

UNIVERSITY OF CENTRAL OKLAHOMA

Edmond, Oklahoma

Jackson College of Graduate Studies

Life History Strategy and Anxiety during the COVID-19 Pandemic

A thesis submitted to the graduate faculty in partial fulfilment

of the requirements for the degree of

MASTER OF SCIENCE IN PSYCHOLOGY

By

Ambré N. Chambers

Yukon, Oklahoma

2022

Life History Strategy and Anxiety during the COVID-19 Pandemic

Life History Strategy and Anxiety during the COVID-19 Pandemic

Thesis Title

Ambre N. Chambers

Author's Name

May 2, 2022

Date

Jackson College of Graduate Studies at the University of Central Oklahoma

A THESIS APPROVED FOR
Master of Science in Psychology

By

Tephillah Jeyaraj-Powell Digitally signed by Tephillah Jeyaraj-Powell
Date: 2022.05.02 12:56:52 -05'00'

Committee Chairperson

Leeda Copley Digitally signed by Leeda Copley
Date: 2022.05.02 13:19:05 -05'00'

Committee Member

J. Adam Randell Digitally signed by J. Adam Randell
Date: 2022.05.02 13:01:50 -05'00'

Committee Member

Life History Strategy and Anxiety during the COVID-19 Pandemic

Abstract

Life history theory (LHT) describes how animals evolve to maximize reproductive fitness in relation to their environmental conditions. Species fall along a continuum based on whether they tend towards a slow life strategy or a fast life strategy. A key factor that underlies the strategy adopted is the uncertainty of the environment (stable and predictable or uncertain and hostile). The COVID-19 pandemic has been an unprecedented event producing very high levels of uncertainty on a global scale and consequently, varying levels of anxiety in individuals. The goal of this study was to determine whether life history strategy can be used to predict individuals' experiences of anxiety during the pandemic. It was hypothesized that slow life strategists would experience more anxiety due to the unprecedented nature of the pandemic compared to fast life strategists who are more used to uncertain environments. Participants were first assessed on their life history strategy. An experimental manipulation was used to prime half of the participants to engage in thoughts about the COVID-19 pandemic while the other half experienced a calming stimulus. State and trait levels of anxiety were measured subsequently. Hierarchical multiple regression was used to analyze the relationship between the variables. It showed that while everyone who experienced the COVID-19 prime had higher scores on the state anxiety scale, slow life strategists were less stressed in this condition compared to fast life strategists. No interaction effects were observed. While the results did not appear to support the research hypothesis, there was an overall relationship between LHT and anxiety. These findings contribute to the life history theory framework being developed as a model to explain human behavior in the context of evolutionary psychology.

Keywords: life-history theory, fast life strategists, slow life strategists, anxiety, stress

ACKNOWLEDGMENTS

First of all, I would like to say a special thank you to my advisor, Dr. Tephillah Jeyaraj-Powell. I know it's been a rough road but your confidence in me and encouragement kept me going, even though a pandemic. In you I know I have not only a mentor but also a friend, someone who really understands me. You always push me to be my best self and I am so thankful for you. Also, I would like to thank my committee members, Dr. Adam Randell and Dr. Leeda Copley, for their wisdom and input on this project. This venture would never have been possible without both of you and your guidance. Dr. Copley, your outside perspective made my writing clear and concise, and you always made me laugh even when I wanted to cry. To Dr. Randell for making sense of hierarchical regression, (whatever that is, I still think you made it up). I also want to thank all my wonderful teachers that guided me during my career at UCO; of course, Dr. Gabriel Rupp, you were an amazing mentor to me. When I felt I was crazy because something about psychology didn't make sense, you would assure me that I was completely sane and tell me a new area of psychology I fit into perfectly. Dr. Rob Doan (you can't have the yin without the yang), you taught me that the world is just our perception and each one of us lives in a completely different one. Dr. Mickie Vanhoy, man you were tough, but I loved every minute, you gave me the passion for psychological research that led me down the path that I'm on today. And last but never least, Dr. Nora Gayzur, you were like the cool aunt or the awesome big sister. There was never a doubt in my mind you had my back, you may kick my rear end all the way to the finish, but you were always there.

My lab mates and PI at OMRF have also made a huge difference to me during this whole process. Dr. Hal Scofield took a chance to hire a psychology major when I'm sure there

were plenty of biologists that would have killed to work for him. Drs. Biji Kuren, Kristi Kolech, and Valerie Lewis along with Josh Calvert, MS have always been patient and encouraging with me though I'm sure there were times I could be quite frustrating. Finally, Martha Tsaliki and Christina Bruxvoort, we have learned together at times and you have taught me at others, but I am so blessed to have you ladies as my friends.

Finally, to my family who has encouraged me every step of the way. Connor, Jason, I hope you boys know that I did all of this for you and on the days, I thought I couldn't go on I would look at you both and knew that I wanted better for you. You two are my world. Pat, you have held my hand and kept my chin up through the muck, you fought next to me on my good days and fought for me on my bad, thank you for standing by me through all of this. Mom & Don, Dad & Peanut, I hope I was able to make you proud, it was because of the person you raised me to be that I was able to accomplish this. Every ounce of strength I have was given to me by you.

TABLE OF CONTENTS

List of Figures.....	7
List of Tables.....	8
Chapter 1: Introduction.....	9
Chapter 2: Methods	22
Chapter 3: Results.....	26
Chapter 4: Discussion.....	32
References	37
Appendix A: Demographic Characteristics of Participants.....	45
Appendix B: Informed Consent Form.....	46
Appendix C: Demographics Questionnaire.....	48
Appendix D: The Mini K	49
Appendix E: The State Trait Anxiety Inventory	51

LIST OF FIGURES

Figure

1. Relationship between life history strategy and anxiety during the pandemic21
2. Schematic diagram of the experimental procedure25
3. LHS and COVID condition as predictors of state anxiety29
4. LHS and COVID condition as predictors of trait anxiety31

LIST OF TABLES

Table

1. Cronbach's alphas for the Mini-K, STAI-State, and STAI-Trait26
2. Hierarchical regression model of predicting state anxiety28
3. Hierarchical regression model of predicting trait anxiety30

Life History Strategy and Anxiety during the COVID-19 Pandemic

CHAPTER 1

Introduction

The sudden emergence of the SARS-CoV-2 or COVID-19 virus in late 2019 and its rapid global spread in 2020 placed significant physical, mental, and economic strains on people everywhere. The current pandemic provides a rare, real life, context to examine whether life history theory (LHT) can predict how people will respond to the anxiety produced during this time of uncertainty, especially with the additional risks of prolonged health problems and death. Life history theory describes how individuals adapt to their changing environmental conditions to maximize their reproductive fitness. Strategies range on a continuum from fast life to slow life which in turn are influenced by the uncertainty and harshness of the environment.

The first part of this chapter begins with a description of life history theory in the frameworks provided by both evolutionary biology and evolutionary psychology. This is followed by a review of the current research relating life history strategy (LHS) to specific psychosocial variables. The second part of this chapter provides a description of some of the circumstances around the COVID-19 pandemic, and how these affected people globally and individually, especially with regards to fear, stress, and anxiety. The third section presents a new study that looks at the relationship between LHS and anxiety in the context of the COVID-19 pandemic.

Life History Theory

Originally developed in the framework of evolutionary biology, life history theory in very simplistic terms seeks to explain reproductive behaviors based on environmental factors such as the availability of resources and the risk of predation. There are two basic groups that species generally fall into that describe their habits but there also can be variation within the species as a whole. Mortality of the species based on environmental cues will determine if they spend more energy investing in the quantity or the quality of their offspring (McArthur & Wilson, 1967; Wilson, 1975). The two groups are r-selected species or fast life strategists (FLS) and K-selected species or slow life strategists (SLS). The r-selected species tend to reside in environments that are uncertain and hostile. Individuals in these species adopt a faster reproductive strategy that is focused on having as many offspring as possible ensures the passing on of their genes successfully to the next generation. Such species reach sexual maturity sooner, reproduce often, have larger numbers of offspring, show little to no parental investment, and average a shorter lifespan. K-selected species live in more stable environments where there is a less imminent threats to survival. Stable or predictable environments allow some species to be able to invest in more somatic (investing resources into longevity) efforts instead of purely the propagation of the species (McArthur & Wilson, 1967; Wilson, 1975).

Even though life history theory is traditionally applied to a whole species, scientists are interested in examining individual differences within species. There has been evidence of these differences seen in many species (Figueredo et al., 2005) from dandelions to field mice depending on the environmental pressures experienced by the individuals. In humans, this can be witnessed in the demographic transition model. This theory states that as mortality rates decline so do fertility rates, both of these being tied to the economy (Lee, 2003). In the 1700s

when the life expectancy was only 27 years globally, the fertility rate was 6.0 births per woman. These rates can be explained by high poverty as well as increased violence which led to high mortality, especially during infancy. The uncertainty of how many of one's progeny would reach adulthood led families to have multiple children in hopes that at least some would survive. A similar trend continued into the 1950s with only a slight increase to 47 years as the life expectancy and lowered fertility rate of 5.0 births. However, a significant jump occurred in 2000 when the global life expectancy jumped to 65 and the average fertility was 2.7 births per female.

These trends tell a much different story when looking at only westernized cultures. Culturally, westernized populations see more stable modernization leaving more available resources to devote to progress and less need to procreate early as mortality reduces (Kelly & Cutright, 1980). With the reduction in mortality rates, there is reduced need to have large numbers of children as most survive to maturity. However, this is not the case in poorer or less developed countries as these cultures have not had important developments that would hold this trend. For example, many poorer countries have little to no family planning leading to higher birth rates (Kelly & Cutright, 1980) but this could also be due to cultural belief systems.

Human life-history strategies appear to be far more complex and varied than what is seen in other species even when taking modernization into consideration. While many other species have shown cultural traits, the integral role of culture is somewhat unique to humans (Laland & Hoppitt, 2003). Cultural aspects that can be witnessed in slow life strategists (SLS) include saving for the future, furthering education, adherence to laws and other social standards, investing in their health, as well as the use of contraceptives (Brumbach et al., 2009). Overall, humans are considered a K-selected species (slow life); however, there is significant

variation within the species due to condition-dependent adjustments like biological, behavioral, and cultural aspects of individuals' environments (Brumbach et al., 2009). The biological and behavioral aspects that characterize slow life strategists (SLS) in humans are similar to the classical view of K-strategists with a longer life span, more parental investment, fewer offspring, and future planning.

It is strongly assumed that one's LHS is developed in childhood and begins to be expressed during adolescence (Brumbach et al., 2009; Gibbons et al., 2012; Griskevicius, Delton, et al., 2011; Griskevicius, Tybur, et al., 2011; Mittal & Griskevicius, 2014). Consequently, environmental cues that are present in early life are subconscious indicators of one's expected morbidity and mortality, possibly leading individuals to make visceral decisions about their future. Harsh and unpredictable environments such as those high in violence (Brumbach et al., 2009) and discrimination (Gibbons et al., 2012), those that lack resources (Griskevicius, Tybur, et al., 2011), and even the absence of a biological father in the household (Ellis, 2004) may indicate that it is more beneficial to grow up faster and reproduce more quickly than it would be to invest in oneself.

Unpredictable environments are highly detrimental to the individual because they could potentially cause errors in judgment and decision making and, therefore, suppress the ability to effectively escape adverse situations (Mittal & Griskevicius, 2014). Over time, this can lead an individual to lose their sense of control over their circumstances and eventually cause the development of coping mechanisms that are disadvantageous to stable environments, such as being more impulsive according to the research. However, when a child that grew up in an environment that was stable and predictable, encounters a situation that is out of their control,

they were more likely to plan strategies that delay immediate gratification and invest in obtaining long term goals (Mittal & Griskevicius, 2014).

The effect of LHS on impulsive behavior also has implications for differences in risk-taking strategies. For example, differences were observed in relation to risk-taking behaviors and mortality cues (Griskevicius, Tybur, et al., 2011). When primed with mortality cues, those who had grown up poor were more likely to take bigger risks hoping for a larger payoff compared to those who had a higher socioeconomic status during childhood who opted for a less risky and lower payoff. Interestingly, the high-risk strategy exhibited by FLS occurred despite their current socioeconomic status. Thus, an important aspect that needs to be taken into consideration is that actual childhood socioeconomic status does not matter as much as the perception of being poor (Griskevicius, Delton, et al., 2011). For example, if one grew up in a higher socioeconomic area but was considered poor by the standards of those around them, then they would develop a perception of being underprivileged and could be more likely to develop a fast life strategy later on in life. However, this was not directly tested and therefore more evidence is needed in this area before firmer conclusions can be drawn.

Life History Theory, Personality, and Psychological Disorders

Life history strategy can be observed in psychological areas other than risk-taking behaviors. However, there does not appear to be a consensus in the literature regarding the relationship between LHS and psychopathy. For example, various researchers have attempted to link LHS with personality traits. One study found that those who tested as K-selected (or slow life strategists) also had low scores for traits that were associated with psychoticism and neuroticism (Figueredo, 2005). Additionally, traits such as risk-taking strategies, boldness, and impulsivity seemed to be related to psychopathic attitudes. It has also been suggested that

psychoticism could be predicted by LHS when sociopaths are created in certain “varying environmental circumstances” (Mealey, 1995). This follows the belief that there are two distinct types of psychopaths (referred to as sociopaths in the text) who are genetically predisposed to lack emotional response to situations. The individuals that become violent do so because of the harsh environments in which they were raised. Psychopathy is thought to emerge as an adaptive response and counter measure to environmental stress (Mealey, 1995). Researchers such as Figueredo et al. (2004) discuss genetic factors of LHS and the likelihood of reproducing with those whose LHS is very similar to one’s own, which strengthens the genetic expression of specific genes (Figueredo & Wolf, 2009). Therefore, one must consider a multitude of factors contributing to LHS and in turn psychopathy. However, others argue that there is no correlation between LHS and psychopathic attitudes (Gladden et al., 2009). They claim that some traits such as short-term mating strategies are consistent with fast LHS, but these are not definitive of psychopathic attitudes.

A personality disorder that is correlated with LHS is obsessive-compulsive personality disorder (OCPD). Those with OCPD frequently experience intense anxiety, delayed gratification, social avoidance, and risk aversion among other traits. If psychopathy is related to the extreme end of the fast life continuum (Figueredo et al., 2004, 2005, 2007; Figueredo & Wolf, 2009), then OCPD would be related to the slow life end of the continuum (Hertler, 2016).

Other psychological disorders have also been grouped into categories that would be typically expressed in slow life or fast life strategists. For example, one study found a link between borderline personality disorder in women and a tendency for FLS (Brüne et al., 2017). Behaviors included seeking short term mating partners, increased risk taking, and less parental investment. LHS has possible links to the likelihood of presenting disorders such as

schizophrenia (potentially more likely in FLS), autism (possibly more likely in SLS), and eating disorders (potentially more likely in FLS) (Del Giudice, 2014). However, these have yet to be tested.

The literature discussed thus far establishes a relationship between life history strategies and several psychological disorders. This next section will focus on the COVID-19 pandemic situation and its negative impact on most of humanity.

The COVID-19 Pandemic

Depression, stress, and anxiety due to the circumstances surrounding the pandemic reached all-time highs for many populations. Circumstances included the shutdowns and social isolation measures implemented by many localities which experts predicted would produce severe psychological effects (Brooks et al., 2020; Sood, 2020). Shortages of basic goods from individuals stockpiling caused anxiety and further panic-buying among consumers (Macias, 2020). Constant updates flooded the news and media with differing opinions and worst-case scenarios (Shalvee, 2020). Individuals were encouraged to only leave the house for absolute necessities and to distance themselves from anyone outside their immediate household.

Economic factors also contributed to the psychological problems experienced by many people. The shutdown of businesses negatively impacted the economy causing many to lose their livelihoods. Unemployment rates skyrocketed from 3.5% and 5.8 million in February of 2020 (Bureau of Labor Statistics, 2020b) to 14.7% and 23.1 million Americans unemployed by April 2020 (Bureau of Labor Statistics, 2020a). This was the largest over-the-month increase in unemployment in the history of the U.S. Department of Labor (Bureau of Labor Statistics, 2020a). Those who did maintain their jobs were compelled to find creative ways to work from home while those whose jobs were deemed “essential” were forced to put themselves and

others at risk. All of these circumstances along with the fear of death of oneself, a family member, or a close friend if they were to catch this virulent virus caused a predictable increase in symptoms of anxiety (Barzilay et al., 2020).

There are several ways that individuals dealt with the spread of COVID-19. Some people chose to follow strict social isolation by avoiding physical contact with anyone outside their immediate household, going out only for necessities, wearing a mask when in contact with others or in public, constant handwashing, sanitizing, and keeping at least six feet between themselves and others. Others adopted less stringent measures and some none at all. The global pandemic was an unprecedented situation for many people and the lack of consistent and established information contributed to the differences in how people perceived and responded to the outbreak, one of the common responses being anxiety.

Anxiety during the Pandemic

In the *Diagnostic and Statistical Manual of Mental Disorders (DSM) V* (American Psychiatric Association, 2013), anxiety encompasses several disorders that range from panic disorder to obsessive-compulsive disorder, but all seem to share a common factor, which is the fear of not being in control. This process starts as fear from a threat in a situation, the definition of stress, but as the threat or fear is prolonged it can become an anxiety disorder. The American Psychological Association (APA) describes anxiety as being advantageous in evolutionary terms since it aids in survival (American Psychiatric Association, 2013). Arousal and the biological response it propagates increase the chances of escape in life-threatening situations (Nesse, 1999). However, it becomes a disorder when it is constant and uncontrollable, causing disruptions to one's life (Parekh, 2017).

Research into the psychological effects of the COVID-19 pandemic is relatively new and ongoing. However, there is data regarding how people are impacted from research conducted on other outbreaks in recent years such as H1N1 influenza, Severe Acute Respiratory Syndrome (SARS-COVI-1), and Middle East Respiratory Syndrome (MERS). Like the current COVID-19 pandemic, during the MERS outbreak (from 2012 to 2015), those that were infected, in contact with those infected, or thought they could be infected were asked to quarantine for two weeks in response. A study of those that were in isolation and followed-up four and six months later showed that 7.6% of the participants exhibited symptoms of anxiety disorder (referred to as anxiety from here forth) during quarantine with 3.0% continuing to have symptoms up to six months later (Jeong et al., 2016). The main causes of anxiety included inadequate supplies, social networking, and financial loss due to isolation. The SARS outbreak in 2003 killed more than 900 people and infected more than 8,000 worldwide in just a few short months (World Health Organization, 2020). One month after discharge from a medical facility or hospital, patients were given the Impact of Event Scale-Revised and Hospital Anxiety and Depression Scale and it was found that 10-18% showed symptoms relating to PTSD, anxiety, and depression (Wu et al., 2005). Psychological effects of this nature were also seen during and after the 2014 Ebola outbreak in Sierra Leone (Waterman et al., 2018).

In early 2019, reports stated that the levels of anxiety for the average person in China were around 4%; however, this increased to around 20.4% in February of 2020 during the midst of the quarantine (Li et al., 2020). A similar study in Italy during March and April of 2020, as the country entered its lockdown phase, showed that perceived lack of freedom would increase symptoms of anxiety and that 32.1% of participants experienced high anxiety (Casagrande et al., 2020). A survey of an Indian population found that the lack of social contact

and increased media exposure had a negative impact during COVID-19 quarantine with 50% of the participants reporting symptoms of anxiety and depression (Sharma et al., 2020). In the United States, New York City was one of the first areas to go into a lockdown phase in early March of 2020 (Rosen et al., 2020). During this time, most of the rest of the country was still conducting business as usual. Of those interviewed, there seemed to be no difference in the level of stress observed dependent on the level of days in quarantine. The average person reported moderate levels of anxiety but 24.8% reported high levels of anxiety that made functioning difficult (Rosen et al., 2020). Overall, stress from the loss of freedom, death of loved ones, uncertainty for the future, and the fear of contagion was shown to create psychological instability along the lines of PTSD, clinical depression, and severe anxiety (Sood, 2020; Brooks et al., 2020).

The data so far show that stress and anxiety seem to be common responses to the pandemic. However, there are variations in the levels experienced and the responses to anxiety. The present study proposes that life history strategy could be a possible explanation for why people may vary in their experience of and or response to anxiety. This next section will discuss the relationship between LHS and anxiety, particularly in the context of the current COVID-19 pandemic.

The Present Study

Pervasive anxiety has become one of the leading mental illnesses in Americans, with reported rates increasing a whole standard deviation from 1952 to 1993 (Twenge, 2000). Symptoms such as feeling of nervousness or apprehension, having a sense of impending danger, restlessness or irritability, trouble concentrating and hypervigilance, and excessive worry beyond what is necessary for the current danger or threat are all indicators of an anxiety

disorder (American Psychiatric Association, 2013). This drastic increase in the levels of anxiety over a short time period appears to indicate environmental effects more than heritability, indicating that the original purpose for stress and anxiety is misplaced in the current environment (Twenge, 2000). Today's anxiety appears to be more correlated with low social connectedness than high environmental threat (Twenge, 2000).

Typically, an SLS would be more concerned with longevity and success versus mortality; however, if events in the SLS's life fail to equate to their perceived expectations, then internal conflict could occur. This conflict induces anxiety when inconsistencies exist between one's beliefs about how things should be and how things transpire. If anxiety serves to protect us from threats in the environment, then increased internal personal conflict would increase this response when an individual who leans more to the slow life end of the continuum feels that their future is threatened (Bateson et al., 2011). Recent events involving the worldwide pandemic of COVID-19 would meet the criteria for this type of response.

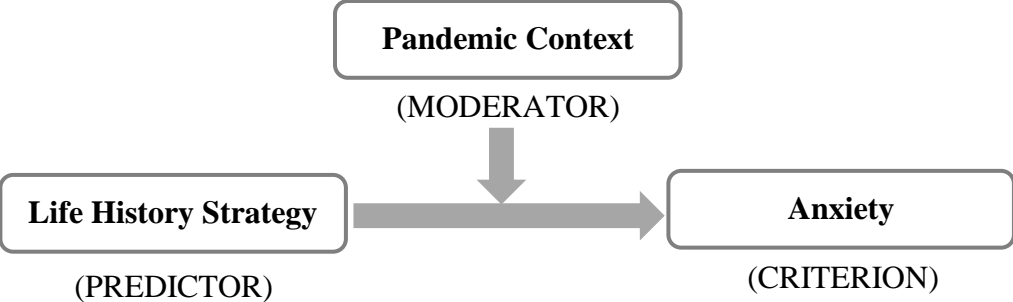
As discussed earlier, anxiety most likely provides an adaptive advantage especially from the perspective of the slow life strategists (Hertler, 2016; Bateson et al., 2011). If a person is faced with sudden uncertainty for the future and a dramatic change in their environment, then anxiety ensues. A lack of information may further lead one to become distressed and left with feelings of helplessness (Huremovic, 2019). SLS attempt to increase their quality of life and plan in advance but in situations like disasters, the outcome is often unpredictable. It can be assumed that such a disaster would leave them in a state that is not under their control. In theory, these persons would already have plans in place for unprecedented circumstances, but these may not always be sufficient.

There are certain factors that could be used as predictors of anxiety. One such factor was socioeconomic status, where those who had fewer resources became more anxious about future outcomes (Lei et al., 2020). A study involving a population in southwestern China found that 8.3% of the 1,593 participants studied showed symptoms of anxiety and the level of anxiety correlated with the average household income, with the lower income indicating higher anxiety levels (Lei et al., 2020). This would indicate that those with a fast life strategy are more susceptible to anxiety since FLS tend to have lower socioeconomic status. It is assumed this would be inconsistent with what we know of anxiety; however, as anxiety tends to be due to feelings of being out of control and FLS are theoretically raised in this environment, it makes them more likely to be able to adapt.

The goal of this present study was to determine the extent to which life history strategy could be used to predict the level of anxiety experienced by individuals during a pandemic. According to evolutionary theory and the psychological definition of anxiety, anxiety would be a response reserved for when one is used to being in control of a situation but suddenly finds oneself unable to assert this control. Anxiety, therefore, would be more intensely experienced by SLS as they are accustomed to planning for the future and a pandemic would leave them in a situation of uncertainty. Further, FLS are raised in environments that are far less predictable and would be expected to be less anxious than SLS, i.e., possibly desensitized to the uncertainty. Therefore, it was hypothesized that those who showed a tendency toward SLS would show heightened levels of anxiety in reaction to the COVID-19 pandemic compared to those who fell on the FLS side of the continuum. Figure 1 depicts the relationship between variables explored by this study.

Figure 1

Relationship between Life History Strategy and Anxiety during the Pandemic



CHAPTER 2

Methods

Approvals for participant recruitment, data collection tools, and procedures were obtained from the Institutional Review Board of the University of Central Oklahoma, prior to conduction of the study.

Participants

Participants were students (18 years and older) recruited from the University of Central Oklahoma through a university-wide email blast. A statistical power analysis indicated a sample size of 400 students was required to produce medium effect size. Despite conducting two rounds of data collection (during the period of November 2021 to April 2022), only 327 responses were obtained. Furthermore, after eliminating the mostly incomplete surveys, only 38 completed and another 48 useable surveys remained for analysis, bringing the final participant count to 86.

Most of the participants were female (79.1%), predominantly Caucasian or white (68.6%), and fell in the 20-29 year age range (57%). These percentages were in the range for the expected demographic characteristics of the student population at the University of Central Oklahoma, a medium-sized, regional, metropolitan university. Regarding their perceived socioeconomic status, a majority reported this to be “average” (45.3%), with very few individuals reporting the extremes of “very poor” or “very wealthy”. A more detailed breakdown of demographic characteristics is presented in Appendix A.

Apparatus & Materials

Qualtrics®

This survey program was used to administer the informed consent (see appendix B), questionnaires, experimental manipulation, and scales. Individuals could participate only once and had to complete the study in one sitting.

Demographics questionnaire

This included four questions about age, sex, race, and perceived socioeconomic status. (See Appendix C for the questionnaire)

The Mini-K

This assessed human life history strategy (Figueredo et al., 2014) by requiring participants to rate twenty statements on a 7-point scale ranging from “Disagree Strongly” to “Agree Strongly”, with “Don’t know/ Not Applicable” in the middle. Scores indicated where participants fell on the LHS continuum. A higher the score on the Mini-K indicated a tendency to be more a slow life strategist. (See Appendix D for the scale)

State-Trait Anxiety Inventory (STAI)

This measured anxiety as a state and anxiety as a trait (Spielberger et al., 1983). Participants responded to twenty statements describing how they felt currently (the state part) and how they generally or usually felt (the trait part). Ratings were made on a 4-point scale varying from “Not at all” to “Very much so”, and from “Almost never” to “Almost always” for the state and trait statements, respectively. Higher scores indicated more anxiety. (See Appendix E for the inventory)

Video clips

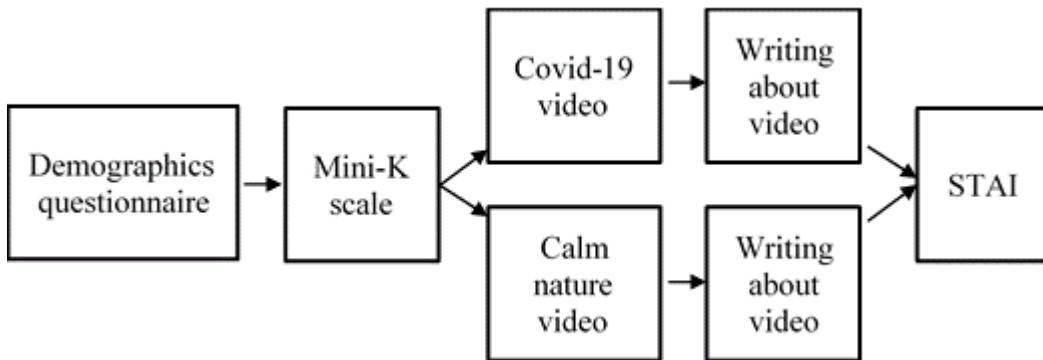
The experimental manipulation involved the viewing of either a 5-minute video clip of news clips related to the COVID-19 pandemic (CNBC Television, 2020; South China Post, 2021) or a 5-minute video clip of nature with relaxing music (Cat Trumpet, 2019). The video clips were selected and edited to prime the participant prior to the assessment of anxiety.

Procedure

The entire procedure was completed online through Qualtrics® (Figure 2 presents the sequence of measures completed). The study link with instructions was sent out through a university-wide email blast. Upon clicking the link, participants first saw a statement of informed consent. Once consent was digitally signed, the demographics questionnaire was presented, followed by the Mini-K. Next, participants were randomly assigned to either the control or the experimental condition. In the control condition, they watched a 5-minute video with content that was calming or relaxing. In the experimental condition, participants watched a 5-minute video consisting of news clips about the COVID-19 pandemic. After watching their respective video clips, each participant was asked to write a short paragraph of approximately 100 words about their thoughts on the video and how it made them feel. The experimental manipulation was done to increase anxiety levels in some participants (the experimental condition) while calming anxiety in others (the control condition). Finally, participants completed the state part of STAI followed by the trait part of the STAI. They were debriefed regarding the purpose of the study before they exited the Qualtrics survey.

Figure 2

Schematic Diagram of the Experimental Procedure



Data Analysis

The raw data was exported from Qualtrics® to Microsoft Excel®, cleaned, sorted, and coded, then imported into IBM SPSS® 24 software for statistical analysis.

CHAPTER 3

Results

While a total of 327 participants went to the Qualtrics® site for this study, only 34 participants completed all measures including the two parts of the experimental manipulation (watching 5 minutes of the video and writing 70-100 words on their thoughts of the video). Another 52 participants completed all measures and watched the video but didn't write enough to meet the word count. An analysis of the scores on the STAI for both sets of samples indicated similar scores on these measures. It was decided to include these 52 participants in the overall data analysis. Altogether, there were 46 individuals that experienced the experimental (COVID) condition and 40 who experienced the control condition bringing the total sample size for this study to 86.

Reliability tests were done on the Mini-K, the STAI-State, the STAI-Trait to ensure that the smaller sample sizes would not compromise the internal consistency of the measures. Cronbach's alpha scores stayed within the acceptable range. Results before and after the combining of the data sets is presented in Table 1.

Table 1

Cronbach's alphas for the Mini-K, STAI-State, and STAI-Trait

Measure	Item Count	Sample with completed data (N=38)	Sample including those who did not complete the manipulation (N=86)
Mini-K	20	.928	.742
STAI-State	20	.710	.934
STAI-Trait	20	.942	.911

Regression Analysis

Two-step hierarchical regression analyses were conducted to evaluate the prediction of anxiety based on life history strategy (FLS or SLS) in the context of the pandemic (i.e., COVID or No-COVID condition). Results are presented separately for state anxiety (Table 2) and trait anxiety (Table 3).

State Anxiety

In step 1, the variables of LHS and COVID condition were entered into the analysis. The main effects of LHS and the experimental manipulation in model 1 were statistically significant $R^2 = .106$, $F(2, 83) = 4.925$, $p < .05$. LHS by itself, had a significant relationship with state anxiety ($\beta = -.205$, $p = .05$). The COVID video manipulation also made a unique, significant contribution to the prediction of state anxiety ($\beta = -.264$, $p < .05$). The main effects explained 10.6% of the variation in state anxiety.

A different outcome was found in step 2 after the interaction between the two variables was added to the analysis. The interaction between LHS and COVID condition was not significant ($\beta = .169$, $p > .05$); the results of the second model, therefore, did not indicate statistical significance, R^2 change = .01, $F(1, 82) = .966$, $p > .05$.

Simple slopes were explored to see if the relationships between the variables were in the predicted directions. Results are presented in Figure 3. In the control (No COVID) condition, LHS had no relationship with anxiety ($p > .05$). In the COVID condition, SLS had lower anxiety (i.e., the higher individuals fell on the slow life strategy end of the continuum, the lower the level of anxiety they tended to experience).

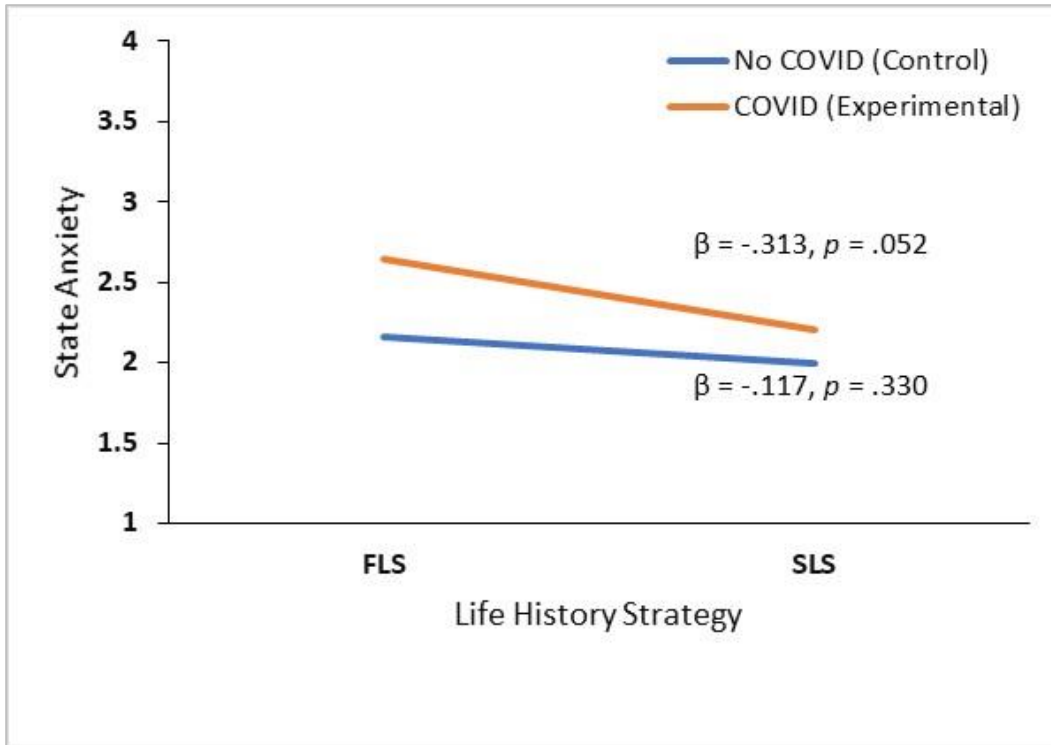
Table 2*Hierarchical Regression Model of Predicting State Anxiety*

Model	Variable	<i>R</i>	<i>R</i> ²	<i>R</i> ² <i>Change</i>	<i>b</i>	<i>SE</i>	β	<i>t</i>
1		.326	.106*	.106*				
	LHS				-.189	.096	-.205*	-1.970
	Condition_R				-.344	.135	-2.64*	-2.539
2		.341	.116	.010				
	LHS				-.313	.159	-.340*	-1.972
	Condition_R				-.345	.135	-.265*	-2.549
	LHS x Condition				.196	.199	.169	-2.546

Note. Higher scores on LHS indicates the slow life end of the continuum. The experimental manipulation Condition_R was dummy coded as 0 for the COVID condition and 1 for the control condition. Statistical significance: * $p < .05$

Figure 3

LHS and COVID Condition as Predictors of State Anxiety



Trait Anxiety

A similar two-step hierarchical regression analysis was conducted to examine the relationship between LHS, COVID condition, and trait anxiety. In the first step, results were not significant, R^2 change = .061, $F(2, 83) = 2.692, p > .05$. Exposure to the COVID manipulation by itself, did not significantly predict trait anxiety ($\beta = .003, p > .05$); however, there was a statistically significant main effect of LHS with regards to trait anxiety ($\beta = -.247, p < .05$).

The interaction between LHS and COVID condition was found to be not significant ($\beta = .157, p > .05$) and the addition of the interaction in the second step, predictably, yielded non-significant results, R^2 change = .009, $F(1, 82) = .785, p > .05$.

Simple slopes were once again analyzed to explore the directionality of the relationships between our variables. Results are presented in Figure 4. In the control condition, there is no significant difference between FLS and SLS with regards to anxiety ($p > .05$). However, in the COVID condition, SLS had lower anxiety than FLS ($p < .05$).

Table 3

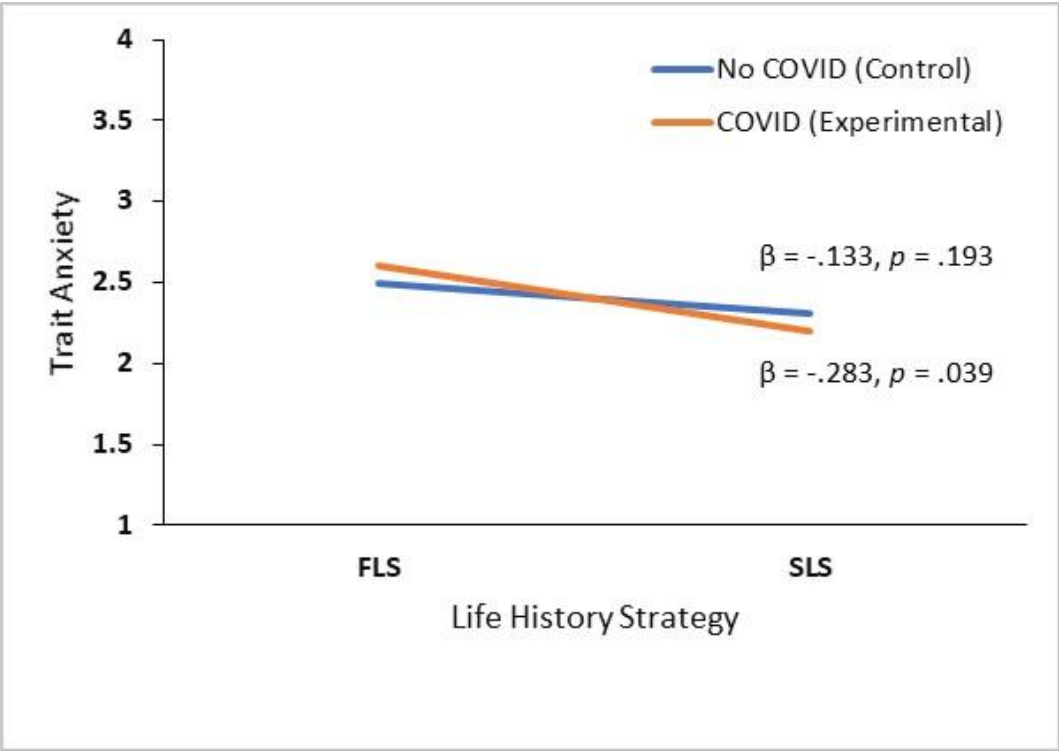
Hierarchical Regression Model for Predicting Trait Anxiety

Model	Variable	<i>R</i>	<i>R</i> ²	<i>R</i> ² <i>Change</i>	<i>b</i>	<i>SE</i>	β	<i>t</i>
1		.247	.061	.061				
	LHS				-.188	.081	-.247*	-2.316
	Condition_R				.003	.115	.003	.025
2		.264	.070	.009				
	LHS				-.283	.135	-.372*	-2.101
	Condition_R				.002	.115	.002	.015
	LHS x Condition				.149	.169	.157	.886

Note. Higher scores on LHS indicates the slow life end of the continuum. The experimental manipulation Condition_R was dummy coded as 0 for the COVID condition and 1 for the control condition. Statistical significance: * $p < .05$

Figure 4

LHS and COVID Condition as Predictors of Trait Anxiety



CHAPTER 4

Discussion

The purpose of this study was to examine whether the life history strategy of individuals could predict how they would experience anxiety in the context of the COVID-19 pandemic. It was hypothesized that those who were identified as SLS would show increased rates of anxiety after being primed about their experiences with news about the pandemic, compared to those who were FLS. This was based on the possibility that FLS who had much more experience with uncertain and stressful environments, would more easily adapt to the harsh economic and health conditions during the pandemic (Chua et al., 2016). It was expected that they would to some extent, be desensitized to the rapid and unforeseen events of the pandemic. Furthermore, due to the nature of SLS to want to plan for the future, it seemed reasonable to anticipate increased anxiety in this group in this unprecedented situation. However, our results were the opposite of what was hypothesized. They revealed that slow life strategists in fact reported lower anxiety scores after experiencing the COVID-19 experimental prime compared to FLS.

It can be argued that this finding may still be consistent with the framework of life history theory. Although not much previous research has looked directly at a relationship between life history strategy and anxiety, a recent study looked at how harsh environments (low socioeconomic status, family neglect, neighborhood crime) affected LHS which was then used to make predictions regarding various other variables (Chua et al., 2016). LHS showed a strong correlation with anxiety and perceived stress, with those on the fast-life end of the continuum reporting higher levels.

Two other related factors might also provide possible explanations for the results of our study: perceived self-efficacy and perceived self-control. Self-efficacy is described as the belief

one has in their own abilities to not only observe, but to shape their own environment (Maddux & Stanley, 1986). It has been shown that an individual's self-efficacy is established in childhood by the self-efficacy that is projected onto them by their parents (Bandura et al., 2001). The kind of childhood environment where parents are able to help establish a sense of security in the children at a young age would likely facilitate the development of a slow life strategy later on in life. Studies have indeed shown that SLS would have more access to resources and therefore increased self-efficacy and higher confidence in their own abilities because of their childhood (Boardman & Robert, 2000).

Self-control is described as the ability to manage one's actions (i.e., change, perform, or restrain behavior) in the pursuit of future goals (Baumeister et al., 2007). Good self-control is positively associated with adjustment, attachment, and emotional state, and has high adaptive value (Tangney et al., 2004). Baumeister et al (1994) suggested a link between self-control and the availability of resources, that is, with lower resources, there's lower self-control. While this was proposed in the context of energy resources, this can also be applied to other resources required for survival. In the context of the present study, if SLS generally have more resources, then they likely have better self-control, or at least perceived self-control.

In the social cognitive theory, Bandura (1988) discussed how self-efficacy and perceived control were related to anxiety. Those who believed in their own abilities and could therefore manage stressful events, experienced lower anxiety. This was also correlated with lower autonomic arousal and stress response. This is additionally supported by the LHT literature which found that when threatened, FLS report feeling less self-control compared to SLS (Mittal & Griskevicius, 2014).

It is possible that the slow life strategists in our study may have had higher self-efficacy and perceived control. Perhaps this arose from being able to wear masks, sanitize, maintain social distance, work from home, purchase food and goods online, and get the vaccines when they became available to the public. Thus, while the situation with the pandemic was filled with uncertainty and high levels of health risk, individuals who were more likely to fall on the slow-life side of the life history continuum maybe had better access to the options or behaviors that gave them a sense of control.

While we found moderate to strong main effects of LHS and the experimental manipulation in relation to state anxiety, we did not see a significant interaction. There did, however, seem to be a possible trend in the data with SLS reporting lower state anxiety than FLS in the COVID condition, but not in the control condition. A larger sample size could have produced more definitive results. With regards to trait anxiety, while SLS seemed to show lower scores than FLS, there was no significant interaction between LHS and whether participants watched the news video about the COVID-19 pandemic. This does fall in line with the argument that FLS are more likely to experience higher levels of anxiety in general due to the factors that contributed to their adopting a FLS in the first place.

Another factor that could have influenced our results is the timing of the study. By the time data collection was underway, we were over a year and a half into the pandemic (if we consider February/March 2020 the beginning in the United States). The level of uncertainty was especially high with reports beginning to spread globally at that time. By November 2021 (when data collection began), most people could have been possibly experiencing “pandemic fatigue” – a subjective feeling of tiredness from keeping up with the protective health measures (behavioral fatigue) and news about the pandemic (information fatigue) (Lilleholt et al., 2020).

It is not inconceivable that the anxiety levels of SLS may have been higher than what we measured, had the data been collected early on in the pandemic, when information was inadequate or inconsistent, and the news reported rapidly climbing infection and death rates all over the world.

Limitations

The most significant limitation of this study was participant attrition. Most of those who went to the Qualtrics® link, did not complete the study in its entirety. Completion rate was 11.6%. This severely reduced power and could possibly be a reason for the weak effect of the interaction obtained between our variables. We propose several reasons for the low completion rate, the first one being the length of the survey. On average, it took participants approximately 20 minutes to complete the study in its entirety. This included time spent watching a 5-minute manipulation video that they could not skip. To be able to keep participants interested, the ideal time to take a survey should only be about 5 minutes or around 10 questions (Chudoba, 2022). Around 73% of the participants did not do the written portion of the manipulation. With no external incentive to participate, many participants were not motivated to complete the study. Offering even a small monetary compensation could have increased the completion rate and our overall sample size of participants. Additionally, with the study being conducted online and not in a more controlled laboratory setting, there was no way to ensure that the participants actually viewed the video in its entirety or just let the video play without watching it. The Qualtrics® software did record how long the video had played for, which should have been 300 seconds (or 5 minutes). Many individuals also mentioned that the video links would not play for them, despite the researchers repeatedly testing the survey using different browsers and

computer systems and providing clear instructions. Since the study was online and anonymous, researchers were unable to troubleshoot any technical issues experienced by the participants.

Conclusion

Our study found that in assessing both state and trait anxiety, SLS were less anxious than FLS, but this difference was only seen when they had watched the video about the pandemic. To gain a better understanding of the mechanisms underlying the reason for why SLS had lower anxiety compared to FLS, future research could investigate the relationship between self-efficacy, perceived self-control, anxiety, and life history theory. SLS ought to be more anxious because they are more future-oriented and anxiety is a future-oriented condition, however they may also have a greater sense of perceived control, which may act as a protective factor. If we could have achieved the proposed power of the study and obtained more definitive results, the study would have made a valuable contribution to the growing body of knowledge on life history theory. Nevertheless, the obtained results do implicate important directions to explore to improve the predictive value of life history theory as a model for explaining human behavior.

References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). <https://doi.org/https://doi.org/10.1176/appi.books.9780890425596>
- Bandura, A. (1988). Self-efficacy conception of anxiety. *Anxiety Research*, 1:2, 77-98, DOI: [10.1080/10615808808248222](https://doi.org/10.1080/10615808808248222)
- Bandura, A., Barbaranelli, C., Caprara, G. V., & Pastorelli, C. (2001). Self-efficacy beliefs as shapers of children's aspirations and career trajectories. *Child Development*, 72(1), 187-206. <http://www.jstor.org.libproxy.uco.edu/stable/1132479>
- Barzilay, R., Moore, T. M., Greenberg, D. M., Didomenico, G. E., Brown, L. A., White, L. K., Gur, R. C., & Gur, R. E. (2020, 2020-12-01). Resilience, COVID-19-related stress, anxiety and depression during the pandemic in a large population enriched for healthcare providers. *Translational Psychiatry*, 10(1). <https://doi.org/10.1038/s41398-020-00982-4>
- Bateson, M., Brilot, B., & Nettle, D. (2011). Anxiety: An evolutionary approach. *The Canadian Journal of Psychiatry*, 56(12), 707-715. <https://doi.org/10.1177/070674371105601202>
- Baumeister, R.F., Heatherton, T.F., & Tice, D.M. (1994). *Losing control: How and why people fail at self-regulation*. San Diego, CA: Academic Press.
- Baumeister, R.F., Vohs, K.D., & Tice, D.M. (2007). The strength model of self-control. *Current Directions in Psychological Science*, 16(6), 351-355. <https://doiorg.libproxy.uco.edu/10.1111/j.1467-8721.2007.00534.x>

Boardman, J. D., & Robert, S. A. (2000). Neighborhood socioeconomic status and perceptions of self-efficacy. *Sociological Perspectives*, 43(1), 117-136.

<https://doi.org/10.2307/1389785>

Brooks, S. K., Webster, R. K., Smith, L. E., Woodland, L., Wessely, S., Greenberg, N., & Rubin, G. J. (2020). The psychological impact of quarantine and how to reduce it: Rapid review of the evidence. *The Lancet*, 395(10227), 912-920.

[https://doi.org/10.1016/s0140-6736\(20\)30460-8](https://doi.org/10.1016/s0140-6736(20)30460-8)

Brumbach, B. H., Figueredo, A. J., & Ellis, B. J. (2009). Effects of harsh and unpredictable environments in adolescence on development of life history strategies: A longitudinal test of an evolutionary model. *Human Nature*, 20, 25-51.

<https://doi.org/10.1007/s12110-009-9059-3>

Brüne, M., O, J., Schojai, M., Decker, C., & Edel, M.-A. (2017). Mating strategies and experience of early adversity in female patients with borderline personality disorder: Insights from life history theory. *Personality and Individual Differences*, 113, 147-154.

<https://doi.org/10.1016/j.paid.2017.03.024>

Bureau of Labor Statistics. (2020a, 05/08/2020). *The employment situation- April 2020*

https://www.bls.gov/news.release/archives/empsit_05082020.pdf

Bureau of Labor Statistics. (2020b, 03/06/2020). *The employment situation- February 2020*

https://www.bls.gov/news.release/archives/empsit_03062020.pdf

Cat Trumpet. (2019, May 7). 3 hours of amazing nature scenery & relaxing music for stress relief. [Video]. YouTube.

<https://www.youtube.com/watch?v=BHACKCNDMW8&t=420s>

- Chua, K. J., Lukaszewski, A. W., Grant, D. M., & Sng, O. (2017). Human life history strategies: Calibrated to external or internal cues? *Evolutionary Psychology*
<https://doi.org/10.1177/1474704916677342>
- Chudoba, B. (2022, April 24). *How much time are respondents willing to spend on your survey?* https://www.surveymonkey.com/curiosity/survey_completion_times/
- CNBC Television. (2020, September 29). Global coronavirus deaths surpass 1 million - Here's a timeline of how we got here. [Video]. YouTube.
<https://www.youtube.com/watch?v=DxCu0fTBtKM>
- Del Giudice, M. (2014). An evolutionary life history framework for psychopathology. *Psychological Inquiry*, 25(3-4), 261-300.
<https://doi.org/10.1080/1047840x.2014.884918>
- Ellis, B. J. (2004). Timing of pubertal maturation in girls: An integrated life history approach. *Psychological Bulletin*, 130(6), 920-958. <https://doi.org/10.1037/0033-2909.130.6.920>
- Figueredo, A. J., Vásquez, G., Brumbach, B. H., & Schneider, S. M. R. (2004). The heritability of life history strategy: The k-factor, covitality, and personality. *Biodemography and Social Biology*, 51(3-4), 121-143. <https://doi.org/10.1080/19485565.2004.9989090>
- Figueredo, A. J., Vásquez, G., Brumbach, B. H., & Schneider, S. M. R. (2007). The K-factor, covitality, and personality. *Human Nature*, 18(1), 47-73.
<https://doi.org/10.1007/bf02820846>

- Figueredo, A. J., Vásquez, G., Brumbach, B. H., Sefcek, J. A., Kirsner, B. R., & Jacobs, W. J. (2005). The K-factor: Individual differences in life history strategy. *Personality and Individual Differences, 39*(8), 1349-1360. <https://doi.org/10.1016/j.paid.2005.06.009>
- Figueredo, A. J., & Wolf, P. S. A. (2009). Assortative pairing and life history strategy. *Human Nature, 20*(3), 317-330. <https://doi.org/10.1007/s12110-009-9068-2>
- Figueredo, A. J., Wolf, P. S. A., Olderbak, S. G., Gladden, P. R., Fernandes, H. B. F., Wenner, C., ... Hohman, Z. J. (2014). The psychometric assessment of human life history strategy: A meta-analytic construct validation. *Evolutionary Behavioral Sciences, 8*, 148.
- Gibbons, F. X., Roberts, M. E., Gerrard, M., Li, Z., Beach, S. R. H., Simmons, R. L., Weng, C.-Y., & Philibert, R. A. (2012). The impact of stress on the life history strategies of African American adolescents: Cognitions, genetic moderation, and the role of discrimination. *Developmental Psychology, 48*(3), 722-739. <https://doi.org/10.1037/a0026599>
- Gladden, P. R., Figueredo, A. J., & Jacobs, W. J. (2009). Life history strategy, psychopathic attitudes, personality, and general intelligence. *Personality and Individual Differences, 46*(3), 270-275. <https://doi.org/10.1016/j.paid.2008.10.010>
- Griskevicius, V., Delton, A. W., Robertson, T. E., & Tybur, J. M. (2011). Environmental contingency in life history strategies: The influence of mortality and socioeconomic status on reproductive timing. *Journal of Personality and Social Psychology, 100*(2), 241-254. <https://doi.org/10.1037/a0021082>

- Griskevicius, V., Tybur, J. M., Delton, A. W., & Robertson, T. E. (2011). The influence of mortality and socioeconomic status on risk and delayed rewards: A life history theory approach. *Journal of Personality and Social Psychology*, *100*(6), 1015-1026.
<https://doi.org/10.1037/a0022403>
- K. Wu, K., K. Chan, S., & M. Ma, T. (2005, 2005-02-01). Posttraumatic stress, anxiety, and depression in survivors of severe acute respiratory syndrome (SARS). *18*, 39-42.
<https://doi.org/10.1002/jts.20004>
- Kelly, W. R., & Cutright, P. (1980, 1980/10/01). Modernization and the demographic transition: Cross-sectional and longitudinal analyses of a revised model. *Sociological Focus*, *13*(4), 315-329. <https://doi.org/10.1080/00380237.1980.10570369>
- Laland, K. N., & Hoppitt, W. (2003). Do animals have culture? *Evolutionary Anthropology: Issues, News, and Reviews*, *12*(3), 150-159. <https://doi.org/10.1002/evan.10111>
- Lee, R. (2003). The demographic transition: Three centuries of fundamental change. *Journal of Economic Perspectives*, *17*(4), 167-190. <https://doi.org/10.1257/089533003772034943>
- Lei, L., Huang, X., Zhang, S., Yang, J., Yang, L., & Xu, M. (2020). Comparison of prevalence and associated factors of anxiety and depression among people affected by versus people unaffected by quarantine during the COVID-19 Epidemic in Southwestern China. *Medical science monitor: International medical journal of experimental and clinical research*, *26*, e924609-e924609. <https://doi.org/10.12659/MSM.924609>
- Lilleholt, L., Zettler, I., Betsch, C., & Böhm, R. (2020, December 17). Pandemic fatigue: measurement, correlates, and consequences. PsyArXiv.
<https://doi.org/10.31234/osf.io/2xvbr>

- Macias, C. J. (2020, June 25, 2020). Is the food supply strong enough to weather COVID-19? *Feeding a Growing Population*. <https://www.ucdavis.edu/food/news/is-food-supply-strong-enough-to-weather-covid-19-pandemic/>
- Maddux, J. E., & Stanley, M. A. (1986). Self-efficacy theory in contemporary psychology: an overview. *Journal of social and clinical psychology, 4*(3), 249-255. <https://doi.org/10.1521/jscp.1986.4.3.249>
- McArthur, R. H., & Wilson, E. O. (1967). *The theory of island biogeography*. Princeton University Press.
- Mealey, L. (1995). The sociobiology of sociopathy: An integrated evolutionary model. *Behavioral and Brain Sciences, 18*(03), 523. <https://doi.org/10.1017/s0140525x00039595>
- Mittal, C., & Griskevicius, V. (2014). Sense of control under uncertainty depends on people's childhood environment: A life history theory approach. *Journal of Personality and Social Psychology, 107*(4), 621-637. <https://doi.org/http://dx.doi.org/10.1037/a0037398>
- Nesse, R. (1999, 1999-11-01). Proximate and evolutionary studies of anxiety, stress and depression: synergy at the interface. *Neuroscience & Biobehavioral Reviews, 23*(7), 895-903. [https://doi.org/10.1016/s0149-7634\(99\)00023-8](https://doi.org/10.1016/s0149-7634(99)00023-8)
- Parekh, R. (2017). *What are anxiety disorders?* American Psychiatric Association. Retrieved June 22 from <https://www.psychiatry.org/patients-families/anxiety-disorders/what-are-anxiety-disorders>

- Rosen, Z., Weinberger-Litman, S. L., Rosenzweig, C., Rosmarin, D. H., Muennig, P., Carmody, E. R., Rao, S. T., & Litman, L. (2020). Anxiety and distress among the first community quarantined in the U.S. due to COVID19: Psychological implications for the unfolding crisis. <https://doi.org/10.31234/osf.io/7eq8c>
- Waterman, S., Hunter, E. C. M., Cole, C. L., Evans, L. J., Greenberg, N., Rubin, G. J., & Beck, A. (2018). Training peers to treat Ebola centre workers with anxiety and depression in Sierra Leone. *International Journal of Social Psychiatry*, *64*(2), 156–165. <https://doi.org/10.1177/0020764017752021>
- Shalvee, S. S. (2020). Role of mass media and communication during pandemic: Key role at crucial stage: Categories and challenges. *International Journal of Creative Research Thoughts*, *8*(5).
- Sood, S. (2020). Psychological effects of the Coronavirus disease-2019 pandemic. *RHiME*, *7*, 23-26. https://doi.org/10.4103/jfmpe.jfmpe_893_19.
- South China Morning Post. (2021, January 15). Worldwide coronavirus death toll nears 2 million. [Video]. YouTube. <https://www.youtube.com/watch?v=9zsQcWEX9-Y>
- Spielberger, C.D., Gorsuch, R., Lushene, R., Vagg, P.R., & Jacobs, G. (1983). *Manual for the State-Trait Anxiety Inventory (Form Y1 - Y2)*. Palo Alto, CA: Consulting Psychologists Press.
- Tangney, J.P., Baumeister, R.F., & Boone, A.L. (2004). High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. *Journal of Personality*, *72*, 271–322.

Twenge, J. M. (2000). The age of anxiety? The birth cohort change in anxiety and neuroticism, 1952–1993. *Journal of Personality and Social Psychology*, 79(6), 1007-1021.

<https://doi.org/http://dx.doi.org/10.1037/0022-3514.79.6.1007>

Wilson, E. O. (1975). *Sociobiology: The new synthesis*. Harvard University.

World Health Organization. (2020). *Severe Acute Respiratory Syndrome (SARS)*. Retrieved

July 2 from <https://www.who.int/csr/sars/en/>

Appendix A

Demographic Characteristics of Participants

Baseline Characteristic	Total		Experimental Condition		Control Condition	
	<i>N</i> (86)	%	<i>n</i> (46)	%	<i>n</i> (40)	%
Sex						
Male	18	20.9	11	23.9	7	17.5
Female	68	79.1	35	76.1	33	82.5
Race						
Asian	5	5.8	4	8.7	1	2.5
Black or African American	7	8.1	3	6.5	4	10.0
Caucasian or White	59	68.6	28	60.9	31	77.5
LatinX	9	10.5	6	13.0	3	7.5
Native American or Alaska Native	2	2.3	2	4.3	0	0.0
Native Hawaiian or Pacific Islander	0	0.0	0	0.0	0	0.0
Multiracial	4	4.7	3	6.5	1	2.5
Perceived Socioeconomic Status						
Very Poor	2	2.3	2	4.3	0	0.0
Poor	24	27.9	13	28.3	11	27.5
Average	39	45.3	21	45.7	18	45.0
Wealthy	21	24.4	10	21.7	11	27.5
Very Wealthy	0	0.0	0	0.0	0	0.0
Age (in years)						
10-19	15	17.4	9	19.6	6	15.0
20-29	49	57.0	28	60.9	21	52.5
30-39	11	12.8	6	13.0	5	12.5
40-49	6	7.0	1	2.2	5	12.5
50-59	4	4.7	2	4.3	2	5.0
60-69	0	0.0	0	0.0	0	0.0
70-79	1	1.2	0	0.0	1	2.5

Appendix B

Informed Consent Form

University of Central Oklahoma

This is my informed consent to participate in a research study.

Project Title: Experience during COVID-19 pandemic time.

Researchers: **Ambre Chambers** (Principal Investigator), Dr. Tephillah Jeyaraj-Powell
(Faculty Mentor)

Purpose of the research: To examine people's experience with the COVID-19 pandemic.

Procedures involved: I will answer basic demographic questions followed by some surveys. I will be required to watch a short video clip and asked to write about it. All of this will be done online through the Qualtrics survey program.

Length of participation: Around 30 minutes.

Potential benefits: Data from this study will provide information regarding how people are dealing with the COVID-19 pandemic. Benefits include the contribution of my data to research.

Potential risks or discomforts: I understand that there is minimal risk associated with my participation in this study. I may be exposed to news regarding the COVID-19 pandemic and if I would like to visit with someone regarding sensitive or special concerns, I may contact the UCO Student Counseling Center by phone at (405) 974-2215 or by email at ucocwb@uco.edu

Assurance of voluntary participation: I understand that my participation in this study is voluntary and that I may withdraw from the study at any time without penalty. I understand that I may refuse to answer any question at any time without penalty or loss of benefits.

Confidentiality and privacy: My information will be kept confidential, and only the principal investigator and faculty mentor have access to my data. This study is anonymous. Any information collected from me will only be used in an analysis as part of a larger group of participants. Thus, I understand that the researchers cannot refer me to anyone based on my answers to the materials. I understand that participant data are coded, securely stored, and reported in aggregate form. All data will be destroyed in 5 years. Electronic information will be kept on a password-protected flash drive prior to deletion.

Contact Information: If I have any questions about this study, I may contact Ambre Chambers (phone: 405-664-3595; email: achambers13@uco.edu). I may also contact Dr. Tephillah Jeyaraj-Powell (phone: 405-974-5484; e-mail: tjeyaraj@uco.edu).

If I have any questions about my rights as a research participant, I may contact the UCO Institutional Review Board by phone, at (405) 974-5479 or by e-mail at irb@uco.edu.

Affirmation by the research participant:

I hereby voluntarily agree to participate in the above listed research project and further understand the above listed explanations and descriptions of the research project. I also understand that there is no penalty for refusal to participate, and that I am free to withdraw my consent and participation in this project at any time without penalty. I acknowledge that I am at least 18 years old. I have read and fully understand this Informed Consent Form. I sign it freely and voluntarily. I may print a copy of this Informed Consent Form for me to keep before I proceed any further.

- Yes, I consent to participate**
- No, I do not consent**

Appendix C

Demographics Questionnaire

1. What is your age in years? (Please specify numerically)

2. What is your anatomical sex?

Male

Female

3. Please specify your race:

Asian

Black or African American

Caucasian or White

LatinX

Native American or Alaska Native

Native Hawaiian or Pacific Islander

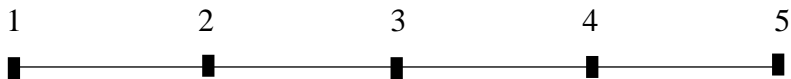
Multi-racial

4. Select the option that describes your childhood socioeconomic status:

Very Poor

Average

Very Wealthy



Appendix D

The Mini-K

Instructions: Please indicate how strongly you agree or disagree with the statements below using the following scale: Disagree Strongly (-3), Disagree Somewhat (-2), Disagree Slightly (-1), Don't Know/Not Applicable (0), Agree Slightly (+1), Agree Somewhat (+2), Agree Strongly (+3).

- I can often tell how things will turn out.
- I try to understand how I got into a situation to figure out how to handle it.
- I often find the bright side to a bad situation.
- I don't give up until I solve my problems.
- I often make plans in advance.
- I avoid taking risks.
- While growing up, I had a close and warm relationship with my biological mother.
- While growing up, I had a close and warm relationship with my biological father.
- I have a close and warm relationship with my own children.
- I have a close and warm relationship with my sexual partner.
- I would rather have one than several sexual relationships at a time.
- I have to be closely attached to someone before I am comfortable having sex with them.
- I am often in social contact with my blood relatives.
- I often get emotional support and practical help from my blood relatives.
- I often give emotional support and practical help to my blood relatives.
- I am often in social contact with my friends.

- I often get emotional support and practical help to my friends.
- I am closely connected to and involved in my community.
- I am closely connected to and involved in my religion.

(Scoring: Points per item will be added up for a total score. Generally, a higher score indicates the slow life end of the continuum.)

Appendix E

The State-Trait Anxiety Inventory

Instructions: A number of statements which people have used to describe themselves are given below. Read each statement then select the appropriate response to indicate how you feel *right now*, that is, *at this moment*. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your feelings best.

(Participants will be able to select from, “Not at all (1), Somewhat (2), Moderately so (3) or Very much so (4)” for their response.)

- I feel calm
- I feel secure
- I am tense
- I feel strained
- I feel at ease
- I feel upset
- I am presently worrying over possible misfortunes
- I feel satisfied
- I feel frightened
- I feel comfortable
- I feel self-confident
- I feel nervous
- I am jittery
- I feel indecisive

- I am relaxed
- I feel content
- I am worried
- I feel confused
- I feel steady
- I feel pleasant

Instructions: A number of statements which people have used to describe themselves are given below. Read each statement then select the appropriate response to indicate how you feel *generally* feel. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

(Participants will be able to select from, “Not at all (1), Somewhat (2), Moderately so (3) or Very much so (4)” for their response.)

- I feel pleasant
- I feel nervous and restless
- I feel satisfied with myself
- I wish I would be as happy as others seem to be
- I feel like a failure
- I feel rested
- I am calm, cool, and collected
- I feel that difficulties are piling up so that I cannot overcome them
- I worry too much over something that really doesn't matter
- I am happy

- I have disturbing thoughts
- I lack self-confidence
- I feel secure
- I make decisions easily
- I feel inadequate
- I am content
- Some unimportant thoughts run through my mind and bother me
- I take disappointment so harshly that I can't put them out of my mind
- I am a steady person
- I get in a state of tension or turmoil as I think over my recent concerns and interests