Fall 2021

# Understanding the Impact of Stress on Sexual Behavior: A Study of the COVID-19 Pandemic and the Masturbation Habits of Americans

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**Understanding the Impact of Stress on Sexual Behavior: A Study of the COVID-19 Pandemic and the Masturbation Habits of Americans**

By

Holly Edwards

Accepted in Partial Completion
of the Requirements for the Degree
Master of Arts

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**Master's Thesis**

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Holly Edwards

11/22/21

# Understanding the Impact of Stress Caused by the COVID-19 Pandemic through the changes in masturbation habits of Americans

A Thesis
Presented to
The Faculty of
Western Washington University

In Partial Fulfillment
Of the Requirements for the Degree
Master of Arts

by
Holly Edwards
December 2021

## Abstract

The COVID-19 Pandemic, officially declared on March 11, 2020, has shifted the world in a myriad of ways. Global citizens are now facing an increase in stress, anxiety, depression, and grief as the SARS-CoV-2 virus claimed thousands of lives as well as changed daily life. With every aspect of life different, I set out to understand how the negative emotions caused by the COVID-19 Pandemic influenced the sexual thought and behavior of American individuals, using masturbation as a focus. An online survey was employed using different Likert scale questions and a few qualitative questions, in order to gain opinions about masturbation, masturbatory behavior before and during the COVID-19 Pandemic, quarantine habits, and few qualitative questions. With 118 participants, forty-one males and seventy-seven females, results indicated a significant increase in consideration of and actual engagement with masturbation during the pandemic as compared to before. However, no other significant changes were found. Males were also found to have negative emotions increase their likelihood of masturbation in comparison to females. Both sexes reported having new motivations for engaging in masturbation, including boredom, anxiety, and depression, rather than sexual desire and arousal.

**Acknowledgements**

I would like to acknowledge my incredible advisor, M.J. Mosher. I have learned more about myself, my skills and abilities, and Outlander because of her. I will always be grateful for the confidence she instilled in me. I also want to thank my family, my friends, and every person I talked to for more than 10 minutes, for letting me talk about my thesis like it was my newborn baby.

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## Introduction

Much of life has been disrupted by the outbreak of the coronavirus disease 2019 (COVID-19), which is caused by the SARS-CoV-2 virus, and the resulting pandemic (Hagger et al., 2020). The COVID-19 outbreak was deemed a pandemic by the World Health Organization on March 11, 2020, and this paper uses "pandemic" as the time frame beginning after March 11, 2020 (Ducharme, 2020). Daily life has drastically changed, from strict 'lockdown' procedures in the early spring of 2020 to the mandating of wearing face covers in all public locations (CDC 2020a; Gostin & Wiley, 2020; The New York Times, 2020). Regardless of where one may live in the United States, or indeed the world, it has been almost impossible to proceed with daily life without acknowledging the pandemic and its massive strains on individuals, businesses, and institutions of higher learning (Hagger et al., 2020; Laborde et al., 2020; Nicola et al., 2020). The lasting effects of this pandemic, including individual and cultural, cannot currently be known, and little is certain during this time (Leung et al., 2020; Nicola et al., 2020; Xiong et al., 2020). With all the stress caused by a relatively measurable environmental and psychological influence, people are rewiring their thoughts, emotions, and behaviors to cope with this stress (Hagger et al., 2020; Xiong et al., 2020). Questions of differences in sexual arousal, desire, and behavior between the past and present therefore have arisen.

Although not the first question on many minds, the changes to personal sexual thought and behavior may have been impacted by the COVID-19 pandemic, consciously or unconsciously (Döring, 2020; Lehmiller et al., 2020; Lopes et al., 2020). The expression of one's sexuality is subject to an immense number of factors and variables, and thus is not free of direct influence from external forces (Wiederman, 2003; Scorolli et al., 2007; Ogas & Gaddam, 2012). Furthermore, the pandemic has caused many sex-based companies and brands to employ

different marketing tools, suggesting there is segment of the population turning towards sex as a method of coping with the newly imposed stress of everyday life (Lee, 2020). Starting on March 24, 2020, Pornhub, a leading pornography website, decided to give users access to 'premium' content for thirty days, free of charge, "in an effort to encourage the importance of staying home and practicing social distancing during the COVID-19 pandemic" (Pornhub, 2020a). The vice president of Pornhub, Corey Price, stated this was their way of helping people find a way to "enjoyably pass the time" while staying home (Pornhub, 2020a). The promotion seemed to work out in their favor, as the website boasted a 24.4% global traffic increase on March 25th compared to the previous day and has consistently shown higher traffic rates during the pandemic compared to the previous year (Pornhub, 2020b). Pornhub was in no way alone, being joined by sex-toy companies, which promoted discounted or free toys to customers (Lee, 2020).

It is often seen in research that stress, depression, and anxiety tend to lower the sexual desire of most (Morokoff et al., 1987; Bodenmann et al., 2006; ter Kuile et al., 2007; Bodenmann & Atkins, 2010). However, there is consistent evidence for a significant minority of people to have an increase in sexual desire, arousal, and behavior during times of depression and anxiety, or that these negative moods have no effect on sexual feelings and behaviors (Barlow et al., 1983; Palace & Gorzalka, 1990; Elliott & O'Donohue, 1997;). The minority provides background and solid data to warrant further research into understanding the differences in the arousal and desire experience within individuals, as it relates to broader mood and environment.

**Goals of The Current Project**

In this project, I set out to understand the interactions between the large, ubiquitous external challenge of the COVID-19 pandemic and the personal sexual habits of individuals, using

masturbation as the sexual behavior. Despite the long history of cultural stigmatization of masturbation in the western world, even into the contemporary era, this behavior is the only sexual behavior accessible to everyone. Masturbation can be engaged in regardless of age, class, race, living situation, or relationship status. Due to the isolation restrictions of the COVID-19 pandemic, this behavior has become the only option for sexual release for many, as individuals try to protect themselves and others from the dangerous virus.

Central to this research is the idea of human variation in regard to sexuality across the globe (Davis & Whitten, 1987; Thornhill & Gangestad, 1996; Buffington et al., 2014). The field of sexual science has struggled to find a way to integrate the notion of diversity within normalcy into the theoretical framework, which would be the foundation of sexual science (Janssen & Bancroft, 2006). The Dual Control Model of sexuality, recently developed, emphasizes the uniqueness of sexual response of each individual; every person will have a set of exciting stimuli as well as a set of inhibiting stimuli (Janssen & Bancroft, 2006; Bancroft et al., 2009). The two systems, of inhibition and of excitation, must be balanced within an individual in order to pursue sexual activity. The careful balance of the two systems, then, provides grounds for the multitude of variation of sexuality and expression (Bancroft, 1999; Bancroft et al., 2009).

The pandemic itself provides an opportunity to observe sexual arousal and behavior changes on a mass scale. Part of the difficulties of studying the interactions of sexuality and the external environment is the notion that most external influences are rather subjective; not everyone will have the same experience. But by using the COVID-19 pandemic, and all its repercussions, one may begin to parse out the ways in which individuals manifest different reactions to a relatively measurable, objective stressor.

The current project will provide further data in order to solidify current understandings of the theoretical framework of human sexuality, specifically the Dual Control Model theory of sexuality, which incorporates many of the other paradigms surrounding sexuality. Furthermore, this research aims to show the immense variability in the way people respond to large, obvious environmental influences in regard to their sexual psychology and behavior. The variability of people is not a glitch in the system, but rather an important component science must accept if it wishes to further understand sexuality.

As sexuality has a multitude of contributing factors, this project aims to tie external and internal influences together in order to create a more succinct, holistic view of the individual sexuality of persons.

**Conceptualization of Sexual Arousal and Desire**

Prior to undertaking the current project, sexual arousal and sexual desire must be defined. Sexual arousal is consistently blurred with sexual desire, as the two often happen simultaneously (Chivers, 2005; Chivers et al., 2010; Mitchell et al., 2014). In human research, all participants seem to have trouble describing and differentiating between sexual arousal and desire, suggesting these two ideas are intertwined on at least a personal level (Beck et al., 1991; Graham et al., 2004; Mitchell et al., 2014). Researchers, as well, often use the two interchangeably (Beck et al., 1991; Graham et al., 2004; Chivers et al., 2010; Mitchell et al., 2014). The differences may be difficult to describe but understanding how they differ allows for a greater understanding of the human experience of sexuality (Mitchell et al., 2014).

In the field of sexology, sexual arousal used to primarily be regarded as the physical response to sexual stimuli (Basson, 2000). The physiology of sexual arousal was one of the first

main topics of interest for early sexologists (Masters & Johnson, 1966). Masters and Johnson (1966) wrote *Human Sexual Response* as a textual foundation for understanding the many physical changes during sexual arousal, as well as during and after sexual activity. Their findings allowed them to propose the four-phase sexual response cycle, which included excitement, plateau, orgasm, and resolution. Each phase was described in great detail using the physiology of the subjects studied (Masters & Johnson, 1966). Their model has been useful, but since its publication the sexual response cycle has been criticized for lacking a psychological component other researchers saw as imperative (Kaplan, 1979; Basson, 2000; Janssen & Bancroft, 2006: Levin, 2008).

Revising the sexual response cycle began in the early 1970s, and the addition of sexual desire was a new component deemed extremely necessary (Kaplan, 1979; Basson, 2000). Helen Singer Kaplan (1979), a sex therapist and creator of another sexual response cycle, found desire to be an imperative, as it drove an individual to seek out or eagerly receive sexual activity. The importance of desire was shown, as Kaplan's work in the field of sex therapy exposed how a lack of desire was often the root of sexual dysfunction in couples (Kaplan, 1979).

The idea of sexual desire tends to revolve around the optimal mental state necessary to engage in sexual activity (Mitchell et al., 2014). Sigmund Freud, in his legendary *Three Essays on The Theory of Sexuality,* opens his first essay with a discussion of "sexual instinct" (Freud, 1905/2000; Toates, 2014). The concept of a sexual instinct, later called the sex drive, creates comparisons with hunger or thirst, two concepts generally accepted as biological 'drives' (Freud, 1905/2000). A drive, in general, is an internal push towards a behavior in order to relieve some sort of inner tension, usually resulting from an imbalance of physiology (Freud, 1905/2000; Kaplan, 1979; Peskin, 1997). Describing sexual wanting as a drive, however, may be too

extreme. Plenty of examples of people abstaining from sexual activity exist, whether solo or partnered, without any negative repercussions further than some internal discomfort (Toates, 2014). The same cannot be said for abstaining from food or drink. Therefore, the scientific term sex drive is too simplistic yet extreme to be used within the majority of research surrounding the seeking of sexual pleasure.

In his book, *How Sexual Desire Works,* Fredrick Toates (2014) relies on a broad definition of sexual desire, rather than drive. Sexual desire is broadly defined as "having the intention of gaining personal sexual pleasure" (Toates, 2014, p. 12). The proposed definition allows for an incentive-based model of sexual desire, exposing how individuals are pulled, rather than pushed, by external forces to engage in sexual situations (Toates, 2009; Toates, 2014). The idea that sexual desire results from a variety of external forces, rather than pushed by internal discomfort, fits with contemporary sexology, as it shows the various reasons people may engage in sexual activity (Meston & Buss, 2007).

Sexual desire, then, is directly conceptualized into the definition of sexual arousal. Sexual desire leads, normally, to sexual arousal; a lack of sexual arousal when desiring activity is often considered a dysfunction (Basson, 2006). However, physical sexual arousal can occur without sexual desire (Nagoski, 2015). The vagina can produce lubrication and the penis can become erect without an intent to gain sexual pleasure, exposing how sexual arousal is often independent of desire (Nagoski, 2015). This consistent lack of connection between the two concepts continues to frustrate sexologists (Beck et al., 1991; Graham et al., 2004; Chivers, 2005; Chivers et al., 2010; Mitchell et al., 2014). A lack of uniformed definitions of arousal and desire permeate the research.

**Sexual Activity Without Sexual Desire**

Many individuals engage in sexual activity without experiencing desire, as they are motivated instead by other wants and goals (Basson, 2000; Meston & Buss, 2007; Toates, 2014). These can include, but are in no way limited to, fear or love, or by a transactional drive, such as for money, or to maintain a healthy relationship (Basson, 2000; Meston & Buss, 2007; Toates, 2014). Individuals in a relationship may consent to sexual activity without the presence of sexual desire, or even a base of arousal, called sexual compliance, as a way of maintaining the health of the relationship (Impett & Peplau, 2003). For the purpose of this research, it is imperative to understand that sexual desire is not a necessity for sexual activity: masturbation was often used as a distraction, an activity to do when bored, or a method of stress relief.

The reasons humans engage in sexual activity range dramatically (Meston & Buss, 2007; McBride & Fortenberry, 2010; Vannier & O'Sullivan, 2012). Meston and Buss (2007) attempted to understand the reasons men and women participate in sexual intercourse, premised on the idea that sexual pleasure cannot be the only motivator. Reasons for engaging in sexual activity ranged from, "I wanted to achieve an orgasm", "It just happened" to, "I wanted to get rid of a headache" (Meston & Buss, 2007, p. 481-483). Sexual gratification, although the most common reason for engaging in sexual activity, is not always a factor (Meston & Buss, 2007). It is clear how variable the motivations for sexual intercourse within humans can be, and other sexual activities are no exception (McBride & Fortenberry, 2010; Vannier & O'Sullivan, 2012).

Rosemary Basson (2000) folded in an understanding of desire as more complex than simply seeking sexual gratification, underlined by motivations for, "emotional closeness, bonding, commitment, desire to increase a sense of attractiveness and attraction to a partner" (Basson, 2000, p. 34). Basson argued for the peripheral motivations for sexual activity in

response to the consistent pathologizing of female libido, which is typically lower than men (Basson, 2000). Exploring how women often find themselves motivated for sexual activity due to reasons other than arousal or desire, Basson argued for the integration of emotional motivations (Basson, 2000). By doing so, research in sexology pulled together the various reasons all individuals reported for engaging in sexual behavior into the sexual response cycle (Rowland & Gutierrez, 2017; Leavitt et al., 2019). Sexual desire, then, could be understood as any motivation for engaging in sexual behavior.

**The Dual Control Model of Sexuality**

Sprouting from this intense variability among what some people find exciting or inhibiting is the Dual Control Model of sexuality (DCM), the foundational theory used throughout this research paper (Janssen & Bancroft, 2006). Proposed by Erick Janssen and John Bancroft (2000), the DCM is explored throughout a series of articles (Bancroft, 1999; Bancroft & Janssen, 2000). Janssen et al. (2008) provides a concise definition, which explains how sexuality can be thought of as, "separate and relatively independent excitatory and inhibitory sexual systems exist[ing] within the central nervous system… it is the balance between these two systems that determines whether a sexual response occurs in any particular situation" (p. 254). By acknowledging the excitation and inhibition 'pathways', the DCM is able to incorporate individual variation as a component of sexuality, rather than an obstacle to overcome within research (Janssen & Bancroft, 2006).

The DCM is, primarily, a "conceptual device, a way to structure and formulate research questions" (Janssen & Bancroft, 2006, p. 2). It works as a foundation to then promote the exploration of sexual response (Janssen & Bancroft, 2006). Within this framework, as mentioned

above, variability is something to be assumed and expected. Variation is not a flaw in the research, but a central component of the results (Bancroft et al., 2009). The DCM accounts for the striking differences we see between people which takes up large space in the field of sexology (Bancroft et al., 2009).

The theory of the two pathways, sexual excitation and sexual inhibition, give a clear way of formatting research. Sexologists are now able to work with participants to parse out the ways some stimuli create motivation for sexual activity and others dampen motivation in individuals as well as the whole. Allowing for variation, then, allows for the emergence of patterns within populations. Research, then, begins to focus on the ways individuals engage with sexual activities and understand the motivations behind the behavior.

*Cultural Inhibitions and Excitations*

A plethora of books have been written on the 'proper' sexual behavior of individuals, creating a culture of stigma and shame in many western cultures, particularly America (Nagoski, 2015; Orenstein, 2017; Orenstein, 2020; Roberts, 2020). An in-depth look at how society and culture contribute to sexual behavior, and even sexual thought, could be a thesis of its own. For the purposes of this study, only a brief introduction will be conducted, with heavy emphasis on American culture.

To begin, the traditional gender roles of men and women lay the foundation for sexual expectations (Estrada, 2021; Hust et al., 2017). Men are portrayed as aggressive, loud, sexual, and dominant; women are portrayed as delicate, passive, nonsexual, and submissive (Estrada, 2021; Hust et al., 2017). The oppositional nature of the two genders (two genders is assumed under this model) creates a society of "patterns [that] are embedded in heteronormative

traditional western gender values that celebrate male sexual activity and dominance whereas females are required to show submission and passivity" (Estrada, 2021, p 3).

The use of gender roles leads, then, to sexual scripts, which are defined by Estrada (2021) as, "internalized beliefs which define what sexual experiences are and determine consequential behaviors" (p 3), are considered to be the normal, desired experience (Marshall et al., 2021). Sexual scripts demand the performance of the above-mentioned gender roles, with men aggressively pushing for sex, and women acting as the gatekeeper, who needs to be persuaded into sex (Hust et al., 2017). Not only does this set up for conflict with consent, but sexual scripts act as a way for cultural and society messaging to interact within romantic and sexual relationships (Rubin et al., 2019; Marshall et al., 2021). The perforation of these cultural messages is capable of internalization due to the constant bombardment of media, education, and interpersonal dynamics enforcing these unspoken rules (Zurbriggen et al., 2013).

The creation of sexual scripts and implementation of gender roles, on their own, may not be seen as a type of inhibition or excitation. However, the combination of the two concepts gives credit to sexual double standards, which, "entail different sexual behaviors are appropriate for men and women" (Endendijk et al., 2020). Deviation from these acceptable behaviors can result in a multitude of consequences, such as public shaming, isolation, or mental distress (Zurbriggen et al., 2013; Goblet & Glowacz, 2021).

Living in the United States is enough to expose one to these messages and the impacts of these messages, but some subcultures experience greater or lesser effects. For example, female presenting individuals, those who may or may not identify as a woman but have the appearance of a stereotypical woman, often face the brunt of the hypersexualized culture, feeling pressure to perform a certain way in order to be considered 'desirable' yet also 'pure' (Estrada, 2021). There

is more expectation for women and girls to fit the heteronormative standards of the male gaze, with more media emphasizing how women need to look, speak, and buy (Zurbriggen et al., 2021). This is only emphasized in highly religious communities, particularly communities identified as evangelical, as they have an extremely conservative mentality around sexuality for women, with more relaxed rules for men (Estrada, 2021). Education through the evangelical lens teaches that, "a woman who engages in any level of sexual activity… compared with a pitcher of water full of spit, a pre-licked lollipop, an unwrapped present, used tape, or a used tissue (Estrada, 2021, p 5). For men and boys, evangelical education often revolves around a disgust of masturbation, as masturbation is considered a grave sin (Kwee & Hoover, 2008; Roberts, 2020).

Fitting outside the heteronormative structure of the agreed upon sexual scripts also impacts individuals, such as those identifying within the queer community (Frost & Meyer, 2009; Heiden-Rootes, 2020). Due to the omnipresent messaging of society, many queer-identifying individuals internalize the heteronormative ideals, thus creating a toxic homophobia from within (Frost & Meyer, 2009). This consistent internal fight with oneself has detrimental effects on relationship and sexual satisfaction, acting as a mental block towards sexual activity or thought (Frost & Meyer, 2009).

*General Patterns of Mood*

Although each individual will have a unique response to sexual situations, general patterns around what could be considered sexually exciting or sexually inhibiting exist. Studies show people, regardless of gender, find it sexually exciting to be desired by their partner (Graham et al., 2004; Janssen et al., 2008). Negative moods, including anger, frustration,

depression, or anxiety are also found to be sexual inhibitors (Graham et al., 2004; Janssen et al., 2008).

Depression and anxiety have an effect on sexual expression, both negatively and positively (Bancroft et al., 2003; Lykins et al., 2006; Schultz et al., 2014; Hodgson et al., 2016). Negative emotions are often cited as a reason for a decrease in sexual desire as well as arousal. However, as stated above, these moods can also serve to increase arousal and desire (Janssen et al., 2008; Graham et al., 2003). A study of men found that the majority notice a decrease in sexual desire when depressed or anxious, and another study found parallels in women (Bancroft et al., 2003; Graham et al., 2004). A significant sexual minority found themselves with a higher sexual motivation during these moods (depressed=9.4%; anxious= 20.6%) (Bancroft et al., 2003). Researchers were able to parse out general reasons for these increases.

Anxiety can cause cognitive distractions, which have been shown to reduce the physical and mental reaction to sexual stimuli (Bradford & Meston, 2010). The general tension of the body and fear created within the body during anxious situations, even if generalized, can act as a direct inhibitor. The body does not often feel safe to engage in reproductive activities if it is fearing for itself. However, there is some evidence that anxiety actually promotes the seeking of sexual gratification. For anxiety, men often report sex as a way of relieving the anxiety and stress. The goal of 'anxious sex' may be the post-orgasmic calm (Bancroft et al., 2003). Women agreed, expressing how stress and anxiety can lead them to seek out sexual activity simply for the stress-relief (Graham et al., 2004).

Depression is also cited as a detriment or enhancer of sexual activity. Oftentimes, as one with depression feels a general numbness to emotions, previously pleasurable activities no longer hold any appeal. Depression also causes fatigue and body aches, thus dampening the desire to

engage in activity, sexual or otherwise. Depression, though, may encourage sexual behavior because one is allowed to feel 'held' and 'close' to another, which weakens one's feelings of isolation and loneliness. When depressed, sexual activity could be used as a way of regulating the bad mood, feeling validated by sexual activity (Bancroft et al., 2003). The validation may allow them a reprieve from negative self-talk, and thus enhancing mood.

*Sex Differences*

Differences between the sexes are apparent, as well (Baumeister et al., 2001). Due to previous research focusing solely on studies of binary gender expression, men and women, this section will use 'men' and 'women' to reflect the verbiage of the literature. Later on in the study, 'male' and 'female' will be used due to specifically focusing in on sexual assignment, rather than gender identity.

It is often thought that women tend to be more complex in their sexuality, with more factors contribute to their level of arousal and desire (Baumeister et al., 2001). However, studies clearly show men have a wide range of factors which can either facilitate or interfere with their arousal and desire (Janssen et al., 2008). Although evidence shows men may think about sex more, desire sex more often, and see sexual gratification as part of a fulfilling life, this does not mean they do not have a plethora of arousal factors to consider (Baumeister et al., 2001). In general, though, women tended to report many more outside influences, such as fears of pregnancy, reputation issues, or their partner using them for sex (Graham et al., 2004). Men focused more on their personal perceptions of their own self-worth and attractiveness, as well as the traits of their partner (Janssen et al., 2008).

Men and women did not report the exact same factors of sexual arousal. However, general patterns of sexual arousing and desirable traits did emerge (Graham et al., 2004; Janssen et al., 2008). Both sexes reported the need to feel confident and attractive in the moment, agreeing that if they thought they looked or felt undesirable, they would have a more difficult time becoming sexually aroused (Graham et al., 2004; Janssen et al., 2008). Women specifically tied in the importance of their partner accepting their bodies unconditionally (Graham et al., 2004). Men and women also agreed that negative mood, whether from a day of hassles or related to their self-perceptions were a big factor to enhancing or inhibiting sexual arousal (Graham et al., 2004; Janssen et al., 2008). For women, anxiety and stress were seen as possible enhancers, with sexual activity acting as a type of 'relief' (Graham et al., 2004). Masturbation was specifically mentioned in the study as a preference when feeling anxious, rather than partner sexual activities. Men shared the same experience, with masturbation mentioned as a possible release of tension (Janssen et al., 2008). Men also discussed how it also depends on their partner, as one explained, "I can be angry, sad, depressed, or mad. If she is interested, I can get over it really quick" (Janssen et al., 2008, p. 259).

For men in particular, the sexual partner is of large focus of sexual arousal as well (Janssen et al., 2008). Men report wanting their partner to feel uninhibited and showing obvious signs of enjoyment during sexual activity. Furthermore, the partner's characteristics are important as well: eyes, legs, good breath, lower back, intelligence, and scent all had the ability to increase or decrease sexual arousal and desire. Men also reported having mixed feelings about their partner's sexual history, with the difference most apparent between the age groups of the participants. Younger men tended to prefer a 'clean slate', meaning someone who hasn't had many partners. They were not worried about the possibility of sexually transmitted infections or

the reputation of their partner, but rather how they would measure up in comparison to their previous partners (Janssen et al., 2008). Older men, however, tended to find experience to be sexually arousing; they were unconcerned about the comparison factor.

For women, the factors of sexual arousal incorporated the stigma of female sexuality as well as the fear of unwanted pregnancy (Graham et al., 2004). Younger women (younger than twenty-four) were often worried their sexual activities would get them labeled as a 'slut'. Older women, above twenty-four, however, were either unbothered by this or found it to be sexually arousing to be doing something 'bad' (Graham et al., 2004). This reputation piece aligns with how women are often turned off by feeling 'used', when they were just used for sexual activities and then dropped. They didn't want their sexual activity to be used as material for a man's bragging, and their detriment. Being desired for their whole selves, mind and body was seen as a turn on (Graham et al., 2004).

**Stress in the Body**

In the United States, where the current project is focused, the conceptualization of stress will be limited to the psychosocial realm, rather than the physical. Physical stress would involve conditions such as starvation or war, rather than psychosocial stress, such as losing a job, financial issues, or running late (Hamilton & Meston, 2013). Although more physical stressors do occur in the United States, as there are areas of the United States where famine and extreme poverty is common, it is not the emphasis of the current research.

Acute stressors are defined as an "immediate threat and… time limited" (ter Kuile et al., 2007). Examples may be alarming noises or traffic jams (ter Kuile et al., 2007). Acute stress is easily handled by the body and mind. It can be considered an adaptation, kicking in the

automatic, well-known ‘fight or flight’ as well as a freeze response (Schneiderman et al., 2005). In the most biologically basic definition, stress “is a constellation of events, consisting of a stimulus (stressor), that precipitates a reaction in the brain (stress perception), that activates physiological fight or flight systems in the body (stress response)” (Dhabhar, 2018, p. 2). It is a built-in instinctual reaction, designed to aid in survival before allowing an organism to go back to a neutral, homeostatic state (Selye, 1936; Schneiderman et al., 2005).

When a stressor is presented, the body perceives it as a threat, and thus attempts to prepare the individual for a reaction (Kemeny, 2003). The sympathetic and parasympathetic nervous systems, together called the autonomic nervous system, are the pathways of the human stress response (Kemeny, 2003). The sympathetic nervous system is turned on when a stressor appears, which releases norepinephrine (adrenaline) and cortisol hormones into the body, causing an increased heart rate and blood pressure, greater blood flow to the limbs, and the ‘adrenaline rush’ one feels (Kemeny, 2003). When the ‘threat’ has subsided, such as the end of a presentation or finally paying off debt, the parasympathetic nervous system switches on, bringing the body back towards a neutral state, decreasing heart rate and pulling an individual’s physiology back to their natural homeostasis (Kemeny, 2003).

Chronic stress, then, refers to a consistently turned-on sympathetic nervous system with only slight relief from the parasympathetic system, usually for the daily hassles of life, such as marital disputes, economic issues, or larger constant threats such as domestic violence (Schneiderman et al., 2005; ter Kuile et al., 2007). Chronic stress can be considered maladaptive, as having the body in an unending cycle of stress response can lead to physical and mental health issues, such as cardiovascular disease, increased cases of the common cold, as well as depression and anxiety (Schneiderman et al., 2005).

**Stress and Mental Health**

Stress, even low levels, is considered a 'gateway' to reoccurring mental health issues (Hammen, 2005; Schneiderman et al., 2005; Laman-Maharg & Trainor, 2017). Mental health cannot be easily defined, as it is not only an absence of mental disorder or illness (Bhugra et al., 2013). Rather, mental health refers to an individual's sense of self, ability to maintain interpersonal relationships of all kinds, manage both positive and negative emotions, and feel comfort and general contentment with one's life (Bhugra et al., 2013).

Research has provided strong evidence for the connection between childhood adversity and trauma, or childhood stressors, and the development of mental disorders (McLaughlin et al., 2012; Stowkowy et al., 2020). Childhood adversity (CA) includes events such as "parental death, abuse, neglect, and family violence" (McLaughlin et al., 2012, p. 2). Within the umbrella of CA is childhood trauma (CT), which "typically involve[s] conceptualizations of unwanted physical, emotional, and psychological harm or neglect" (Stowkowy et al., 2020, p. 70). Some CA and CT experiences have been connected to mental disorders more strongly, such as sexual abuse and fear disorders (McLaughlin et al., 2012). The mental disorders connected to CA and CT can range from serious mental illness, such as psychosis, or generalized sensitivity to anxiety or depression (Heim & Nemeroff, 2001; Hovens et al., 2009; Stowkowy et al., 2020). Substance abuse disorders, such as drug addiction, are commonly associated with CA and CT (McLaughlin et al., 2012).

A study of university students showed a gradual decline in mental health as subjective stress levels increased (Bovier et al., 2004). Perceived stress was strongly connected to an individual's personal resources and performance abilities, such as self-esteem. Unsurprisingly,

"when people feel good about themselves, they cope with stress better" (Bovier et al., 2004, p. 169). When stress is persistent or becomes extreme, an individual may become anxious (Kumari & Jain, 2014). College students often see their stress levels move into a state of general anxiety when they are unprepared for classes, or do not have the social support they need to properly cope with the stressors (Kumari & Jain, 2014). This general anxiety caused by the stressor of school is shown again, on a more extreme scale, during a study with medical students. Rosiek et al. (2016) found medical students experienced higher instances of suicidal thinking when experiencing higher stress levels.

**Stress and Sexuality**

Stress is commonly cited as a reason for a lack of sexual desire, physical sexual arousal, or sexual behavior (ter Kuile et al., 2007; Hamilton & Meston, 2013; Hamilton & Julian, 2014). On a minor level, this lack of sexual expression can be bothersome, but on a large scale could be diagnosed as sexual dysfunction (Hamilton & Julian, 2014).

Stress causes sexual dysfunction in a myriad of ways (Bodenmann et al., 2007). For married couples specifically, such stressors take away chances for quality time and increases the chances a partner will be hostile or irritable (Bodenmann et al., 2007). Stress can interfere with personal relationships in general and has been shown to decrease overall satisfaction within married couples (Bodenmann et al., 2007). One's own sexual orientation or preferences can cause stress as well; individuals who include themselves in the LGBTQ+ community face stigma and discrimination, two highly stressful psychosocial components (Lea et al., 2014; Henny et al.,

2019). One's sexual performance or physicality, as well, can cause stress, leading to a form of 'stage fright' (Bowsfield & Cobb, 2021).

Sexual activity has also been shown to be a possible coping mechanism for stress. Ein-Dor and Hirschberger (2012) studied seventy-five heterosexual couples, and "found that stressful days increased the probability of having sex on a subsequent day, and that sexual intercourse relieved stress for both men and women in satisfying relationships, but not in unsatisfying relationships" (p. 126). There is a necessary prerequisite of having a healthy relationship, yet sexual activity can relieve the stress of daily life (Ein-Dor & Hirschberger, 2012).

Stress can also lead to hypersexual behavior, as sex experiences may cross over from a healthy coping mechanism into a way of distracting oneself from stressors (Hall et al., 2014). A study categorizing the different 'types' of hypersexuality described "avoidant masturbation" (Cantor et al., 2013). The 'avoidant masturbator' uses masturbation (or possibly other forms of solo sexual activity) in order to avoid negative feelings, such as anxiety or depression (Cantor et al., 2013). The use of masturbation as a way of not only avoiding negative emotions, but also as a way of avoiding a boring task, has become a mainstream condition, being referred to as "procrasturbation" (Cantor et al., 2013).

**Mental Health and Sexuality**

Depression and anxiety have an effect on sexual expression, both negatively and positively (Kane et al., 2019). The definitions of these mental issues, two of the most common mental illnesses in the United States for adults and children, are often precise and clinical in nature (Ghandour et al., 2019; Kane et al., 2019). Anxiety is the result of interacting factors of physiological sensations, such as sweating or increased heart rate, cognitive beliefs around a

triggering stimulus, and a behavior, which is often avoidance of the trigger (Kane et al., 2019). Anxiety can be broken up into discrete categories, including state anxiety, trait anxiety, and anxiety sensitivity (Bradford & Meston, 2006). State anxiety involves the activation of the sympathetic nervous system, discussed above, and is described as a general apprehension (Bradford & Meston, 2006). Trait anxiety is an individual's predisposition to experiencing state anxiety; the higher the trait anxiety, the higher the state anxiety (Bradford & Meston, 2006). Those with higher anxiety sensitivity are more prone to feel fear in response to the physical symptoms of anxiety (Bradford & Meston, 2006). The physical symptoms of anxiety, such as flushing, increased heart rate, or sweating, are often similar to the physical symptoms of sexual arousal, and thus, those with higher anxiety sensitivity may feel apprehension when experiencing sexual arousal (Bradford & Meston, 2006).

In sexual studies, the focus is usually based solely on sexual, performance-based anxiety (Bradford & Meston, 2006). Sex-related anxiety, such as worries about physical appearance, fears about sexual desires, as well as performance concerns, are easily associated with difficulties in sexual arousal and sexual dysfunctions (Bradford & Meston, 2006; Rowland & van Lankveld, 2019)). However, the general state of anxiety, that is, anxiety with a source outside of sexual activity or arousal, has recently become the focus of research.

Researching anxiety and sexual dysfunction involves two basic methodologies, being a collection of physical, genital response data as well as taking subjective reports of anxiety and sexual arousal (Kane et al., 2019). Using these two data collection methods, researchers are then able to manipulate the situations in which their participants find themselves. Subjects may be given an anxiety provoking task, experience the bodily sensations of anxiety, asked about anxiety-based situations, or given memory-based tasks (Kane et al., 2019). As with most sexual

research, the results are often conflicted, with many caveats (Kane et al., 2019). For example, some studies will document a clear physical response, indicating sexual arousal, to sexual stimuli, but will then report a subjective experience of no response to said sexual stimuli. The differences, and understanding the causes of these differences, have necessitated a hesitancy to declare anxiety a cause or rather a correlate of sexual dysfunction, or sexual enhancement.

The general consensus, however, is that sometimes anxiety will enhance sexual desire, arousal, and activity, or it will be a halting force upon all sexual feelings and behaviors (Dutton & Aron, 1974; Barlow et al., 1983; Elliott & O'Donohue, 1997; Bradford & Meston, 2006; Kane et al., 2019). With such variability, it is then an issue of understanding what types of anxiety-provoking situations or thoughts will lead to a decreased sexual arousal and behavior, and what will provide an increase.

Depression has become a commonality among the US population and is the most common psychiatric disorder globally (Liu et al., 2020). Depression is defined, generally, as a persistent dysphoria, as well as loss of interest in previously pleasurable activities, changes to sleep patterns, hopelessness, appetite changes, and suicidal ideation (Kanter et al., 2008). Depression is usually preceded by a major life event, positive or negative, such as a loss of a parent, birth of a child, financial ruin, or marital changes (Hammen, 2005).

Depression and sexuality are often studied through the lens of medication; understanding how antidepressants are capable of dampening sexual desire and arousal has been the focus of research (Östman, 2008; Frohlich & Meston, 2021). However, outside the realm of antidepressant research, research has found evidence for depression itself changing the ability of an individual to experience sexual desire, arousal, and behavior (Östman, 2008; Frohlich & Meston, 2020). Östman (2008) found, when interviewing severely depressed patients, individuals

experienced a lessening of sexual desire as symptoms of depression, including suicidal thoughts, increased. It was described that patients were at a 'loss of capacity' for sexual activity, rather than a loss of sexual wanting (Östman, 2008). Furthermore, one study generally found that those with high rates of depression also had higher rates of dissatisfaction with their sexual activity; it seems like the apathy for general life is also placed upon sexual activity (Hamilton & Julian, 2014). Women, specifically, have been found to experience a range of sexual dysfunctions in relation to depression, including loss of desire, anorgasmia, reduced sexual pleasure, sexual avoidance, and pain during sexual activity (Frohlich & Meston, 2021).

Evidence suggests depression can be a trigger for hypersexuality, specifically nonparaphilic hypersexual behavior (NPHB) (Schultz et al., 2014). NPHB refers to a pattern of excessive sexual behaviors and fantasies in order to avoid unpleasant feelings or stress (Schultz et al., 2014). An individual, then, when put in a situation connected to the feelings of depression, "attempts to cope are made through engaging in sexual fantasies, urges, and behaviors" (Schultz et al., 2014, p. 478). Understandably, the COVID-19 pandemic may be a situation in which individuals feel compelled to escape through the feelings of sexual arousal and desire; sexuality becomes a temporary coping mechanism for them. A comparative meta-analysis of NPHB and depression focused studies found no statistically significant differences between groups experiencing NPHB in response to negative emotions, regardless of gender, sexual orientation, or age (Schultz et al., 2014).

**Stress and the COVID-19 Pandemic**

The COVID-19 pandemic can undeniably be considered both an acute and chronic stressor (Hagger et al., 2020; Taylor et al., 2020a; Brown et al., 2020; Horesh & Brown, 2020).

A study from China found approximately 35% of 52,730 participants experienced psychological distress due to the COVID-19 pandemic (Qui et al., 2020). Scientists have been quick to conduct research on the effects of both the disease and pandemic caused by COVID-19 during these unprecedented times, and the conceptualization of COVID Stress Syndrome has followed (Taylor et al., 2020b). The syndrome encompasses five areas of stress, including, "(1) danger and contaminations fears, (2) fears about economic consequences, (3) xenophobia, (4) compulsive checking and reassurance seeking, and (5) traumatic stress symptoms about COVID-19" (Taylor et al., 2020a; Taylor et al., 2020b).

It is clear, as well, that there are secondary stressors associated with COVID-19 Pandemic, which would be considered stressors that have increased due to the pandemic, but not from the physical disease itself (Agberotimi et al., 2020; Chu et al., 2020). The COVID-19 pandemic increased the global rates of stress, anxiety, and depression (Nowicki et al., 2020; Shah et al., 2020). Different populations, such as frontline health workers, have even begun showing increased rates of post-traumatic stress disorder, as the havoc of the coronavirus is abundantly visible to health workers (Nowicki et al., 2020). Disrupted daily life, rather than direct fear of the novel disease, wreaks havoc on people and causes mental distress (Shah et al., 2020). Researchers propose isolation, loneliness, and unemployment can quickly increase levels of depression (Shah et al., 2020). The uncertainty and decreased financial stability of the world also increases levels of anxiety (Shah et al., 2020).

As of this writing, the COVID-19 pandemic has resulted in approximately 747,970 deaths (Centers, 2021). With this immense loss, there will clearly be depression. Even without the loss of life, more and more people have begun reporting 'long COVID', where they may have healed from the initial infection, but are still experiencing debilitating symptoms (CDC, 2020b). As of

July of 2021, this condition of post-COVID symptoms has been fully recognized as a disability under the Americans with Disabilities Act (CDC, 2020b).

**Masturbation as a Research Focus**

The current project specifically used masturbation as the studied sexual activity, aware of the stigma behind it. Masturbation as an activity was chosen for multiple reasons. Specifically, any individual is, at least, capable of engaging in this solo activity, regardless of any qualifier. Furthermore, due to the isolation orders of the COVID-19 pandemic, it would not be unreasonable to assume masturbation as the obvious outlet for sexual frustration, and thus an obvious choice for this research project.

Masturbation is an incredibly common sexual behavior (Kinsey, 1948; Kinsey, 1953; Arafat & Cotton, 1974; Hite, 1976/2005). A study in 2007 with 3,112 participants, aged eighteen to sixty, found that 38% of women and 61% of men had masturbated within the preceding year (Das, 2007). Robbins and colleagues (2011) surveyed US adolescents between the ages of fourteen and seventeen to see how masturbation prevalence was associated with other sexual behaviors. Regardless of age, Robbins et al. (2011) found, with a total sample size of 820, roughly 74% of males and about 48% of females reported masturbating. The commonality of masturbation is not a phenomenon solely in the United States, as studies have shown its prevalence among a multitude of countries (Sharma & Sharma, 1998; Das et al., 2009). Masturbation is also cited as both a substitute and a complement to partnered sexual activity, not only a 'backup' for when one is without a partner (Regnerus et al., 2017). Due to the intense stigma of masturbation, particularly in areas with strict religious beliefs and norms, however, there are minimal studies of masturbation in countries outside of Europe and the United States.

The stigma of masturbation had its roots firmly planted by the explosion of Christianity in the western world and strengthened in the early 1700s. Around this time, an incredibly popular and impactful piece of writing was published, titled, "*Onania; or, The Heinous Sin of Self Pollution, and all its Frightful consequences, in both SEXES Considered, with Spiritual and Physical Advice to those who have already injured themselves by this abominable practice".* Published anonymously, the small pamphlet gained so much attention in and out of academic circles that it would grow into a full book, which would then go through more than eighteen editions (Peakman, 2013). The anonymous author goes into great detail how masturbation, referred to in the text as "Self-Pollution", is the cause of practically all ills, both individual and social (*Onania,* 1756; Laqueur, 2003). The text suggests masturbation hinders the growth of children, and causes fainting, epilepsy, dry cough, infertility, and even death, among other diseases (*Onania* 1756). *Onania*, in all editions, cleverly included advertisements for all types of potions, pills, and powders to help all readers kick the habit of masturbation, and protect themselves from all manner of disease (Laqueur, 2006; Peakman, 2013).

Although it would seem such a text was creating a problem in order to sell a cure, the idea of masturbation as a reason for individual and social decay caught on during the 18th and 19th centuries (Laqueur, 2006). Benjamin Rush, a physician and signer of the Declaration of Independence, wrote in 1812 how masturbation caused, "insanity… impotence… pulmonary consumption, dyspepsia, dimness of sight, vertigo, epilepsy, hypochondriasis, loss of memory" and eventually death (Peakman, 2013). Masturbation was not just a personal bad habit, but a threat to nations as a whole (Peakman, 2013). Doctors and philosophers deemed masturbation as worse than plagues or unending wars, going so far as to call it "the destroyer of civilization" (Peakman, 2013, p.63). This craze around the dangers of masturbation for individuals and

civilization as a whole caused many types of cures to be proposed or used, such as painful contraptions like the urethral ring, pouring carbonic acid on the clitoris, and late, unanesthetized circumcisions of men (Peakman, 2013; Lister, 2020). Perhaps one of the better-known creations to dampen the urge to masturbate is Kellogg's brand cereal, created by John Harvey Kellogg (Lister, 2020). Kellogg (1852-1943) believed a bland, sparse diet was the best way to lessen the urge to engage in sexual activities, specifically masturbation (Lister, 2020).

Although these older dramatic views of the power of masturbation may seem extreme, the idea of masturbation as wholly 'bad' has persisted (Watson & McKee, 2013; Clayton & Humphreys, 2019). A pronounced, identifiable stigma against masturbation continues (Watson & McKee, 2013). In 1994, Dr. Jocelyn Elders was forced to resign as Surgeon General under the Clinton administration for supporting the idea of teaching masturbation during sexual education as a way of combating the spread of AIDs and other STIs/STDs (Jehl, 1994). Multiple qualitative research projects have produced patterns of individuals stating they do engage in masturbation but continue to feel guilt or shame in congruence with the pleasure of sexual release (Kaestle & Allen, 2011). The negative feelings associated with masturbation may be seen, then, as a general inhibitor of this activity, with individuals preferring partnered activity. Masturbation is still seen the way the Hite Report stated through participants' words, as a way of releasing sexual tension if no one else is available (Hite, 1976/2005; Watson & McKee, 2013).

In contemporary times, masturbation is still portrayed as a transgression, an activity that is inherently shameful and negative, regardless of gender identity (Watson & McKee, 2013; Clayton & Humphreys, 2019). Clayton & Humphreys (2019) analyzed four popular movies, and found female masturbation, specifically, as a way to "demonstrate how the act of masturbation underscores character traits and narrative tropes, simultaneously demonise[ing] auto- eroticism

and undermines foundational concepts of sexual development and sexual health" (p. 247). Although not explicitly stated, the scenes of masturbation in the examined cinema function as an expression of the isolation, awkwardness, and indignity within the female characters, rather than an enjoyable sexual experience (Clayton & Humphreys, 2019). In another study, Watson and McKee (2013) focused on the impressions fourteen- to sixteen-year-old individuals had around masturbation. Both males and females found masturbation as a source of embarrassment (Watson & McKee, 2013). Adolescent girls also discussed their discomfort with the act due to shame and embarrassment about their vulva and vaginas, citing their inherent 'gross'-ness (Orenstein, 2017). Adolescent boys understood masturbation as a normal part of their sexual development, but many did not seem to believe girls were capable of masturbation; it was something boys were allowed to do, not girls (Watson & McKee, 2013). Masturbation is also directly linked to pornography for boys; the shame of watching pornography is directly linked to the shame of masturbation (Orenstein, 2021).

Some change is occurring in the depiction and understanding of masturbation. A Netflix show, *Big Mouth*, had a storyline centered around explaining female masturbation, through the exploration of parts of the vulva and vagina, in a comical method (Suarez, 2019). The show also made a point of explaining that "girls get horny, too", which flies in the face of many messages giving boys an allowance for their sexuality, but maintaining the secrecy of girls' (Suarez, 2019).

## Methods

For this research, an online survey provided the data. The survey consisted of fifty-seven questions, taking roughly twenty-five minutes to complete. The survey could be easily accessed through a link, which was distributed through social media channels. The social media channels

used included Instagram, Twitter, Facebook, and Reddit. Recruitment involved sharing a link on these channels, which anyone was free to copy to share with others, possibly via other channels (such as text message or email). The survey was available for anyone to take, provided they were over eighteen and currently residing in the USA and its territories. The survey and recruitment method were approved by the Western Washington University IRB board prior to the data collection beginning.

The survey was active online and shared during the months of June, July, and August of 2020, and it was closed the first week of September 2020. It is essential to acknowledge that the summer months of 2020 were not only a time of pandemic isolation and heightened anxiety around health, but also stressful due to the Black Lives Matter Protests triggered by the death of George Floyd and Breonna Taylor, as well as the heated campaign for the US Presidency. Questions surrounding these country-wide stressors were not included, due to the unexpected nature of these events. However, some participants did cite these events in open response questions.

It should be noted that although participants were required to be eighteen or older, an online method may have allowed for some younger to participate without consequence. Consent was obtained via a checkbox, which would automatically unlock the rest of the survey.

Participants were free to end the survey (See Appendix C) at any point if they wished to, simply by exiting the internet window displaying the survey. If participants wished, they were allowed to provide their email for the chance to be given one of five $100 Amazon e-gift cards. By providing a possible incentive, individuals may have been more likely to continue through the survey, even as the questions grew more personal. The collection of these emails was done via a separate link at the end of the survey, in order to make sure the provided contact

information was never connected to their survey answers. This was done in order to protect the privacy of the participants, as this project asked highly personal questions that may have caused shame, embarrassment, or other harm if compromised. Once the five 'winners' were selected via the random number generator provided by Google and then notified of their 'winning' by email, all the provided emails were deleted repentantly from the PI's records. This was done in order to further remove evidence of taking the survey, in order to protect the 'winners' privacy.

The data provided from the main survey was then analyzed, working to understand if there was a statistical significance between the 'before' pandemic habits and the 'during' pandemic habits. This analysis was run using the software Statistical Package for Social Sciences version 27 (SPSS), and I used the paired t-test in order to compare the 'before' and 'during' pandemic habits.

Within the survey, participants were told that masturbation referred to, "using one's own self to produce sexual pleasure. This could include using one's own hand, toy, or other object on one's own genitals to sexually stimulate or produce orgasm in one's self. *This is an activity done alone. This definition does not include mutual masturbation."* The COVID-19 outbreak was deemed a pandemic by the World Health Organization on March 11, 2020, and thus the survey defined 'before pandemic' as before March 11, 2020, and the 'during pandemic' time frame as after March 11, 2020 (Ducharme, 2020).

Furthermore, sexual arousal was used as the main identifier for both sexual arousal and sexual desire, since the terms have shown to be almost interchangeable to research participants (Chivers et al., 2010; Beck et al., 1991; Graham et al., 2004; Mitchell et al., 2014). Sexual arousal was also favored over sexual desire, as an emphasis on the physical response was part of this research; the term 'sexual arousal' has been most often linked to the physical response.

**Results**

A total of 138 responses were recorded, with 118 of those qualifying for analysis. 20 responses were not included in data analysis, with 18 being incomplete and 2 reported outside of the United States. The 18 incomplete responses show that most respondents ended the survey once questions about personal habits and masturbation began. The demographic results are included in Table 1. Of note, the qualifying responses were mostly white females within the age of 22-26 years old (n=74). The responses were also mostly heterosexual (n=65). In order to maintain clarity through this project, I have focused on the assigned sex, rather than the identifying gender.

| Demographics | Responses | Percentages |
|---|---|---|
| Age | | |
| 18-21 | 14 | 11.86% |
| 22-26 | 74 | 62.71% |
| 27-31 | 15 | 12.71% |
| 32-36 | 3 | 2.54% |
| 37-41 | 0 | 0% |
| 42 or older | 12 | 10.17% |
| Assigned Sex | | |
| Male | 41 | 34.75% |
| Female | 77 | 65.25% |
| Gender Identity | | |
| Cisgender man | 40 | 33.90% |
| Cisgender woman | 67 | 56.78% |
| Transgender man | 1 | 0.09% |
| Transgender woman | 0 | 0% |
| Nonbinary | 8 | 6.78% |
| Other | 2 | 1.69% |
| Sexual Orientation | | |
| Heterosexual | 65 | 55.08% |
| Homosexual | 10 | 8.47% |
| Bisexual | 27 | 22.88% |
| Pansexual | 7 | 5.93% |
| Other | 9 | 7.63% |
| Racial Identity | | |
| White | 105 | 88.98% |
| Black or African American | 4 | 3.39% |
| American Indian or Alaska Native | 1 | 0.09% |
| Asian | 5 | 4.24% |
| Native Hawaiian or Pacific Islander | 1 | 0.09% |
| Other | 6 | 5.10% |

*Table 1: Demographics of included respondents*

*General Attitudes*

97.47% of respondents had masturbated with or without orgasm at some point in their lives; 89.83% had masturbated explicitly to orgasm at some point in their lives. The age at which respondents first masturbated with the goal of sexual pleasure and/or orgasm ranged, with the majority (78.18%) of respondents first doing so between the ages

of eleven and twenty years old. No respondent reported beginning masturbating after the age of thirty-one. Table 2 shows the responses of all participants in regard to their attitudes and relationship towards masturbation in general, split by assigned sex.

All male respondents (n=41) reported having masturbated with or without orgasm at some point in their lives, regardless of age, race, sexual orientation, or gender identity. Table 2 shows the results of male and female respondents**.** 96.10% of female respondents reported masturbating with or without orgasm at some point in their lives. 87.10% had masturbated with orgasm. 37.66% reported always orgasming when masturbating, and 36.36% reported orgasming most of the time. 25.97% reported orgasming half the time or less when masturbating**.**

| Questions | Male | | | | | | | Female | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Likert Scale | Strongly agree | Agree | Somewhat agree | Neither agree nor disagree | Somewhat disagree | Disagree | Strongly disagree | Strongly agree | Agree | Somewhat agree | Neither agree nor disagree | Somewhat disagree | Disagree | Strongly disagree |
| Masturbation is a shameful activity. | 0% | 0% | 7.32% | 9.76% | 4.88% | 7.32% | 70.73% | 1.3% | 1.3% | 7.79% | 2.60% | 6.49% | 31.17% | 49.35% |
| I enjoy masturbation. | 39.02% | 34.15% | 24.39% | 2.439% | 0% | 0% | 0% | 45.46% | 25.97% | 12.99% | 7.79% | 2.60% | 3.90% | 1.30% |
| There is no harm in engaging in masturbation. | 48.78% | 24.39% | 12.20% | 4.88% | 7.32% | 2.44% | 0% | 61.04% | 24.68% | 7.79% | 2.60% | 0% | 0% | 3.90% |
| Other people do not masturbate. | 2.44% | 7.32% | 4.88% | 7.32% | 4.88% | 24.39% | 48.78% | 1.3% | 5.20% | 2.60% | 6.49% | 3.90% | 29.90% | 50.65% |
| Masturbation is a way for me to feel like I am in control of my sexuality. | 9.76% | 14.63% | 21.95% | 31.71% | 4.88% | 12.20% | 4.88% | 20.78% | 29.87% | 11.69% | 27.27% | 2.60% | 5.20% | 2.60% |
| Masturbating ends with me feeling positive emotions. | 9.76% | 34.15% | 26.83% | 9.76% | 9.76% | 7.32% | 2.44% | 16.88% | 32.47% | 16.88% | 14.29% | 11.69% | 2.60% | 5.20% |
| Masturbation is a neutral activity; it is neither good nor bad. | 14.63% | 26.83% | 17.07% | 12.20% | 17.07% | 12.20% | 0% | 10.39% | 18.18% | 12.99% | 19.48% | 19.48% | 18.18% | 1.30% |
| I am comfortable masturbating, with no shame or guilt surrounding the activity. | 34.15% | 19.51% | 12.95% | 9.76% | 4.88% | 9.76% | 0% | 28.57% | 27.27% | 18.18% | 2.58% | 9.09% | 5.20% | 9.09% |
| I have been told masturbating is bad, and I should not do it. | 9.76% | 12.20% | 14.63% | 9.76% | 9.76% | 24.39% | 16.51% | 9.09% | 25.98% | 16.88% | 9.09% | 7.79% | 18.18% | 12.99% |
| I feel guilt or shame around masturbating. | 0% | 9.76% | 19.51% | 7.32% | 4.88% | 19.51% | 39.02% | 3.90% | 5.20% | 19.48% | 9.09% | 6.49% | 33.77% | 22.08% |
| Masturbating ends with me feeling negative emotions. | 2.44% | 0% | 24.39% | 4.88% | 14.63% | 34.15% | 19.51% | 3.90% | 0% | 15.58% | 12.99% | 19.48% | 24.68% | 23.38% |

*Table 2: Male and Female attitudes and beliefs around masturbation; 1= strongly agree, 2= agree, 3= somewhat agree, 4= neither agree nor disagree, 5= somewhat disagree, 6= disagree, 7= strongly disagree*

*Masturbation Habits: Before versus During*

Participants were asked questions pertaining to their masturbatory habits before and during the pandemic. The percentages for each question are broken down by sex in tables 3a-c. Individuals were asked how often they masturbated, with a median being 'once a week' (4) before and '2-3 times a week' (3) after. When asked how often they thought about masturbating, the median for before and during was '2-3 times a week' (3). The question "I masturbate only when I am sexually aroused produced a median before and during of 'somewhat agree' (3). For the question, "When I am alone and sexually aroused, I consider masturbating" the median for both before and during was 'most of the time' (2). The median for "when I am alone and sexually aroused, I masturbate" was 'most of the time' (2) before, and then 2.5 (2= most of the time, 3=about half the time) during. The question "I use pornography, including video, literature, or photos, when I masturbate" produced a before and during median of 'most of the time' (2). The median for both before and during the pandemic for the question "I masturbate while engaging in sexual communication, such as sexting, video calls, or phone calls, with someone" was 'sometimes' (4). When given the statement, "I masturbate when I'm bored" both the before and during median was 'sometimes' (4). Lastly, the statement, "I become sexually aroused at random times" both the before and during median was 'neither agree nor disagree' (4).

| Questions | Before | | | | | During | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Likert Scale | Always | Most of the time | About half the time | Sometimes | Never | Always | Most of the time | About half the time | Sometimes | Never |
| When I am alone and sexually aroused, I consider masturbating. | 28.81% | 38.14% | 10.17% | 21.19% | 1.96% | 30.77% | 29.91% | 11.97% | 22.22% | 5.13% |
| When I am alone and sexually aroused, I masturbate. | 11.02% | 38.98% | 22.03% | 22.03% | 5.93% | 12.82% | 46.15% | 13.68% | 18.80% | 8.55% |
| I use pornography, including video, literature, or photos, when I masturbate. | 22.03% | 37.29% | 9.32% | 18.64% | 12.71% | 23.93% | 35.04% | 6.84% | 16.24% | 17.95% |
| I masturbate while engaging in sexual communication, such as sexting, video calls, or phone calls, with someone. | 5.93% | 9.32% | 10.17% | 37.29% | 37.29% | 5.98% | 9.40% | 5.98% | 33.33% | 45.30% |
| I masturbate when I am bored. | 0.85% | 16.10% | 15.25% | 50.85% | 16.95% | 4.27% | 18.80% | 17.95% | 37.61% | 21.37% |
| I become sexually aroused at random times. | 5.08% | 20.34% | 21.19% | 46.61% | 6.78% | 8.55% | 22.22% | 15.38% | 44.44% | 9.40% |

*Table 3a: Before and during the pandemic masturbation habits*

| Questions | Before | | | | | | | During | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Likert Scale | Strongly agree | Agree | Somewhat agree | Neither agree nor disagree | Somewhat disagree | Disagree | Strongly disagree | Strongly agree | Agree | Somewhat agree | Neither agree nor disagree | Somewhat disagree | Disagree | Strongly disagree |
| I masturbate only when I am sexually aroused. | 11.86% | 27.12% | 18.64% | 7.63% | 15.25% | 16.10% | 3.39% | 8.55% | 27.35% | 27.35% | 3.42% | 15.38% | 14.53% | 3.42% |

*Table 3c: Before and during the pandemic masturbation habits*

| Questions | Before | | | | | | During | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Likert Scale | Daily | 4-6 times a week | 2-3 times a week | Once a week | Twice a month or less | Never | Daily | 4-6 times a week | 2-3 times a week | Once a week | Twice a month or less | Never |
| How often do you masturbate to orgasm? | 5.93% | 16.10% | 26.27% | 24.58% | 19.49% | 7.63% | 11.86% | 16.10% | 27.97% | 16.95% | 15.25% | 11.86% |
| How often do you consider masturbating to orgasm? | 16.10% | 12.71% | 30.51% | 16.10% | 16.95% | 7.63% | 21.19% | 15.25% | 26.27% | 17.80% | 9.32% | 10.17% |

*Table 3b: Before and during the pandemic masturbation habits*

In order to compare the 'before' and 'during' habits, I used a paired sampled t-test. This test was chosen due to the sample size and the link between the two samples. Table 3 shows the descriptive statistics for before and during the pandemic. Table 4 shows the descriptive statistics and results of the paired t-test, conducted on SPSS 27, the software available to students at Western Washington University.

The comparison questions were analyzed using a paired sampled t-test. The datum is related, and the sample size is large enough to warrant the paired sampled t-test. After working with each data set, it was found that only the comparison between the before/during questions, "How often do you masturbate to orgasm" (P=.017) and "How often do you consider masturbating to orgasm" (P=.003) were statistically significant. Both showed a decrease in numbers, but when translated to the Likert scale used in the survey (1= daily, to 6= twice a month or less), there was a shown increase in thought and activity. Therefore, there was a statistically significant increase in both "how often do you masturbate to orgasm" and "how often do you consider masturbating to orgasm".

| Before and During Comparison | Mean | Standard Deviation | P-Value |
|---|---|---|---|
| How often do you masturbate to orgasm? | .237 | 1.060 | .017 |
| How often do you consider masturbating to orgasm? | .280 | .986 | .003 |
| I masturbate only when I am sexually aroused. | .000 | 1.514 | 1.000 |
| When I am alone and sexually aroused, I consider masturbating. | -1.20 | .811 | .113 |
| When I am alone and aroused, I masturbate. | .094 | .900 | .261 |
| I use pornography, including video, literature, or photos, when I masturbate. | -.077 | .745 | .266 |
| I masturbate while engaging in sexual communication, such as sexting, video calls, or phone calls, with someone. | -1.20 | .790 | .104 |
| I masturbate when I am bored. | .145 | .088 | .100 |
| I become sexually aroused at random times. | .051 | .066 | .441 |

*Table 4: Paired samples test results. Numbers taken from Likert scale, 1= daily, 2= 4-6 times a week, 3= 2-3 times a week, 4= once a week, 5= never, 6= twice a month or less*

*Depression and Anxiety*

Before the pandemic, both males and females had some level of agreement that they masturbate when sad or depressed. For all respondents, the median was 'neither agree nor disagree' (4). For males, the median was 'somewhat agree' (3). For females, the median was 'somewhat disagree' (5). Before the pandemic, there was a more neutral level of agreement for masturbating when nervous or anxious. For all respondents, the median was 'somewhat disagree' (5). For females, the median was 'disagreed' (6). For males, the median was 'somewhat disagree' (5).

During the pandemic, all respondents for the statement "I masturbate when I am sad, or depressed" produced a median of 'sometimes' (4). For males, the median was 'sometimes' (4). For females, the median was 'sometimes' (4) as well. The statement "I masturbate when nervous, or anxious" during the pandemic, all respondents produced a median of 'never' (5). For

males, the median was ‘sometimes’ (4). For females, the median was ‘never’ (5). Table 5 and table 6 show the percentages for each answer divided by sex.

| Question | Male | | | | | | | Female | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Likert | Strongly agree | Agree | Somewhat agree | Neither agree nor disagree | Somewhat disagree | Disagree | Strongly disagree | Strongly agree | Agree | Somewhat agree | Neither agree nor disagree | Somewhat disagree | Disagree | Strongly disagree |
| I masturbate when I am sad, or depressed. | 7.32% | 17.07% | 29.27% | 12.20% | 12.20% | 14.63% | 7.32% | 2.60% | 11.69% | 15.58% | 19.48% | 9.09% | 25.97% | 15.58% |
| I masturbate when I am nervous, or anxious. | 4.88% | 9.76% | 21.95% | 9.76% | 9.76% | 31.71% | 12.20% | 6.49% | 9.09% | 12.99% | 12.99% | 7.79% | 16.88% | 33.77% |

*Table 5: Percentages for 'before' the pandemic, 1= strongly agree, 2= agree, 3= somewhat agree, 4=neither agree nor disagree, 5= somewhat disagree, 6= disagree, 7= strongly disagree*

| Question | Male | | | | | Female | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Likert | Always | Most of the time | About half the time | Sometimes | Never | Always | Most of the time | About half the time | Sometimes | Never |
| I masturbate when I am sad, or depressed. | 7.32% | 9.76% | 9.76% | 56.10% | 17.07% | 3.95% | 5.26% | 11.84% | 32.89% | 46.05% |
| I masturbate when I am nervous, or anxious. | 4.88% | 9.76% | 4.88% | 56.10% | 24.39% | 1.32% | 6.58% | 9.21% | 28.95% | 53.95% |

*Table 6: Percentages of ‘during’ the pandemic, 1= always, 2= most of the time, 3= about half the time, 4= sometimes, 5= never*

In comparison of the male and female answers for mood and masturbation habits, an unpaired t-test was used, due to the independent nature of the datum. Tables 7, 8, 9, and 10 show the descriptive statistics and P-value. When comparing the before habits of “I masturbate when I am sad, or depressed”, there was a significant difference between the sexes (P=0.0147). For comparing the before habits of “I masturbate when I am nervous, or anxious”, there was no significant difference (P=0.3114). For the during habits of “I masturbate when I am sad, or depressed”, there was a significant difference between the sexes (P= 0.0287). For the during habit of “I masturbate when I am nervous, or anxious” there was also a significant difference (P= 0.0307).

| | Mean | Median | Standard Deviation | P-value |
|---|---|---|---|---|
| Male | 3.78 | 3 | 1.72 | 0.0147 |
| Female | 4.61 | 5 | 1.74 | |
| All | 4.32 | 4 | 1.77 | |

*Table 7: Descriptive statistics for 'before'; question, "I masturbate when I am sad, or depressed"*

| | Mean | Median | Standard Deviation | P-value |
|---|---|---|---|---|
| Male | 4.54 | 5 | 1.80 | 0.3114 |
| Female | 4.92 | 6 | 2.00 | |
| All | 4.79 | 5 | 1.94 | |

*Table 8: Descriptive statistics for 'before'; question, "I masturbate when I am nervous, or anxious"*

| | Mean | Median | Standard Deviation | P-value |
|---|---|---|---|---|
| Male | 3.66 | 4 | 1.10 | 0.0287 |
| Female | 4.12 | 4 | 1.06 | |
| All | 3.96 | 4 | 1.10 | |

*Table 9: Descriptive statistics for 'during'; question, "I masturbate when I am sad, or depressed"*

| | Mean | Median | Standard Deviation | Sum |
|---|---|---|---|---|
| Male | 3.85 | 4 | 1.10 | 0.0307 |
| Female | 4.28 | 5 | 0.97 | |
| All | 4.79 | 5 | 1.94 | |

*Table 10: Descriptive statistics for 'during'; question, "I masturbate when I am nervous, or anxious"*

*Quarantine Life*

As mentioned before, respondents reported living either alone (18.64%), living with one or more roommate(s) (26.27%), living with romantic/sexual partner(s) (27.97%), or living with family (27.12%). Due to the many laws, guidelines and recommendations of the states surrounding quarantine and isolation, respondents were asked how often they left the house weekly. 25.42% reported they left their homes daily, 33.05% 4-6 times a week, 28.81% 2-3 times a week, 11.86% once a week, and .08% never.

Roughly half (47.46%) reported their employment status was changed due to the COVID-19 pandemic. This could also possibly explain why 38.98% of respondents are now working from home. When asked about the difference in employment due to the pandemic, 53 respondents wrote in answers. These included layoffs and furloughs, which accounted for 66.04% of reasons. Other reasons were moving towards working from home (16.98%), or

reduced hours (15.09%). A few respondents mentioned career changes, travel cancelled, or incomplete projects left to the side.

*Mood and Masturbation*

Respondents also answered questions regarding the way quarantine has impacted their mental health. 83.05% agreed they had increased anxiety due to the pandemic, and 66.95% agreed to experiencing increased depression. This data ties, then, to the answers regarding self-observed changes in sexual arousal and behavior. A majority of respondents did not feel their ability to be sexually aroused changed due to the pandemic (66.10%), with some believing it has (33.90%). For those who responded that their sexual arousal has changed around this time, 37 participants explained their changes. Qualitative questions were coded and analyzed. Many responses were vague, with no clear connection to arousal. For example, some responses were, "Less engagement with guys" or "I don't feel as sexually liberated by masturbating or sex". The responses that clearly answered the prompt were categorized into three areas: decreased arousal, increased arousal, sporadic arousal. Of those, 21.62% experienced an increase, 8.11% reported sporadic arousal ability, and 70.27% noticed a decrease in sexual arousal.

Questions around sexual behavior, however, produced different responses. 61.86% stated their sexual behavior changed, while 38.14% did not. 66 participants offered details about this change, producing clear patterns. The responses were coded into five categories: changes in availability of partners, increased use of toys or pornography, more opportunities, less opportunities, or masturbation changes. 15.15% specifically stated they had begun masturbating more, either due to less partnered activity or stress. Those who already had a committed sexual partner did report an increase in their sexual activity, though did not go into further explanation.

**Discussion**

Much of the data gathered during this process was surprising. Almost all respondents (97.47%) reported having masturbated with or without orgasm at some point in their lives. Although not terribly surprising, due to the commonality of masturbation, having the overwhelming majority report this behavior has not been seen in previous research (Robbins et al., 2011). The majority of participants were female (n=77), meaning an extreme number of women had reported this behavior. Previous studies had shown the hesitancy of women to report masturbation, whether due to abstaining from the practice or being unwilling to report. In the current culture, however, there may be less stigma attached to masturbation, which thus allows for individuals to feel more comfort when responding to scientific surveys.

Following the reported commonality of masturbation among the sample, many attitudes around masturbation were positive or neutral, which has changed relatively recently (Patton, 1986). The majority (85.59%) disagreed to some level that masturbation was shameful. Similar questions with different wording showed similar results; roughly 75% agreed to a level that they were comfortable masturbating without shame or guilt. Even less, though still more than half (62.71%) disagreed with the statement "I feel guilt or shame around masturbating". The slight difference may be due to general wording versus personal wording of the survey statements. Some may have reasoned that masturbation is not inherently shameful but do still feel shame and guilt when they personally engage in the activity. An individual could believe that masturbation is not shameful, and it is completely fine for others to participate in the activity, and still believe that they should not engage in masturbation (*see Table 2*).

Breaking down the attitudes and beliefs of the respondents even more, there were decided differences between males and females regarding attitudes and beliefs. The majority of females

agreed to some extent that masturbation is a way to be in control of one's sexuality. This percentage was much higher than males (46.34%), suggesting that women may feel more empowerment surrounding masturbation. This would align with the past and present feminist movements that have often put masturbation front and center when discussing female sexuality (Bowman, 2014). Roughly half of females (51.95%) also agreed to an extent that they had been told masturbating is bad and they should not do it. Again, this number was higher than males (36.59%), which would align with many cultural messages that make light of male masturbation but place a greater negative reaction to female masturbation.

Male attitudes hovered closely to the female attitudes, but with key differences. Firstly, all male respondents had masturbated with or without orgasm in their lifetime. This makes sense, as masturbation is normalized for males in western cultures (Watson & McKee, 2013). Similar to the females, the majority (70.73%) strongly disagreed that masturbation is a shameful activity, yet only 39.02% strongly disagreed that they felt guilt or shame around masturbation. Again, this difference between the neutral statement versus a personal admission is clear, as it was with the female respondents.

In general, female respondents gave stronger responses, answering 'strongly disagree' or 'strongly agree' rather than a neutral or basic agree/disagree (*see Table 2*). Males tended to answer neutrally or with a basic agree/disagree. This difference is possibly due to the intense socialization females experience around sexuality; to have an opinion about sexuality, an individual would have to either rebel or accept a strong cultural message. It is possible, due to the relative freedom males have in their sexual activity and ideology, that they do not need to have and defend stronger opinions.

Based on qualitative questions, it is clear individuals' sex lives were changed during the pandemic, though usually just their behavior, rather than their arousal ability. Understandably, participants reported the largest change to their sex lives being the lack of partners available. As the SARS-CoV-2 spread, individuals recognized a need for distance from others in order to protect themselves and their 'germ circles', so partnered sexual activity was considerably slowed, if not completely halted. However, other changes included an increased use of technology, such as pornography, sexual texting, sex toys, or phone sex, during the pandemic. The use of technology in general increased during the pandemic as people turned to their phones to create connections; it is understandable, then, that this even touched the realm of sexuality. Participants overall did not believe they were experiencing issues with sexual arousal during the initial pandemic, though those who did believe so mostly cited a general decrease in sexual arousal patterns. However, roughly 10% of those who did see their sexual arousal change, cited an increase. This percentage mirrors studies of sexual arousal and emotion, as between 10-20% of participants saw an increase in sexual arousal when stressed, depressed, or anxious (Bancroft et al., 2003) (*see Table 5 and Table 6*).

When looking at the differences in sex and masturbation habits pertaining to a negative mood state (i.e., anxiety or depression), there were some significant differences (*see Table 5 and 6*). Before the pandemic, males and females differed on masturbating when depressed; females were less likely too, and males were more likely to. When comparing before habits of the activity when anxious or nervous, both sexes overwhelmingly did not engage. During the pandemic, males and females both differed in responses for both moods. Males were more likely to masturbate when anxious or depressed in comparison to females. This mirrors previous work and could be due to the generally higher sexual motivations of males (Janssen et al., 2013).

There were few statistically significant differences between the 'before' and 'during' sections of the survey. However, the two that did show differences were "how often do you masturbate to orgasm" and "how often do you consider masturbating to orgasm". Both showed an increase in the behavior and the thought about the behavior. Of course, as we saw with the qualitative questions, there are many reasons individuals will change their behavior and thought patterns around masturbation. Stress, anxiety, and depression are cited by participants, as is a general boredom with being stuck in lockdown. These results align with previous studies on motivations for sexual behavior (Meston & Buss, 2007).

**Conclusion**

The COVID-19 Pandemic continues to wreak havoc on the lives of millions of individuals (Hagger et al., 2020). The toll of the preventative measures, the immense loss of life, and the newfound isolation throughout the pandemic has invariably caused stress, anxiety, and depression in the global population (Qui et al., 2020; Taylor et al., 2020a; Taylor et al., 2020b). The objective threat, the coronavirus, has allowed for unique studies to become possible. Understanding the ways stress impacts sexuality in the general population may lead towards methods of improving sexual dysfunction caused by stress or showing how sexual activity is capable of acting as a coping mechanism for stress.

This research focused on the masturbation habits of citizens of the United States, asking questions on the beliefs and attitudes of the individuals towards the solo sexual act, as well as attempting to see how behavior changed as lockdowns went into effect. The research provided evidence for a more open population, specifically female population, about the sexual behaviors

and feelings experienced. The attitudes and beliefs around masturbation between males and females were expectedly different but ended up showing that females tend to have stronger opinions about masturbation, whether good or bad, than males.

There was a statistically significant increase in the act of and the consideration of masturbating to orgasm. Although some participants specifically stated that they were masturbating more due to stress, anxiety, and depression, there seems to be other factors influencing the decision to masturbate, as other participants cited lack of physical intimacy and boredom as reasons, too.

**Limitations and Future Directions**

This study has clear limitations. First, the sample size of this project was small, which necessitates further studies in order to get a more robust understanding of the issue. Along with size, the recruitment process was limited by lack of funds for advertisements. Participants were collected via social media snowballing, starting first within the social media circle of the principal investigator. Thus, this study was limited to the age, gender, race, and socioeconomic status of those within the 'friend' group of the Principal Investigator, and the friend groups of that friend group. Thus, the sample cannot be considered representative of all groups, as demographic information shows.

Furthermore, the sexual nature of this project most likely invited those more comfortable with their sexuality to participate, rather than a more diverse set of people, which is common within sexual research (Dunne et al., 1997; Wiederman, 1999). Future directions should engage more with internal stressors, asking the ways in which internal motivation and detriment may interact with the external environment, such as how the stigma of masturbation may have

increased or decreased with the new lack of sexual partners. Focus groups may be a method in which this study could benefit. Focus groups have been shown to be effective in studying sensitive subjects such as sexual behavior (Frith, 2000).

Lastly, this project would have benefitted from a second round of questioning from the same participants. A longitudinal design may have better shown the ways changes to stress levels impacted masturbation habits. Stress and sexuality are both far from static and a distinct pattern may have emerged within a longer study. However, due to the length of a master's program, as well as the uncertainty of how long the lockdowns would remain in place, this would have been nearly impossible to set up.

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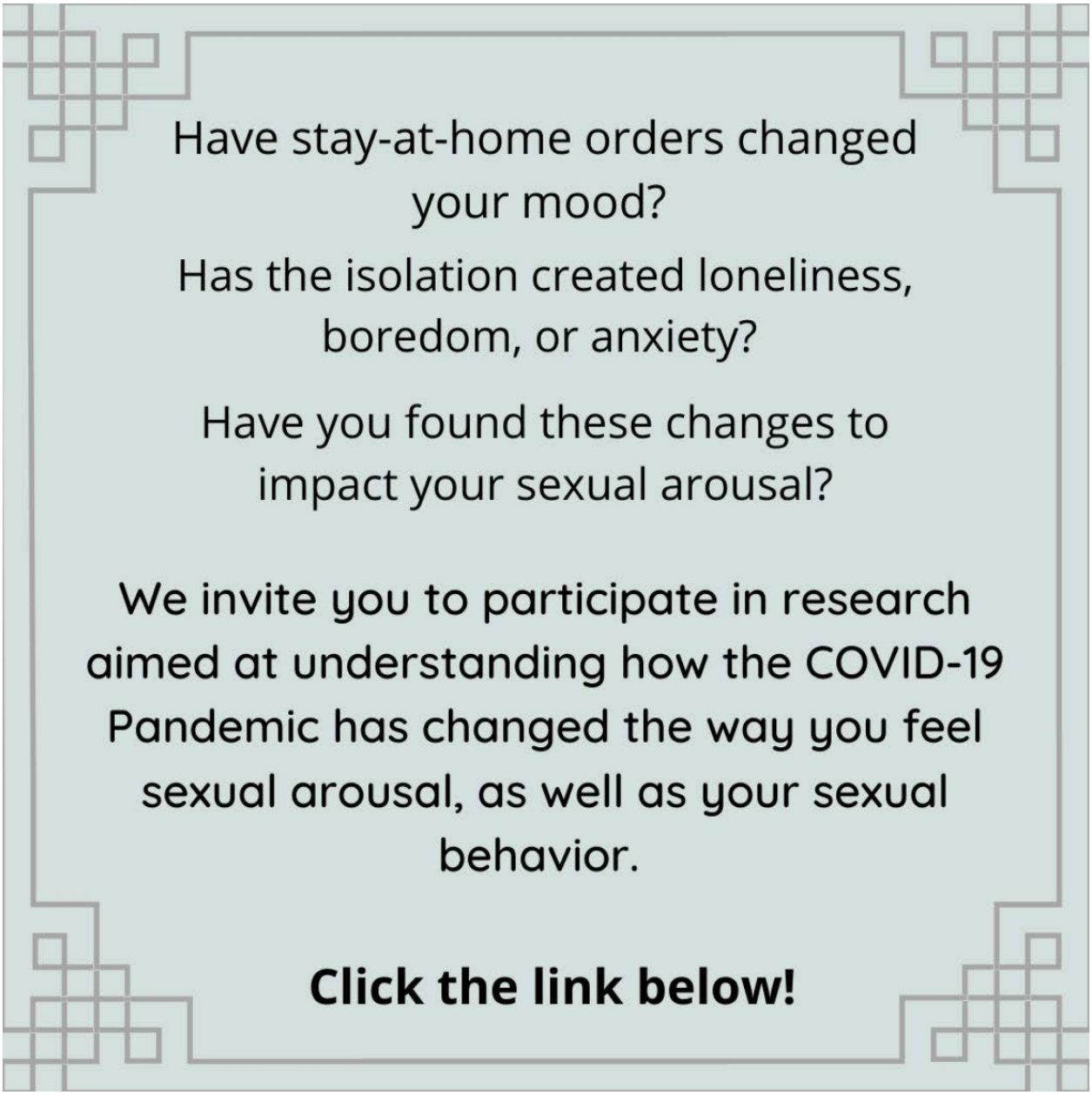
**Appendices**

Appendix A: Social media recruitment post



*Appendix B*: Copy of survey and consent form

# Masturbation Habits during the COVID-19 Pandemic

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Start of Block: Block 5

Masturbation Habits during the COVID-19 Pandemic
Principle Investigator: Holly Edwards
Contact Information: edwardh5@wwu.edu; (509) 570-4137

We are asking you to be in a research study. Participation is voluntary. The purpose of this introduction is to give you the information needed to help you decide whether to participate. Please read this introduction carefully. You may ask questions via email or phone about anything that is not clear. When we have answered all your questions, you can decide if you want to be in the study or not. This process is called "informed consent". You may copy and print out this form for your records.

---

The purpose of this research is to understand the way stress and loneliness, due to the COVID-19 pandemic, impacts an individual's habits of masturbation. This research aims to understand how mood and environment may change the nature of sexual self-pleasure. The survey that follows is around 20 minutes long and will ask about: 1. General background (age, sex, etc)2. General beliefs and attitudes about masturbation 3. Masturbation habits before and during shelter-in-place orders 4. The way general life has been impacted by shelter-in-place orders.
*Due to the personal nature of this subject, the survey may cause discomfort, as the questions are about extremely private activities. You may withdraw from the study at any time before submitting the survey by closing the browser window.*

---

We take absolute precaution with your information. Your privacy is of the upmost importance, due to the private nature of the subject. Your data will be stored on a secure server.
The only identifying information taken during this survey will be an email, in order to contact you if you win the raffle associated with participating.
Supplying your email is not mandatory. Your email will not be used to contact you for further information. Emails will never be linked to your data and will be stored on a secure server. Emails will only be used to give incentives; once incentives are given all emails will be

permanently deleted.
As a thank you for participating, you may submit your email after completing the survey in order to be entered in a raffle, with one of five $100 amazon e-card as the prize. Entering the raffle is not mandatory.

If you have any questions, please contact the principal investigator, Holly Edwards, at edwardh5@wwu.edu or (509) 570-4137. If you have questions about your rights as a research participant, please contact the Western Washington University Office of Research and Sponsored Programs (RSP) at compliance@wwu.edu or (360) 650-2146.

Do you consent to this terms and conditions? Selecting "yes" will direct you to the survey. **If you do not consent, please exit this browser window**. You must be 18 years or older to participate in this research.

- ○ Yes

**End of Block: Block 5**

**Start of Block: Basic Information**

How old are you?

- ○ 18-21
- ○ 22-26
- ○ 27-31
- ○ 32-36
- ○ 37-41
- ○ 42 or older

What is your assigned sex?

- ○ Male
- ○ Female

What is your gender identity?

- ○ Cisgender Man
- ○ Cisgender Woman
- ○ Transgender Man
- ○ Transgender Woman
- ○ Nonbinary
- ○ Other _____

What is your sexual orientation?

- ○ Heterosexual
- ○ Homosexual
- ○ Bisexual
- ○ Pansexual
- ○ Other _____

What is your racial identity?

- [ ] White
- [ ] Black or African American
- [ ] American Indian or Alaska Native
- [ ] Asian
- [ ] Native Hawaiian or Pacific Islander
- [ ] Other

In which state do you currently reside?

▼ Alabama ... I do not reside in the United States

Do you practice a religion?

- ○ Yes
- ○ No

If yes, what religion?

_____

What is your current living situation?

- ○ Living alone
- ○ Living with one or more roommate
- ○ Living with romantic/sexual partner(s)
- ○ Living with family

End of Block: Basic Information

---

Start of Block: Block 6

**For this research, masturbation is defined as using one's own self to produce sexual pleasure. This could include using one's own hand, toy, or other object on one's own genitals to sexually stimulate or produce orgasm in ones self.** ***This is an activity done alone. This definition does not include mutual masturbation.***

End of Block: Block 6

---

Start of Block: General Masturbation Attitudes and Habits

Have you masturbated, with or without orgasm, at any point in your life?

- ○ Yes
- ○ No

Have you orgasmed from masturbation at any point in your life?

- ○ Yes
- ○ Maybe
- ○ No

At what age did you first masturbate explicitly for sexual pleasure and orgasmic pursuit?

▼ Under 10 ... 46 or older

Do you use an object, such as a sex toy, to masturbate?

- ○ Always
- ○ Most of the time
- ○ About half the time
- ○ Sometimes
- ○ Never

Masturbation is a shameful activity.

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree

I enjoy masturbation.

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree

---

There is no harm in engaging in masturbation.

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree

---

Other people do not masturbate.

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree

---

Masturbation is a way for me to feel like I am in control of my sexuality.

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree

---

Masturbating ends with me feeling positive emotions.

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree

---

Masturbation is a neutral activity; it is neither good nor bad.

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree

---

Masturbation ends with me achieving orgasm.

- ○ Always
- ○ Most of the time
- ○ About half the time
- ○ Sometimes
- ○ Never

---

I am comfortable masturbating, with no shame or guilt surrounding the activity.

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree

---

Masturbating ends with me feeling negative emotions.

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree

---

I have been told masturbating is bad, and I should not do it.

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree

---

I feel guilt or shame around masturbating.

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree

**End of Block: General Masturbation Attitudes and Habits**

---

**Start of Block: Pre-Pandemic Habits**

The following questions will ask you about your masturbation habits **BEFORE MARCH 11, 2020**. It is to collect the data on habits **BEFORE** isolation and quarantine orders were put in place. Please keep this in mind when answering the questions below.

---

How often do you masturbate to orgasm?

- ○ Daily
- ○ 4-6 times a week
- ○ 2-3 times a week
- ○ Once a week
- ○ Twice a month or less
- ○ Never

---

How often do you consider masturbating to orgasm?

- ○ Daily
- ○ 4-6 times a week
- ○ 2-3 times a week
- ○ Once a week
- ○ Twice a month or less
- ○ Never

---

I masturbate only when I am sexually aroused.

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree

---

When I am alone and sexually aroused, I consider masturbating.

- ○ Always
- ○ Most of the time
- ○ About half the time
- ○ Sometimes
- ○ Never

When I am alone and sexually aroused, I masturbate.

- ○ Always
- ○ Most of the time
- ○ About half the time
- ○ Sometimes
- ○ Never

I use pornography, including video, literature, or photos, when I masturbate.

- ○ Always
- ○ Most of the time
- ○ About half the time
- ○ Sometimes
- ○ Never

I masturbate when I am sad, or depressed.

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree

---

I masturbate while engaging in sexual communication, such as sexting, video calls, or phone calls, with someone.

- ○ Always
- ○ Most of the time
- ○ About half the time
- ○ Sometimes
- ○ Never

---

I masturbate when I am nervous, or anxious.

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree

---

I masturbate when I'm bored.

- ○ Always
- ○ Most of the time
- ○ About half the time
- ○ Sometimes
- ○ Never

---

I become sexually aroused at random times.

- ○ Always
- ○ Most of the time
- ○ About half the time
- ○ Sometimes
- ○ Never

End of Block: Pre-Pandemic Habits

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Start of Block: Pandemic Habits

The following questions will ask you about your masturbation habits **AFTER MARCH 11, 2020**. It is to collect the data on habits **AFTER** isolation and quarantine orders were put in place. Please keep this in mind when answering the questions below.

How often do you masturbate to orgasm?

- ○ Daily
- ○ 4-6 times a week
- ○ 2-3 times a week
- ○ Once a week
- ○ Twice a month or less
- ○ Never

How often do you consider masturbating to orgasm?

- ○ Daily
- ○ 4-6 times a week
- ○ 2-3 times a week
- ○ Once a week
- ○ Twice a month or less
- ○ Never

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I masturbate only when I am sexually aroused.

- ○ Strongly agree
- ○ Agree
- ○ Somewhat agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Disagree
- ○ Strongly disagree

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When I am alone and sexually aroused, I consider masturbating.

- ○ Always
- ○ Most of the time
- ○ About half the time
- ○ Sometimes
- ○ Never

When I am alone and sexually aroused, I masturbate.

- ○ Always
- ○ Most of the time
- ○ About half the time
- ○ Sometimes
- ○ Never

I use pornography, including video, literature, or photos, when I masturbate.

- ○ Always
- ○ Most of the time
- ○ About half the time
- ○ Sometimes
- ○ Never

I masturbate when I am sad, or depressed.

- ○ Always
- ○ Most of the time
- ○ About half the time
- ○ Sometimes
- ○ Never

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I masturbate while engaging in sexual communication, such as sexting, video calls, or phone calls, with someone.

- ○ Always
- ○ Most of the time
- ○ About half the time
- ○ Sometimes
- ○ Never

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I masturbate when I am nervous, or anxious.

- ○ Always
- ○ Most of the time
- ○ About half the time
- ○ Sometimes
- ○ Never

I masturbate when I'm bored.

- ○ Always
- ○ Most of the time
- ○ About half the time
- ○ Sometimes
- ○ Never

I become sexually aroused at random times.

- ○ Always
- ○ Most of the time
- ○ About half the time
- ○ Sometimes
- ○ Never

**End of Block: Pandemic Habits**

**Start of Block: Life During the Pandemic**

Are you currently working from home?

- ○ Yes
- ○ No

How often do you leave your house a week?

- ○ Daily
- ○ 4-6 times a week
- ○ 2-3 times a week
- ○ Once a week
- ○ Never

Was your employment status impacted by the COVID-19 quarantine regulations?

- ○ Yes
- ○ No

If yes, how was your employment status impacted?

_____

Have you experienced increased anxiety during the COVID-19 pandemic?

- ○ Yes
- ○ No

Have you experienced increased depression during the COVID-19 pandemic?

- ○ Yes
- ○ No

Do you feel your ability to become sexually aroused has changed due to the COVID-19 pandemic?

- ○ Yes
- ○ No

If yes, how has your ability to become sexually aroused changed due to the COVID-19 pandemic?

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Do you feel your sexual behavior has changed due to the COVID-19 pandemic?

- ○ Yes
- ○ No

If yes, how has your sexual behavior changed due to the COVID-19 pandemic?

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End of Block: Life During the Pandemic