignment generator, and conducted in a booked tutorial classroom at the university's campus. Upon signing the consent forms and completing the demographic questionnaire, participants were given the DEQ to complete prior to the emotion induction. They were then asked to listen to either happy, sad, fearful or neutral musical pieces for 3 minutes, played at a loudness of 70 dB and administered the DEQ once again. Thereafter, participants were presented with a 1-minute video via a projector depicting a shoplifting scene. They were then presented with a narrative summarizing the video containing misinformation. Subsequently, participants were then asked to complete an easy version of a word search puzzle for 3 minutes. Once completed, participants were handed the memory test and collected upon completion. As this study employed deception, participants were debriefed about its nature, as well as the true purpose of the study before being dismissed.

Instruments

A pilot test was conducted beforehand in order to assess item centrality from the video for the construction of the memory questionnaire, and served to improve the overall rigor of the study. The distinctiveness of the original detail poses a significant problem in research on the misinformation effect, as the central critical items presented in laboratory studies are largely peripheral in nature and lack visibility. Thus, a pilot study was necessary in order to ensure that the central items comprised of highly vivid and visible details.

Pilot Test

Upon watching the same 1-minute video from the experimental conditions, participants were required to list down on a blank piece of paper, in as much detail as possible, the details remembered from the video. Their responses were then coded into idea units for scoring. For example, mentions of clothing would constitute one idea unit pertaining to the physical appearance of the perpetrator. Three idea units recalled frequently were defined as central items (M=1.43, SD=1.04) and three units not recalled frequently were defined as peripheral items (M=0.43, SD=0.50). Two neutral items with a range of recall frequency (M=0.73, SD=0.45) were included so that the questions on the memory test did not solely query on the items pertaining to misinformation.

Demographic Questionnaire

Assessed participants on their age, gender and ethnicity.

A Measure of Discrete Emotions

Discrete Emotions Questionnaire (DEQ): The questionnaire comprised of 32 items divided across 8 subscales (happiness, anger, disgust, fear, anxiety, sadness,

relaxion and desire) containing 4 items each. Each item was scored on a 7-point Likert scale, whereby 1 indicates 'Not at all' and 7 indicates 'An extreme amount'. Participants were directed to indicate their responses based on their current emotional experience. A high average score across each subscale, indicated the greater extent participants were experiencing these emotions. The DEQ comprises of subscales that are high in reliability (α > 0.80) (Harmon-Jones et al., 2016).

Musical Excerpts

3-minute excerpts of Vivaldi Four Seasons: Summer, Band of Brothers-Discovery of the Camp, Gustav Holst- Mars, The Bringer of War and Claude Debussy-La Mer were used in the emotion induction to induce the happy, sad, fearful and neutral condition respectively. These pieces were obtained from YouTube and downloaded into audio files and have been successfully used in previous studies to induce the aforementioned emotional states (Baumgartner, Esslen, & Jäncke, 2006; Krumhansl, 1997; Vuoskoski & Eerola, 2012).

Misinformation Paradigm

Crime Video

A 1- minute video depicting a man at a convenience store shoplifting was obtained via CCTV footage on YouTube. The appearance and actions of the perpetrator are as such; dressed in a red, blue and white striped shirt, brown trousers and black shoes, wearing a watch and carrying a black sling bag into which he placed two boxes of Ferrero Rocher chocolates whilst no one was looking. The crime depicted had to be neutral in nature and not feature violence scenes, lest it interferes with the participants' emotional state after the emotion induction.

Misinformation Narrative

Contained 123 words, summarizing the events witnessed in the video with three pieces of misinformation alluding to central items, another three towards peripheral items, and was based off a similar format from a study by Szpitalak and Polczyk (2019). The misinformation for central items depicted the perpetrator as wearing a plain shirt, shorts and stealing three boxes of chocolate. Misinformation for the peripheral items described the perpetrator as wearing slippers, a bracelet and running out of the store. The two neutral items were not mentioned in the narrative, although they were presented in the video. The narrative was presented via a PowerPoint slide for 45 seconds.

Word Search Puzzle

An easy version comprising of 16 items was used as a distractor task between the narrative and memory test. The purpose of this task was to prevent participants from immediately detecting the discrepancies in the narrative and original events witnessed in the video as well as weakening the memory trace due to the passage of time (Read, 1996).

Memory Test

Consisted of eight open ended questions — six questions pertaining to the misinformation items and the remaining two questions relating to neutral items. The justification for the use of open- ended questions instead of forced choice recognition was due to the former being nonleading, and with a smaller risk of misleading respondents (Ibabe & Sporer, 2004).

Results

The Shapiro-Wilk test of normality was used, as the sample size in this study was less than 2000. The assumption of normality was met for the happy (W (47) =.93, p=.007), fearful (W (47) =.93, p=.007) and neutral (W (47) =.93, p=.006) conditions, but was not met for the sad condition (W (47) =.92, p=.004). However, a one-way independent ANOVA analysis

was still able to be conducted as it is a robust test and results are still interpretable, especially since the sample sizes were equal across all four conditions.

The Levene's Test of Homogeneity of Variances revealed that the assumption has been met, $F(3,184) = 0.60$, $p = .614$. Scores for the DEQ were averaged across the happiness, sadness and fearful subscales, whereby a higher score indicated the greater extent of the emotional state experienced. As the DEQ did not primarily include a subscale for neutral emotion, scores from the calm item were tabulated instead. Prior research has validated the perceptual similarities between these two emotions (Gallegos & Gasper, 2018).

For the manipulation check, an ANOVA analysis revealed that the emotion induction was successful, as the groups differed significantly with one another before and after, $F(3, 184) = 4.47$, $p = .005$. Bonferroni post hoc comparisons showed that there was a significant difference between the groups in the sad and happy condition (*Mdiff*= .91, *SE*= .30, $p = .015$) and those in the neutral condition (*Mdiff*= .96, *SE*= .30, $p = .009$), but no significant difference for those in the fearful condition (*Mdiff*= .54, *SE*= .30, $p = .409$). Besides that, the groups did not significantly differ across the fearful and happy condition (*Mdiff*= .37, *SE*= .30, $p = 1.000$) and those in the neutral condition (*Mdiff*= .41, *SE*= .30, $p = .974$). Additionally, there was no significant difference between the happy and neutral conditions (*Mdiff*= .05, *SE*= .30, $p = 1.000$).

As seen in Table 2, Descriptive statistics revealed that the participants in the happy condition ($M = 2.30$, $SD = 1.68$) reported the least amount of misinformation than participants in the sad condition ($M = 2.53$, $SD = 1.54$), than participants in the fearful condition ($M = 2.62$, $SD = 1.78$), and compared to participants in the neutral condition ($M = 2.85$, $SD = 1.84$).

Table 2

Mean Scores on the Total Amount of Misinformation Reported

Discrete Emotions	M	SD
Happy	2.30	1.68
Sad	2.53	1.54
Fearful	2.62	1.78
Neutral	2.85	1.84

The one-way independent ANOVA analysis revealed that there was no significant effect of discrete emotions on amount of misinformation reported, $F(3,184) = 0.84$, $p = .476$. Therefore, the hypotheses that participants who are in the happy condition will report the least amount of misinformation compared to those in the sad, fearful and neutral condition; participants who are in the fearful condition will report the highest amount of misinformation compared to those in the other conditions; and participants who are in the sad condition will report a fewer amount of misinformation compared to participants who are in the neutral condition was not supported.

In regards to overall accuracy on the memory test, participants in the fearful condition ($M = 3.36$, $SD = 1.70$) reported the

highest accuracy, followed by the sad condition (*M*=3.11, *SD*=1.65), the happy condition (*M*=3.09, *SD*=1.52) and lastly, the neutral condition (*M*=2.85, *SD*=1.59).These results were tabulated based on both correct and incorrect answers across all three items for the final total score. Note that the researcher defines incorrect responses here as those pertaining to no answer and spontaneous false recall. However, this effect was not found to be significant, $F(3,184) = 0.79$, $p=.503$. Participants also reported higher amounts of incorrect responses (*M*=3.43, *SD*=1.71) compared to misinformation recall (*M*=2.57, *SD*=1.71).

For the neutral condition, a one-way between-subjects ANOVA was conducted on the proportion of correct neutral items. Participants in the fearful condition (*M*=1.51, *SD*=0.59) reported the highest number of correct responses, compared to participants in the happy condition (*M*=1.47, *SD*=0.65), to those in the neutral condition (*M*=1.30, *SD*=0.69) and to those in the sad condition (*M*=1.26, *SD*=0.74).The total amount of misinformation reported (out of 6) was calculated by adding participants scores on the misinformation recall relating to central and peripheral items.

Moreover, further ANOVA analyses revealed that participants across all four conditions reported higher amounts of misinformation on peripheral details (*M*=1.48, *SD*=1.02), compared to central details (*M*=1.09, *SD*=0.97). However, the hypothesis that participants across all four conditions will report more misinformation on peripheral details compared to central details, was not supported either due to the insignificant effect obtained.

Discussion

For the data obtained from the pilot test, a single coder counted the frequency of central, peripheral and neutral items recalled by participants. The findings from the pilot test revealed that the perpetrator's apparel, as well his action in committing a crime (shoplifting) formed the central items of this study. Perhaps what was interesting was that, only the perpetrator's apparel was of most salience to the participants as opposed to his entire appearance, as these units (lower and upper apparel) were the ones that were most frequently recalled. Other aspects of the perpetrator's appearance, such as his footwear, exiting movement and accessory worn were observed, but not as frequently recalled as the central items, thus being deemed as peripheral items.

The findings are consistent with the proposed categorization of to be remembered information (Burke, Heuer, & Reisberg, 1992), which proposed that central details contain details pertaining to the gist of the event and materials which are visually central to the event. Whereas peripheral details include details that are visually attached to the central materials, and details from the background and context of the event. Perhaps this would then explain why participants found the perpetrator's action of most salience as it formed the gist of the crime that he was committing which was shoplifting. In addition, the perpetrator's apparel was also of salience as it was of centrality to the crime being committed. The perpetrator's footwear and accessory although still forming a part of his appearance, was not as frequently recalled, as these details were attached to the visually central details (the perpetrator's appearance in terms of apparel), which captured more attention.

Furthermore, the aim of this study was to examine the effect of discrete emotions on amount of misinformation reported. Based on the results above, there is no support to the hypotheses proposed; 1) participants who are in the happy condition will report the least amount of misinformation compared to those in the sad, fearful and neutral condition; 2) participants who are in the fearful condition will report the highest

amount of misinformation compared to those in the other conditions; 3) participants who are in the sad condition will report a fewer amount of misinformation compared to participants who are in the neutral condition; and 4) participants across all four conditions will report more misinformation on peripheral details compared to central details. Therefore, the researcher infers that there is no significant effect of discrete emotions on amount of misinformation reported. These findings were inconsistent with that of past studies (Corson & Verrier, 2007; Ellsworth & Dougherty, 2015; Levine et al., 2008; Storbeck & Clore, 2011; Van Damme & Seynaeve, 2013).

A few explanations are offered for these contradictory findings. While the emotion induction was successful, its quantification of persistence throughout the entire experiment may be called into question. A study by Ribeiro, Santos, Albuquerque and Oliveira-Silva (2019) demonstrated how evoked emotion states via music induction switched to a neutral state 2 minutes after the induction took place. These findings allude to the possibility that evoked emotional states may not have lasting effects until the very end of the experiment. Thus, it is difficult to assess the duration to which participants experienced the evoked emotional states, as this study did not employ physiological measures of heart rate and skin conductance level.

However, in light of the effectiveness of the manipulation check, it may very well be that the intensity of the emotions induced was not powerful enough to elicit a change in participants' cognition, which subsequently lent a pivotal role in impairing participants recall on the memory test. This may also shed light unto these study's findings whereby the misinformation recall only constituted of a smaller portion of the incorrect responses reported, with the no answer and spontaneous false recall comprising of a higher distribution. As this study was primarily interested in the amount of misinformation reported and not the false memory domain, further analyses on participants' responses of spontaneous false recall were deemed irrelevant to the purpose of the study. Furthermore, manipulation employed in laboratory settings to induce emotional states are not equitable towards real life witnessed events, as a blend of emotions is likely to co-occur (Trampe, Quoidbach, & Taquet, 2015). In such instances, the arising emotions may either interact or be of salience differently than what was captured in this study.

Additionally, the memory test only comprised of 8 questions and was by no means an exhaustive list of known information about the event, but rather was limited to a subset of items. Retrieval induced forgetting, a potential mechanism underlying the misinformation effect phenomenon, suppresses the unwanted material during the time of retrieval. It is plausible that the memory questions, serving as a cue, were insufficient in aiding recall and therefore accessed unwanted material such as spontaneous false recall (Chan, 2009). Even more interestingly was that, the fearful condition scored the highest on memory accuracy. This may be due to a stronger arousal elicited, as a higher degree of uncertainty provided a forefront in reporting more accurate details (Michalowski, Weymar, & Hamm, 2015).

Emergent literature has provided support to these findings (Neil, Olsson, & Pellicano, 2016) whereby anxiety is implicated with a more acute sense of sensory sensitivity due to the feelings of uncertainty experienced. Although anxiety and fear are distinct from one another, both emotions confer adaptive value. In a fearful situation, most people would experience physical reaction ascribed under anxiety (Grupe & Nitschke, 2013) and display similar effects in performance.

Limitations

Several limitations of the current study need to be considered, one of it being the complexity in phrasing in question number 7, which possibly led to poor comprehension and confusion, as indicated by question marks on several responses. Although the emotion manipulation was effective and the authors assert that the DEQ is highly capable of assessing state discrete emotions in emotional contexts, it is unclear if the outcome may have been different for the amount of misinformation reported, employing the other methods the DEQ is more sensitive to. Due to the absence of a neutral subscale, only the calm item from the relaxation subscale was used while the ratings for the other three subscales were averaged. Thus, this unequal distribution of weightage may have affected the results of this study. Lastly, the study was conducted during the peak of the semester, whereby students may have experienced mental fatigue from their heavy coursework, as well as having to complete 32 items on the DEQ twice through. This may explain the large number of incorrect responses obtained, whereby the spontaneous false recall and no answer responses outweighed the misinformation recall category.

Future Research

Future studies should dedicate efforts towards accounting for the potential confounds of the misinformation effect and employ a longer time interval between the misinformation presented and the memory test, as this effect has been found to increase over longer time intervals (Thomas, Gordon, Cernasov, & Bulevich, 2017). Thus, a longitudinal study would be beneficial in teasing apart any interactions with some of the confounds of the misinformation effect. A pilot study, in regards to the phrasing of the items on the memory test, would also be useful in alleviating verbal confusions. As it is unclear in the present study whether the misinformation reported was due to a failure in one of its multiple underlying mechanisms, it would be fruitful for future research to attempt to pinpoint under which conditions these failures are exacerbated and how the retrieval process may be ameliorated to inoculate against misinformation. Future studies should also account for individual differences as this approach may be able to tease apart any idiosyncratic variations in cognitive skills.

Theoretical Implications

Despite these limitations and insignificant results engendered, it is sufficed to say that the broader dimension of discrete emotions and its interface with that of cognition is still warrant of further scrutiny. In the Introduction section, it was posited that the emotion fear resulted in greater memory impairment, but the pattern of findings suggested otherwise. Despite this insignificant effect obtained, it seems highly superfluous to discard further inspection into the nature of this emotion. Further investigations into the other discrete emotions present, such as anxiety shall enrich and augment existing literature.

Conclusion

In conclusion, the present study was interested in examining the effect of discrete emotions on amount of misinformation reported. The findings however reveal that there was no effect of discrete emotions on amount of misinformation reported. It is conceivable that this could be due to potential confounds such as individual differences, insufficient cues on the memory test to aid recall or lapses in attention. Nevertheless, this study still captures the interesting facets of discrete emotions and has aided theoretical literature by setting the forefront in attempting to distinguish the various underlying mechanisms encapsulating the various emotions. Furthermore, the intricate natures of memory and its

encoding and retrieval processes, seem to be largely intertwined, and yet has continued to receive a paucity of consciousness. Such efforts would extend vast contributions to considerable theoretical, as well as applied interest.

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