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PSYCHOPHYSIOLOGICAL CORRELATES OF MORBID CURIOSITY

by

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Dedication

For my grandmother, whom I wish could have seen this achievement, and my mother, who encouraged me to remain steadfast on my education and in life.

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I am greatly appreciative to the constant encouragement of my mother and my family in my pursuit of a master's degree. Without their understanding and support, such an achievement would not have been realized and cultivated. I am truly blessed and grateful.

ABSTRACT

PSYCHOPHYSIOLOGICAL CORRELATES OF MORBID CURIOSITY

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Morbid curiosity is the interest or attentiveness to uncomfortable content (Scrivner, 2021). Very little research has investigated the psychological and physiological underpinnings of morbid curiosity. The current study investigated the psychophysiological correlates of morbid curiosity with the use of heart rate variability (HRV), self-reported morbid curiosity, and a morbid curiosity induction. Aim 1A investigated if there was a relationship between HRV and self-reported morbid curiosity. It was hypothesized that morbid curiosity would be correlated with HRV at rest and HRV during the completion of a self-reported morbid curiosity assessment (i.e., Morbid Curiosity Scale). Aim 1B assessed the relationship between heart rate variability and induced morbid curiosity using the morbid curiosity induction task. It was hypothesized that HRV would increase when participants engaged in a morbid curiosity task (i.e., watching a true crime documentary), as compared to a neutral condition (i.e., watching a neutral documentary) or at baseline (i.e., rest). Aim 2 investigated the **relationship between the induced morbid curiosity, participants' curiosity ratings, and learning.**

It was hypothesized that HRV and participant's curiosity ratings during the morbid curiosity condition would be a significant predictor of learning, as measured immediately after the morbid curiosity induction and approximately one week later (Aim 2). No significant correlations were found between self-reported morbid curiosity and HRV (Aim 1A). For the Morbid Curiosity Induction Task, there was a significant increase in HRV during the neutral condition (i.e., watching neutral documentary) as compared to baseline (i.e., at rest), but no difference between the morbid curiosity condition (i.e., watching true crime documentary) and the other conditions (Aim 1B). HRV and participant's curiosity ratings were not found to be significant predictors of learning in either the in-lab learning assessment or in the learning assessment (memory recall task) that was administered a week later (Aim 2). The results of this study suggest that there is no significant relationship between HRV and self-reported morbid curiosity, and no relationship between induced morbid curiosity and learning. This work highlights the importance of better understanding the concept morbid curiosity and to better understand the relationship between morbid curiosity and psychophysiological processing.

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CHAPTER I: INTRODUCTION

Previous research has described curiosity as a crucial driver of behavior (Scrivner, 2021). Curiosity is often described as an interest that motivates individuals to seek more information on a specific topic (Lima & Rocha, 2019). Moreover, the curiosity for socially unpleasant themes—death, violence, harm, and other aversive stimuli—is commonly pursued by individuals, despite its disagreeable nature (Oosterwijk, 2017). People seek out unpleasant content through many mediums including the news, podcasts, documentaries, books, or movies. This phenomenon is known as morbid curiosity, or the interest or attentiveness to uncomfortable content, such as death, violence, and the paranormal (Scrivner, 2021).

Psychological Underpinnings of Morbid Curiosity

Very little research has investigated the psychological and physiological underpinnings of morbid curiosity. Work by Zuckerman and Litle (1986) analyzed the socially unacknowledged phenomena and interest in morbid curiosity. Noting an absence of research on morbid curiosity in the literature, Zuckerman and Litle (1986) developed the Curiosity About Morbid Events (CAME) Scale to measure an individual's interest in witnessing violence or morbid content in various contexts (e.g., nightly news over crimes in the area, true crime documentaries). Additionally, they created the Curiosity About Sexual Events (CASE) Scale to measure an individual's interest in witnessing sexual events to further their investigation on seemingly unsavory content not socially accepted by society. This work also investigated the association between an individual's personality and their interest in viewing morbid content. They found that morbid curiosity was positively correlated to psychoticism and sensation-seeking for both sexes,

whereas morbid curiosity was only positively correlated to introversion-extroversion for men.

Despite being the original scale for morbid curiosity, the CAME Scale was not widely used. According to Scrivner (2021), this is likely due to a number of reasons, including the lack of research establishing the validity and reliability of the scale and criticisms that the scale was unidimensional in that it only focused on one aspect of morbid curiosity. That is, the CAME Scale placed an emphasis on questions related to witnessing violence (e.g., 'I think I would like to witness an execution'), which is not necessarily indicative or fully encompassing of morbid curiosity. Given these noted concerns, as well as the recent rising popularity of true crime media and the prevalence of violence within the media and public, Scrivner (2021) developed the Morbid Curiosity Scale (MCS). Similar to the CAME scale, the MCS is also comprised of violence-related prompts in order to assess an individual's interest in morbid curiosity. As such, the MCS consists of 20 items from the original CAME scale and an additional nine items. To provide a more multidimensional assessment of morbid curiosity, the additional nine items on the MCS assessment probe interest in paranormal phenomenon and the motivation behind criminalistic and morbid acts. The MCS and CAME both focus on unfavorable content scenarios related to violence, death, and bodily harm, however, the MCS additionally focuses on scenarios that are broader in nature related to morbid curiosity, such as the occult, paranormal situations, and the motives behind crime. Moreover, the MCS can be further divided into four subscales of morbid curiosity: Body violation, violence, motives of dangerous people, and paranormal dangers.

Some research argues that the interest in morbid content such as horror movies and true crime media serves as a means for protective vigilance (Vicary & Fraley, 2010). Unpleasant content allows individuals to learn more about negative topics, reduce

uncertainty in unfavorable situations, and facilitate learning through another's experiences (Hoffner et al., 2009; Bartsch & Mares, 2014). Oosterwijk and colleagues (2020) found that individuals deliberately expose themselves to pessimistic content daily and interpret it as preparation for unpleasant events which may occur in the future. Research on curiosity focuses on the idea that information-seeking behavior displayed by individuals is motivated by curiosity, can lead to learning, improves performance in decision-making, and improves physical fitness (Kidd & Hayden, 2015). Research supports the existence of such a connection between consuming morbid content and motivation to prepare for unpleasant events (Hoffner et al., 2009). Research also shows that women report that they pursue more morbid content and true crime books to potentially learn better survival strategies and prepare for potential acts of harm toward them (Vicary & Fraley, 2010).

Psychophysiological Correlates of Morbid Curiosity

Despite limited research on the psychological underpinnings of morbid curiosity, some research has started to investigate the psychophysiological correlates of morbid curiosity. Pinkerton and Zhou (2008) found that participants with high morbid curiosity were more aroused towards negative news broadcast stories, such as a fatal helicopter collision, as compared to people with reported low morbid curiosity. The physiological arousal was indicated by an increase in skin conductance response (SCR) indexed by electrodermal activity (EDA). Interestingly, Pinkerton and Zhou (2008) found no significant difference between low and high morbid curiosity for self-reported arousal, heart rate, or appeal of negative stories, however, negative stories were rated more appealing, entertaining, stimulating, and enjoyable across all participants in the study, independent of their reported morbid curiosity levels (Pinkerton & Zhou, 2008).

Research has also started to investigate the neural correlates of morbid curiosity. According to Oosterwijk et al. (2020), viewing morbid content (e.g., horror movies) was linked to increased activation of the reward circuitry in the brain in comparison to viewing positively cued stimuli (e.g., images of children throwing flowers at a wedding). More specifically, viewing unpleasant content was associated with activation of the striatum, inferior frontal gyrus (IFG), anterior cingulate cortex, and anterior insula (Oosterwijk et al., 2020). By contrast, Kang et al. (2009) found activation in the caudate nucleus, IFG, bilateral prefrontal cortex (PFC), and the parahippocampal gyri to be associated with low and high curiosity, independent of morbid curiosity. Moreover, Gruber et al. (2014) reported activation in the midbrain and the nucleus accumbens associated to an individual's anticipation for an answer or solution to their curiosity. This work suggests that these regions of the brain are activated when curiosity is piqued and when an individual's curiosity is satiated. Although there is some overlap, it is important to better elucidate the differences in neural activity between general curiosity and morbid curiosity.

Curiosity and Learning

A prominent framework in the curiosity literature suggests learning is a reward that satiates curiosity. Marvin and Shohamy (2016) found that individuals had a greater chance of recalling information and showed greater reward anticipation (i.e., curiosity) if the content was positive in comparison to negative. They also found that recalled information created a prediction error between curiosity before and after the subject of interest was revealed. Participants who rated their anticipated curiosity as high, reported that their curiosity remained high or increased further even after the subject of their curiosity was revealed (Marvin & Shohamy, 2016).

According to Lima and Rocha (2019), Frontal Brain Asymmetry (FBA), the asymmetry in the activation of left and right frontal brain regions, is commonly used to measure engagement and motivation when an individual expresses curiosity and is actively learning. Lima and Rocha (2019) conducted a study exploring the connection between learning, memory recall, and curiosity, and the physiological and neural underpinnings of these processes. The work examined the effects of curiosity on learning and evaluated the concept of curiosity as a driver of behavior. More specifically, Lima and Rocha (2019) conducted an experiment where twenty-one participants answered thirty-five general interest trivia questions while connected to an electroencephalogram (EEG) to identify the neural correlates of curiosity, as indicated by what questions piqued an individual's interest. A week later, participants were asked to answer the same thirty-five trivia questions. Accurately remembering the questions individuals got correct at the follow-up was considered an indication of which questions piqued interest or curiosity. This study did not find a correlation between FBA and self-reported curiosity, however, participants who had higher FBA had better recall as compared to individuals with lower FBA. This work suggests that FBA may work as modulator or driver of reward-motivated behavior (Lima & Rocha, 2019). This work provides additional support toward understanding the neural correlates of curiosity, with particular insight on the role of learning in satiating curiosity.

According to van Lieshout et al. (2020), curiosity is essential to motivate behavior to become increasingly aware and fill gaps in knowledge that individuals have become conscious of. The drive to acquire knowledge motivates the individual to use any material at their disposal to extinguish the extent of their curiosity. Acquiring knowledge to subdue curiosity may be a rewarding factor that bridges learning to curiosity (Marvin & Shohamy, 2016). According to Lima & Rocha (2019), the concept used to explain the

rewarding factor of acquiring is referenced as the information-as-reward approach, which motivates individuals to engage in reward-motivated behavior.

The Current Study

Despite its disagreeable nature, morbid curiosity remains a popular genre in media and in everyday life. Morbid content has grown extremely popular in the entertainment industry ranging from horror movies, true crime documentaries, podcasts, and the nightly news that reports current crimes (Harrison & Frederick, 2020). Morbid curiosity is constantly sought out by individuals for a variety of reasons such as protective vigilance, to obtain knowledge, or to become a driver for reward-motivating behavior. Additionally, learning is thought to be essential component to understanding morbid curiosity. Given the paucity of research investigating the psychological and psychophysiological underpinnings of morbid curiosity, the current study examined the relationship between morbid curiosity and learning, and the psychophysiological underpinnings of these processes.

Heart rate variability is considered a measure that reflects the neuro-cardiac connection between the heart and brain and the autonomic nervous system (ANS), comprised of the parasympathetic nervous systems (PNS) and sympathetic nervous system (SNS). Spectral power is used to calculate various indices of HRV including low-frequency (LF) power, ranging from 0.04 – 0.15 Hz, high-frequency (HF) power ranging from 0.15 – 0.40 Hz, and the LF/HF ratio, a ratio of LF and HF. The HF power is an indicator of the PNS activity and the LF power is an indicator of SNS activity (Yoo et al., 2021). The LF/HF ratio reflects the balance of the SNS and PNS. Findings on the effects of emotion and arousal on HRV are mixed (Kim et al., 2018). The experience of viewing true crime media and morbid curiosity content requires emotional processing and attention to pique a participant's interest. Visualization of arousing emotional stimuli

increases vagal activity (Marín-Morales et al., 2021). Participants exposed to visual stimuli of mutilated bodies report an increase in HF power and a decrease in LF/HF ratio (Sokhadze, 2009). Moreover, when exposed to short film clips of body injuries fitting the condition of painful injury but no core disgust, participants displayed an increase in respiratory sinus arrhythmia (RSA), another measurement of the HF band of HRV, and greater inter-beat intervals, which measures time interval spaces between heartbeats (Shenhav & Mendes, 2014).

Aims & Hypotheses

Aim 1 of the study was to investigate the psychophysiological correlates of morbid curiosity. This aim analyzed the relationship between heart rate variability (HRV), and morbid curiosity, both self-reported (Aim 1A) and induced (Aim 1B). HRV is a physiological marker that identifies the difference, or variability, in time and distance between heartbeats of an individual (Kim et al., 2018). Thus, although not definitive, based on prior research on morbid content and HRV specifically, it was hypothesized that morbid curiosity should be correlated to heart rate variability. Therefore, it was hypothesized that morbid curiosity, as indicated by the self-reported Morbid Curiosity Scale, would be correlated to HRV. More specifically, it was hypothesized that increased morbid curiosity would be correlated to increased inter-beat intervals (Aim 1A).

Aim 1B of the current study was to investigate the effects of morbid curiosity on heart rate variability. To induce morbid curiosity, a morbid curiosity induction task was designed where participants were exposed to both a morbid curiosity condition (a true crime documentary) and a neutral condition (neutral documentary). Unlike the self-reported questionnaire, where participants report on their intrinsic levels of morbid curiosity, the induction task was used to further explore participants' interest in morbid content. The induction of morbid curiosity is to mirror the behavior of those who

voluntarily watch true crime and other morbid content and how individuals gravitate toward this type of negative content in real world situations. It was hypothesized that when engaged in a morbid curiosity task, there would be an increase in heart rate variability during the morbid curiosity condition as compared to a neutral condition and baseline HRV, as indicated by an increase in inter-beat intervals (Aim 1B).

Aim 2 of the current study investigated the relationship between morbid curiosity, HRV, and learning. It was hypothesized that HRV (i.e., inter-beat intervals) during the morbid curiosity condition and participant's curiosity ratings after the morbid curiosity condition would predict learning (Aim 2). Learning was assessed at two different time points—once immediately after the morbid curiosity induction and again one week later.

CHAPTER II: METHODOLOGY

Participants

Eighty adults from the University of Houston-Clear Lake (UHCL) aged 18 and older ($M=24.3$, $SD=5.02$) participated in the current study. With regard to gender, participants identified as female (72.5%), male (23.8%), non-binary (1.3%), or other (2.5%). With regard to ethnicity, participants identified as Hispanic/Latinx (40.0%), White (27.5%), Black/African American (10.0%), Asian (16.3%), Middle Eastern/North African (1.3%) or Other (5.0%). Recruitment was done through the UHCL SONA participation pool and through the UHCL community. As compensation for participating in the study, students enrolled in SONA received 2.5 credit hours in total (0.5 in-person study bonus, 1.5 credit hours for participating in the lab setting, and 0.5 credit hours for completing the online follow-up via email). No compensation was provided for participants of the UHCL community that did not require SONA credit. Consumption of products such as caffeine, tobacco, and alcohol are known to have effects on HRV (Koenig et al., 2013). Therefore, before coming into the lab, participants were asked to abstain from caffeine and smoking for at least two hours and to abstain from alcohol consumption for at least 24 hours prior. Additionally, participants were asked to report their caffeine consumption at the time of their visit to the laboratory. Of the 80 participants, 28 did not have complete HRV data, resulting in 52 participants for Aim 1. Of the 54 participants that completed the memory recall task, nine did not have complete HRV data, resulting in complete data for 45 participants for Aim 2.

Materials

Morbid Curiosity Scale

Participants completed the 24-item Morbid Curiosity Scale (Scrivner, 2021) to assess morbid curiosity. The Morbid Curiosity Scale uses a 7-point Likert scale (1 = Strongly disagree to 7 = Strongly agree) with prompts to determine participants' interest in morbid curiosity. Examples of the prompts are: "If a head transplant was possible, I would want to watch the procedure" and "I am curious about crime and enjoy reading detailed news accounts about murders and other violent crimes" (Scrivner, 2021, p. 4). Please see Appendix A for the full questionnaire.

The participant's score on the Morbid Curiosity Scale was calculated by finding the mean of all the Likert ratings for the 24 questions in the scale. MCS Scores range from 1 to 7. Higher mean scores on the MCS indicate more curiosity and more likelihood to seek out morbid content (Scrivner, 2021).

Morbid Curiosity Induction Task

The morbid curiosity induction task consisted of three conditions—baseline (rest), a morbid curiosity condition, and a neutral condition. A within subjects design was implemented and the morbid curiosity and neutral conditions were counterbalanced. The morbid curiosity condition was a 10-minute segment of the true crime documentary *Crime Scene: The Texas Killing Fields* on Netflix. This documentary is about a criminal case over the 1970s Texas Killing Fields located in League City, Texas. The documentary's content discusses the victims, the motives of the perpetrators, how the victim's bodies were found, and theories of what happened during these murders. Investigators give their thoughts and theories over the case, and images of victims' bodies are displayed throughout the documentary. The Texas Killing Fields documentary

contains content such as violence, death, bodily harm, and motivation behind a criminal's defiant acts, which are all facets of morbid curiosity.

The neutral condition was a 10-minute segment of the informative documentary *The Human the World Within* on Netflix. *The Human the World Within* teaches the audience about the human body and the ways the body survives in everyday life. The content of the informative documentary goes over the extremities and physiological processes the body undergoes in the simplest of tasks, such as how skin regenerates, the immune system protects the body, and how the body endures all types of situations. Unlike the true crime documentary, the informative documentary was set up to act as a neutral topic, in which participants watched and rated their interest in the subject.

Both conditions were presented on a computer via Netflix. Participants were asked to rate their level of curiosity after each documentary on a 5-point Likert scale ranging from *not interesting at all* (1) to *extremely interesting* (5). Additionally, participants were administered 18 questions over the morbid curiosity condition and 18 questions over the neutral condition testing their knowledge of the information presented to them after watching each of the documentaries. Please see Appendix B and C for the full questionnaires.

Memory Recall Task

A week after the in-lab portion of the study, participants received a follow-up email with the same 36 questions corresponding to the two documentaries previously administered. Curiosity, even morbid curiosity, can be a powerful motivator for individuals to seek knowledge and explanations about unfamiliar topics (Spielberger & Reheiser, 2009). Similar to work by Lima and Rocha (2019), if participants correctly answer more questions, we took that to be indicative of increased curiosity about the topic. Scores were calculated separately for each condition, neutral and true crime,

resulting in a general curiosity score and a morbid curiosity score. Scores were reported as the percentage correct. Increased number of correct answers was taken to represent increased general curiosity, morbid curiosity, and learning.

Heart Rate Variability (HRV) measurements

Recordings of analog arbitrary units (wave function) were captured through the Polar H10 chest strap device. Data was then collected and processed using the Heart Rate Variability Logger and the Kubios Software to extract the mean R-R intervals, or inter-beat intervals (IBI). With electrocardiogram (ECG) recordings, the QRS complex is recorded, with R-peak representing the maximum or peak of the heartbeat. Mean R-R is calculated by measuring the time between R-peaks from heartbeat to heartbeat. HRV was collected at the following time points throughout the study: at baseline (10 minutes), during the completion of the self-report Morbid Curiosity Scale (time varied, $M = 3.43$ minutes, $SD = 1.33$), during the neutral condition (10 minutes), and during the morbid curiosity condition (10 minutes). The first two minutes of the HRV during the completion of the Morbid Curiosity Scale was used for data collection due to the variation in time of completion.

Procedures

The protocol was approved by the University of Houston-Clear Lake's Committee for the Protection of Human Subjects. All procedures were administered in the UHCL Psychology Research Lab (Bayou Building 1221). Upon arrival participants signed the informed consent for the study. Participants then completed the demographic questionnaires via Qualtrics. Participants then filled out questions on their consumption of caffeine, alcohol, and smoking. Baseline HRV data was collected for 10 minutes. Participants then proceeded to fill out the Morbid Curiosity Scale via Qualtrics and their HRV was recorded during that task. Participants were then exposed to the two conditions

of the morbid curiosity induction (morbid curiosity condition and neutral condition). The two conditions were counterbalanced with a 10-minute break between conditions, where participants were asked to simply sit quietly in the room and refrain from any activity, such as getting up to walk around or using their phone. HRV data was collected throughout the entirety of the morbid curiosity induction task in two 10-minute segments. For each condition, participants completed a questionnaire self-reporting their curiosity rating for the documentary, then answered 18 multiple choice questions regarding content of each of the documentaries they had watched. After the morbid curiosity induction task and questionnaires were completed, participants were then debriefed, and the follow-up portion of the study was explained to the participants. Exactly one week after testing, participants were administered the follow-up memory recall task online (either via email or through the SONA system). The follow-up memory recall task consisted of a 36-multiple choice questionnaire about content from the documentaries participants had viewed a week prior. The entirety of the in-lab portion of the study was approximately 90 minutes. The at-home follow-up memory recall task took participants approximately 15-30 minutes to complete.

Data Analysis

Jamovi statistical software was used to conduct all statistical analyses. For Aim 1A, correlational analyses were conducted to assess if there is a relationship between self-reported morbid curiosity scores and participants' HRV (mean R-R) both at baseline and during the completion of the self-reported Morbid Curiosity Scale. Morbid Curiosity Scale scores and measures HRV were entered as continuous variables. For Aim 1B, a repeated measures ANOVA was used to determine if there were differences in HRV between baseline HRV, HRV during the morbid curiosity condition, and HRV during the

neutral condition. All analyses were tested for violated assumptions and corrected for any violations that occurred.

For Aim 2, linear regression analyses were used to measure the relationship between induced morbid curiosity, participants' curiosity rating, and learning both immediately after the induction task and one week later (memory recall task). HRV, learning scores, and curiosity ratings were entered as continuous variables. HRV and curiosity ratings were entered as predictors and learning was entered as the dependent variable.

CHAPTER III:

RESULTS

Aim 1A: Resting Heart Rate Variability and Self-Reported Morbid Curiosity

Eighty participants volunteered for the current study, but 28 participants were excluded due to incomplete HRV data recordings. This left a total of 52 participants for Aim 1A analyses. Correlational analyses were used to assess the relationship between measures of HRV at rest (baseline) and self-reported morbid curiosity, as measured by the Morbid Curiosity Scale. There were no significant correlations between self-reported morbid curiosity and HRV at rest ($r = .087, p > .05$). Correlational analyses were also used to determine if there is a relationship between self-reported morbid curiosity, as measured by the Morbid Curiosity Scale, and HRV during the completion of the measure. There were no significant correlations between self-reported morbid curiosity and HRV when completing the Morbid Curiosity Scale ($r = .185, p > .05$).

Table 1:
Correlation Matrix for HRV and Morbid Curiosity

		Morbid Curiosity Scale Scores	
HRV (mean R-R) at Baseline	Pearson's		0.087
	<i>r</i>		
HRV (mean R-R) during Morbid Curiosity Scale	p-value		0.5417
	<i>r</i>		
	Pearson's		0.185
	<i>r</i>		
	p-value		0.190

Aim 1B: Heart Rate Variability and Morbid Curiosity Induction

A repeated measures ANOVA was used to examine the effect of the morbid curiosity on HRV. Fifty-two participants were included in the Aim 1B analysis. After correcting for sphericity, repeated measures ANOVA determined that HRV, as measured by mean R-R interval, varied significantly across conditions ($F(1.468, 74.85) = 5.332, p = .0131$). Post-hoc analyses showed that while there was no significant difference between morbid curiosity condition ($M = 739.07, SD = 102.34$) and the neutral condition ($M = 743.29, SD = 96.44$) or between the morbid curiosity condition ($M = 739.07, SD = 102.34$) and baseline ($M = 704.40, SD = 91.1$), mean R-R was significantly higher during the neutral condition ($M = 743.29, SD = 96.44$) as compared to baseline ($M = 704.40, SD = 91.1$).

Aim 2: Heart Rate Variability, Morbid Curiosity Induction, and Learning

Linear regression analyses were used to assess the relationship between HRV during the morbid curiosity induction (i.e., true crime documentary), participants' curiosity ratings, and learning. Of the 80 participants who were recruited for this study, 54 were included in the following analyses. A linear regression investigating the relationship between HRV (mean R-R), curiosity, and learning in the lab (i.e., the day of task administration) was not significant, $R^2 = .0155, F(2, 63) = .496, p > .05$.

Of the 80 participants who were recruited for this study, 54 completed the entirety of the study including the memory recall task (one week follow-up). Of those 54 participants, nine did not have completed HRV data due to data loss, so 45 participants were included in the following analysis. A linear regression investigating the relationship between HRV (mean R-R), curiosity, and learning one week later was not significant, $R^2 = 0.0543, F(2, 44) = 1.26, p > .05$.

CHAPTER IV:

DISCUSSION

The current study investigated the psychophysiological correlates of morbid curiosity with the use of heart rate variability (HRV), self-reported morbid curiosity, and a morbid curiosity induction. Overall, the current study found no significant relationship between the psychophysiological marker HRV and morbid curiosity (Aim 1A and 1B), nor did the current study find morbid curiosity or HRV to be significant predictors of learning.

More specifically, Aim 1A of the study was to determine if there was a relationship between HRV and self-reported morbid curiosity. The current study found no significant correlation between self-reported morbid curiosity and HRV, neither at baseline nor during the completion of the Morbid Curiosity Scale. These findings suggests that trait morbid curiosity does not affect one's baseline HRV or cause physiological arousal. These findings are inconsistent with a study that found that participants with high CAME scale scores were more physiologically aroused, as indicated by the SCR during the presentation of videos containing unpleasant content (Pinkerton & Zhou, 2008).

Aim 1B of the study was to assess the relationship between morbid curiosity condition and the neutral condition in the morbid curiosity induced task. There was an indication of a significant difference between all three conditions (baseline, morbid curiosity condition, and neutral condition), driven by the neutral condition. Participants were no more affected by the morbid curiosity condition than by the neutral condition. Both conditions were revealed to be equally stimulating. Mean R-R interval of HRV during the neutral condition was found to be significantly higher than HRV at rest. The informative documentary during the neutral condition saw more physiological arousal

than during baseline. These findings are inconsistent with a study that participants visually exposed to morbid content reported an increase in HF power and a decrease in LF/HF ratio (Sokhadze, 2009).

Aim 2 was to examine the relationship between induced morbid curiosity, participants' curiosity rating, and learning, indicated by the memory recall task. The linear regression found that the relationship between HRV (mean R-R), curiosity, and learning in the lab was insignificant. HRV and curiosity were not found to be significant predictors of learning, neither immediately after exposure to a morbid curiosity induction nor one week later. Learning is not predicted by self-reported curiosity ratings or physiological correlates (HRV) during the in-lab questionnaire given the same day of the true crime documentary exposure and during the memory recall task, a week later from initial in-lab visit. These findings were inconsistent with a study that found that individuals have a greater chance of recalling information and greater reward anticipation due to curiosity if content was positive compared to negative (Marvin and Shohamy, 2016).

Study Limitations

One major limitation for the current study include the failure to reach the target sample size. Eighty participants were recruited, but 28 were dropped because of inadequate collection of HRV data due to data recordings not transferring correctly from HRV Logger software and participants not following pre-study instructions. Moreover, the sample of participants were predominately female during data collection and the average age for participants was 24.3, therefore we could not explore gender differences. Moreover, given the unexpected data loss, the sample size was smaller than expected and may not provide enough power to yield reliable results. Another major limitation was attentiveness during the study. Participants' attentiveness could have been an issue

because some participants were not notified before watching the documentaries that they would be completing questions afterwards, while others were notified beforehand. Moreover, the informative documentary for the neutral condition was designed not to pique too much interest but produced the opposite effect, as evident in HRV results.

Suggestions for Future Research

The current study contributes to the growing literature of better understanding the connection between morbid curiosity and the psychophysiological correlates of the body. Future research should include a more thorough investigation of HRV measures including LF power, HF power, LF/HF ratio, and other time-domain measurements (SDNN, RMSSD, pNN50). Time-domain analyses measures variations in heart rate over longer periods of time and correlates to PNS input. Future research studies should study further into gender differences and the engagement with true crime and other morbid content. Further research on other psychophysiological correlates such as EEG data to better assess morbid curiosity and brain waves. To assure participants' attentiveness, notify participants that they will be answering questions before viewing documentaries or any other media in the study. Finally, a larger sample size would be recommended to increase power levels of all analyses. Due to the limited research and findings inconsistent from what has been previously reported in the literature, the current study calls for the continuous investigation to better understand morbid curiosity and how it affects the brain and behavior.

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APPENDIX A:

MORBID CURIOSITY SCALE USED IN SCRIVNER ARTICLE (2021)

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I would not be interested in touring a house where a serial killer murdered his victims.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think the supernatural is an interesting topic.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would be curious to see how an autopsy is performed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would be interested in seeing a new horror movie.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If a famous killer published a book about his life, I would be interested in reading it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would not want to own a human skull under any circumstances.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Under no circumstances	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

would I be interested in seeing a video of a person being killed.							
I would be interested in learning about shrunken heads.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am curious about crime and enjoy reading detailed news accounts about murders and other violent crimes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would be interested in seeing how limb amputation works.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would never be interested in visiting a place that is supposed to be haunted.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would not want to look at a serious injury like a gunshot wound.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would never be interested in visiting where many people were murdered.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would be interested in	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

interviewing a serial killer.							
If there was a fatal car wreck on the side of the road and the police were already present, I would try to catch a glimpse of the body.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find the Occult interesting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am curious about the different ways people can die.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would never want to watch a major surgical operation being performed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would be interested in attending an exorcism.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would be curious to see what some toxic substances do to the body.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I came across a video of a gruesome murder online, I would be curious enough to click on it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I am not interested in seeing what kind of damage a grenade would do the human body.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I lived in Medieval Europe, I would in interested in attending a public execution.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find crime shows interesting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>