Social Support in the Digital Age: A Re-examination of the Buffering and Main Effect Models of Social Support

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CHAPTER 1

Background

In their 1985 paper, Cohen and Wills characterized the mechanisms by which social support (SS) positively impacts mental health. In doing so, they introduced two models to illustrate this pathway: the main effect model and the buffering model. The main effect model posits that SS directly and positively impacts well-being of any recipient regardless of their current life stressors. The buffering model posits that SS is truly only necessary when an individual is experiencing stress. When individuals experience stressors, SS buffers the negative health impacts that are typically associated with stress. Cohen and Wills suggested that SS may help these individuals reappraise their stressors, thus mitigating the effect of stress on psychopathology.

In addition to proposing the main effect and buffering models of SS, Cohen, and Wills (1985) differentiated between structural and functional SS. Structural SS refers to the number and types of connections within an individual's social network. Measures of structural SS represent the amount of SS that is available when needed. Functional SS refers to the extent to which certain relationships actually serve particular functions (e.g., esteem/emotional support, informational support, social companionship, and instrumental support, etc.). Cohen and Wills' (1985) theories have stimulated a large amount of subsequent research on the benefits and importance of SS. However, a lot has changed since 1985, not the least of which is the advent of online social support (OSS) and the emergence of COVID-19 as an almost universal stressor in 2020. Prior to the current study, Cohen and Wills' (1985) models had not been tested with

support received via the online world (text messages, social media, zoom, etc.) or with respect to COVID-19. The current study aims to examine whether these theories pertain to the online world of SS, particularly in light of the COVID-19 pandemic as a stressor. In this introduction, I first review the importance and relevance of SS broadly. Second, I review the ideas from Cohen and Wills' 1985 paper that are relevant to the current study. Third, I introduce the use of COVID-19 as a stressor. Fourth, I review the current research on SS and its associations with mental health, as well as the research pertaining only to OSS.

1.1 Social Support

Broadly, SS is a psychological construct that has both stress-preventive and stress-buffering features (Thompson & Ontai, 2000). Social support is defined as the diverse types of support or help that people perceive and receive from others (Haber et al., 2007). The first is esteem/emotional support, which reflects communications from others conveying that a person is held in high esteem, offering help in managing one's emotional state, or expressing acceptance, intimacy, caring, liking, respect, validation, empathy, or sympathy. Esteem support communicates that a person is valued despite personal difficulties or faults. The second is social companionship support, which conveys a sense of belonging, either directly via expressions of inclusivity or indirectly, by spending time together in leisure or recreational activities. This mode of support may reduce stress by fulfilling one's need for affiliation and contact with others, helping to distract an individual from their problems, or inducing positive affective moods. Third is informational support, which includes help in defining, understanding, and coping with problems. It can take the form of giving advice, offering positive feedback, sharing new information or perspectives, or providing references to new resources. Finally, instrumental support includes the provision of financial aid, material resources, and needed services; it

includes offering help in getting necessary tasks done, providing something of use, performing a task, or taking on a responsibility (Cohen & Wills, 1985; Nick et al., 2018). Even though these support functions can be conceptually distinguished, in actuality, they are not usually independent, as people with larger support networks will likely derive greater SS in each of these domains.

SS has been linked to numerous beneficial health outcomes, both physical and emotional. Research shows that people with a greater number of social relationships live longer, have increased resistance to infectious disease, and show less cognitive decline with age (Cohen, 2020; Eisele et al., 2012). These findings indicate that SS may be an important target for psychological and health interventions.

1.2 Overview of Cohen and Wills (1985) Theories

In 1985, Cohen and Wills published an influential paper examining the positive association between SS and well-being. Cohen and Wills proposed two possible pathways that explain *why* the association exists, the buffering model and the main-effect model. The buffering model posits that support buffers or protects individuals from the negative influence of stressful events, whereas the main effect model posits that SS and resources have a beneficial effect irrespective of individual stressors. In other words, the buffering model predicts that a stress × support interaction exists in relation to health outcomes (including psychological health), whereas the main effect model predicts a statistical main effect on health outcomes. Ultimately, Cohen and Wills established that support exists for both models when certain conditions are met.

1.2.1. The main effect and buffering models of social support. The main-effect model posits that SS provides beneficial health effects irrespective of current stress levels. The underlying principle is that a sense of belonging in social networks provides individuals with

regular positive experiences, a sense of stability and predictability, as well as recognition of self-worth. Integration into social networks may also help individuals avoid negative experiences such as economic or legal problems. This phenomenon is commonly referred to as social embeddedness. At its core, the main effect model postulates that increased SS will subsequently increase well-being irrespective of the existing level of support or life stressors. However, some evidence suggests that a minimum threshold of SS is necessary for a positive impact on health to emerge (Cohen & Wills, 1985).

The buffering model posits that SS acts as a buffer to stress, ultimately reducing the impact of stress on physical and mental health outcomes. Cohen and Wills (1985) suggested that stress arises when an individual appraises a situation as threatening or demanding and either does not have or cannot use an appropriate coping response. They suggested that stress results in disruptions to the neuroendocrine or immune systems, can cause changes to health-related behaviors such as substance use or diet and exercise, and disrupts self-care behaviors. Conversely, a reduction in stress via SS would logically decrease the negative physical and emotional outcomes commonly associated with stress. Cohen and Wills also indicated that stress is associated with feelings of helplessness due to a perceived inability to cope with stressful situations. This inability to cope often results in reduced self-esteem, especially when individuals attribute the stress to their own shortcomings.

As shown in Figure 1, SS can interrupt the causal chain that links stress to illness (e.g., depression) at two points (Cohen & McKay, 1984). First, SS may positively impact individuals during the appraisal process, as support may prevent individuals from perceiving events as stressful. For example, consider the scenario where person A is required to work late without prior notice. If they have a partner at home to handle dinner, childcare, and other tasks, they may

not feel overwhelmed. Conversely, person B, lacking a robust support system, may have to contend with additional hurdles like arranging for take-out or hiring a babysitter, leading to a heightened perception of stress compared to person A.

The second point at which SS may intervene is after an individual has already perceived an event as stressful but before a pathological outcome occurs. When a person faces a stressor, SS can result in reappraisal of the situation, limit maladaptive responses, or facilitate positive counter-responses (Cohen & McKay, 1984). An example of this would be when Person B finally arrives home, he calls a friend who may provide him with esteem/emotional support in the form of validation or informational support by walking him through how to set firmer boundaries with his boss, subsequently cutting off or lessening the link between the stress response and the negative health outcome.

Cohen and Wills (1985) suggested that esteem and informational support are the most common types of SS, as they occur in response to a wide range of stressful events. In other words, these modes of SS are typically beneficial almost regardless of the stressor. Esteem support may reduce the impact of stressful events on self-esteem, and informational support may combat the feeling of helplessness by aiding individuals with reappraisal or through suggestions of appropriate coping responses (Haven, 1995). Instrumental and social companionship support are also effective but make the largest impact when the support is matched to the specific need elicited by the stressor. For example, if stress is linked to monetary problems, providing financial aid (a type of instrumental support) may have an especially beneficial effect. Cohen and Wills posited that buffering will be observable when the type of support is well-matched to the type of stressful events. In the current study, I examine both general stressors and use the COVID-19 pandemic as a specific stressor.

Another distinction that Cohen and Wills (1985) highlighted in their article is the difference between structural SS and functional SS. Structural SS reflects the existence of relationships that may provide support, whereas functional SS reflects the extent to which these relationships actually provide specific supportive functions. At a surface level, structure and function may seem similar; however, Cohen and Wills suggested that structural support is more about the *availability* of support, not the *actualization* of that support. In fact, correlations between structural and functional measures of SS are typically around .2 to .3, which indicates that these two constructs are quantitatively distinct (Barrera, Sandler, & Ramsay, 1981; P. Cohen et al., 1982; Sarason, Levine, Basham, & Sarason, 1983; Schaefer, Coyne, & Lazarus, 1981). For example, an individual may derive substantial functional support from one very supportive relationship whereas someone with multiple superficial relationships may be rich in structural support but lacking in functional SS. Additionally, Cohen and Wills suggested that the buffering effect will only be observed when the functional support is well-matched to the stressful events under study.

1.3 COVID-19 as a Stressor

In addition to measuring general stressors, I examined COVID-19-generated stress. Researchers are still discovering the extent to which the pandemic has negatively impacted mental health among the general population. The American Psychological Association has been measuring stress levels across the United States since 2007. In their 2021 report, they found that 32% of adults sometimes struggled to make basic decisions such as what to wear or what to eat due to stress caused by the pandemic (American Psychological Association, 2021). Data released in 2023 (American Psychological Association) suggest that the increased levels of stress experienced during the COVID-19 pandemic have persisted. In 2023, 24% of adults rated their

average stress levels between eight and 10 compared to 19% of adults in 2019. They also report an increase in prevalence rates of chronic illness (48% in 2019 and 58% in 2023) and mental illness diagnoses (31% in 2019 and 45% in 2023) in adults aged 35-44, which suggests we may be witnessing the health impacts of prolonged exposure to stress during the COVID-19 era.

The COVID-19 pandemic has undoubtedly been stressful for people across the globe, but how does it fit into the established theoretical approach regarding stress? There are currently four main approaches to defining what constitutes a stressful event: (1) adaption, (2) threat or harm, (3) demands exceeding resources, and (4) interruption of goals (Cohen, Murphy, & Prather, 2019). The COVID-19 pandemic would be categorized as a major stressor using any of these approaches.

1.3.1 Adaption. Adaption views the stressfulness of an event based on the amount of adaption or change it requires of the average individual (Holmes & Rahe, 1967). COVID-19 required quite a bit of adaption as individuals adjusted to changes such as working from home and following safety protocols put into place to reduce the spread of the virus (Zamarripa et al., 2021).

One study examined adaptability to online learning for college students during the COVID-19 pandemic and reported that students had negative reactions to the online condition versus their typical face-to-face learning environment (Besser, Flett, & Zeigler-Hill, 2022). They also reported that higher levels of adaptability to the pandemic were associated with lower scores on a measure of negative mood, higher scores on a measure of positive mood, and lower levels of loneliness. Another study conducted several interviews over a year (March 2020 – March 2021) with individuals who were all required to transition to remote work. Although they found that the majority of respondents felt the transition to remote work was positive, they highlighted

several areas that required individual effort to adapt to the changes (e.g. comfort with digital technology required for remote work, increased self-management, balancing motherhood while working from home, lack of social interactions during the work day, etc.).

Another qualitative study used thematic analysis to identify the main challenges associated with the COVID-19 pandemic (Maison et al., 2021). They highlight several areas that required substantial adaption from individuals including limited direct contact with people, restrictions on movement and travel, increased time spent at home and inability to engage in activities outside of the home, boredom and monotony, and uncertainty about the future. They also note that although limited contact with others was a challenge for most respondents, it was particularly difficult for individuals living alone and/or previously led an active social life.

1.3.2 Threat or harm. Brown and Harris (1989) defined stressful events as those that are seen as harmful or threatening. A study by Fitzpatrick, Harris, and Drawve (2020) collected data on fear of COVID-19 from individuals living in the United States (n = 10,368) over one week in March 2020. They asked respondents to rate their fear of COVID-19 on a 1–10-point scale. They found that respondents were fearful with an average score of almost 7. They also noted significant differences based on sub-group membership and geographic location. Participants in more densely populated communities, communities with higher COVID-19 case concentrations, and urban locations reported higher levels of fear. Additionally, Asian respondents had a mean fear score of 7.3 whereas non-Asian respondents had a mean fear score of 6.5. This is indicative of the various threats associated with the COVID-19 pandemic, beyond solely fear of illness. Asian American communities also experienced an increase in discrimination and hate crimes related to the pandemic (Han, Ridell, & Piquero, 2023; Kim et al., 2022).

Other subgroups also experienced increased fear or anxiety as a result of the COVID-19 pandemic. A study that surveyed the same pregnant women before and during the COVID-19 pandemic found that a greater number of participants met criteria for moderate and severe anxiety during the pandemic compared to before the pandemic (Ayaz, Hocaoğlu, Günay, Yardımcı, Turgut, & Karateke, 2020). Throughout the COVID-19 pandemic, the threat of serious illness, prolonged illness (long COVID-19), and even death was heightened and unusually prevalent. Additional sources of threat and harm emerged for specific groups over the course of the pandemic. Thus, COVID-19 qualified under the threat or harm conceptualization of stressors (Fofana et al., 2020; Porcelli, 2020).

1.3.3 Demands exceed resources. The third approach posits that demanding situations result in psychological distress when both control over the situation and decision-making related to the situation are insufficient (Karasek et al., 1981). Concerning the COVID-19 pandemic, individual control over the situation was minimal, and the responses to the pandemic decreased access to certain coping strategies (e.g., getting out of the house, etc.). A study examining change in coping strategies collected data prior to and during the COVID-19 pandemic and found that participants reported decreased active coping, or engagement in activities to deal with stress (Godor & Van der Hallen, 2022).

Additionally, job insecurity and loss, a largely uncontrollable and unpredictable stressor, increased as a result of the COVID-19 pandemic and was significantly associated with deterioration of food sufficiency for families and children (Milovanska-Farrington, 2022). The week that COVID-19 was declared a pandemic, unemployment in the U.S. increased by 1.4 million people. By April 2020, the national unemployment rate was recorded at 14.7% which is the highest it has been since the Great Depression (Wilson et al., 2020). In contrast, the

December 2019 the unemployment rate was 3.6% (U.S. Bureau of Labor, 2024). Both a lack of controllability and a reduction in resources (financial, food, psychological coping) add to the perceived stress experience and qualify COVID-19 as a severe stressor when using the demands exceeds resources approach.

1.3.4 Interruption of goals. The final approach defines stressful events as events resulting in interruptions of major goals (Carver & Scheier, 1999). COVID-19 fits this definition as many individuals experienced a pause in the pace and trajectory of their lives (and goals) due to the pandemic. For example, many individuals lost jobs, whereas others were unable to form new relationships, interrupting life goals for these individuals hoping to advance their careers or establish meaningful connections with others. A study by Hubley and Scholer (2022) examined the impact of having goals disrupted or put on pause by COVID-19 (i.e., "COVID-19-frozen goals") and found a positive association between individuals with higher percentages of frozen goals and psychological distress. They also reported that ruminating on these goals was negatively related to life satisfaction among participants.

Although each of these approaches can individually classify an event as a stressor, the fact that COVID-19 qualifies using *all* of them points to the importance of examining COVID-19 specific stress among individuals. COVID-19 clearly qualifies as a stressor, but beyond that, it affords many advantages when used in the context of the current study. First, virtually no one escaped the COVID-19 pandemic without some level of COVID-19 related stress: from job-loss to wide-spread lockdowns and remote working, COVID-19 is a specific stressor that impacted everyone in some way. In the past, studies examining a specific stressor were limited to studying the sub-group of individuals who had experienced that particular stressor (e.g. individuals with a specific cancer diagnosis); however, using COVID-19 as a specific stressor allowed us to sample

the general population as everyone was impacted in some way. In the present study, COVID-19 was a timely stressor that allowed for a sample of the general population while still examining the impact of a specific stressor.

Second, while the COVID-19 pandemic may appear as a singular event, the experience of stress related to COVID-19 varies greatly depending on circumstances. For example, one individual may have experienced relatively low levels of stress related to the COVID-19 pandemic (such as a family member contracting COVID-19 and making a full recovery), while another individual may experience much greater stress (such as the death of a close family member or significant loss of income due to COVID-19). The variation in stressors related to COVID-19 can vary enormously.

Third, using a specific stressor like COVID-19 allows for matching SS measures to a specific stressor. This matching increases the ability to detect buffering effects. Prior studies examining the buffering hypothesis have largely used cumulative stress measures to do so as opposed to measuring discrete stressful events (Holmes & Rahe, 1967). Other researchers have examined chronic stressors such as poverty or illness (Cummins, 1988; Lepore, Evans, & Schneider, 1991; Olstad, Sexton & Søgaard, 2001). Another group of studies assessed levels of perceived stress in a specific domain (such as perceived occupational stress) (Cheng et al., 2020; LaRocco, House, & French, 1980). These methodological choices may interfere when attempting to detect a stress x support interaction (buffering model), because the stress measures don't match up with the types of support needed to deal with those specific stressors. Using COVID-19 as the stressor in this study allowed us to focus on types of SS that pertain to COVID-19 specific stressors. In particular the inclusion of OSS in the present study may be a well-matched source of support in light of the socially isolating nature of COVID-19.

Finally, COVID-19 was a stressor beyond individual control. In other words, it was not self-generated. Self-generated stressors may be linked to both well-being and depression (Hammen, 2005). For example, depressed individuals may experience a larger number of stressors due to their depression, such as not going to work due to low energy levels subsequently resulting in job loss. Using COVID-19 as a stressor in this study will ensure that the stressor is not confounded with the chosen mental health outcomes.

1.4 Impact of SS on Psychological Well-being and Depression

Several reviews have examined the impact of SS on mental health outcomes. One such review examined the impact of perceived social support on mental health outcomes (Wang et al., 2018). Wang and colleagues (2018) found that individuals with depression and low perceived social support had worse outcomes in terms of symptoms, recovery, and social functioning than those with depression and higher levels of perceived support. Another review focused on the impact of social support on depression after a sudden loss or death of a close family member (Scott et al., 2020). This review may be particularly relevant to the COVID-19 pandemic due to its high mortality rate. They reviewed 11 papers and found consistent evidence of a negative association between social support and symptoms, or presence of depression. Gariépy et al.'s (2016) meta-analysis, looking at SS and protection from depression across different age groups, found that SS protected against depression regardless of age.

In terms of well-being, a meta-analysis by Chu, Saucier, and Haffner (2010) reported a small positive association between social support and well-being for children and adolescents. Another meta-analysis examining SS and well-being among ethnic minorities reported a positive association between SS and well-being (Vera et al., 2020). Finally, a meta-analysis examining social networks and well-being in adults over the age of 55, reported a positive association

between subjective well-being and SS (Pinquart & Sörensen, 2000). They also reported that the *quality* of social contacts had greater impact on well-being than the *quantity* of social contacts did.

In addition to reviews, several empirical studies have been conducted examining the associations between social support and well-being and depression that deserve particular attention. McDonald (2018) examined the impact of SS on mental health outcomes for LGBTQ adolescents and found that higher levels of SS were associated with positive self-esteem, whereas lower levels of support were associated with higher levels of depression, anxiety, alcohol or drug misuse, risky sexual behaviors, shame, and low self-esteem. A study examining the relation between social support and well-being across age groups found that well-being (operationalized by life satisfaction) was predicted by both enacted and perceived support (Siedlecki et al, 2014). They also found that family embeddedness and the provision of support to others predicted positive affect. These patterns held across all different age groups.

The short-term impact of SS on mental health outcomes is also noteworthy. A study by Caspi, Bolger, and Eckenrode (1987) examined the relation between stressful daily events or discrete stressors, SS, and overall daily mood. They found that perceived availability of SS was related to meaningful decreases of the impact of the reported stressors on next-day mood states. Another study (Solomon, Mikulincer, & Hobfoll, 1986) looked at the mental health of soldiers following a war. They found that soldiers who reported a lack SS from army officers (compared to soldiers who reported support from army officers) were at a significantly greater risk of experiencing a combat stress reaction. Additionally, they found that lack of support from officers as well as other soldiers was significantly related to greater feelings of loneliness.

1.5 Overview of Research on OSS

A body of literature regarding the impact of OSS has emerged in recent years as the use of technology has become a more integral and prevailing component of day-to-day life. Over the past several years, OSS has become even more important as social media and computer-mediated-communication have become integral components of the current social landscape. It is critical to understand the ways that OSS positively affects mental health through avenues such as expanded SS networks (Nesi, 2020).

Additionally, with COVID-19 severely impacting daily life, in-person socialization decreased drastically. At the time of data collection for the present study, there were shifting levels of in-person and virtual socialization depending on a variety of factors such as individual differences, the emergence of new COVID-19 variants (such as Omicron), vaccination status, and variable comfort levels related to the risk of exposure. Awareness of the mental health of individuals during uncertain times was highlighted during this period of increased and unpredictable social isolation. Thus, the role of OSS, and the need to understand how it relates to mental health, has only increased due to the limits imposed on in-person social interactions by lockdown and social distancing orders. Ellis et al.'s (2020) analysis of social media use and mental health outcomes for adolescents, conducted at the height of the COVID-19 pandemic, indicated that virtual time spent with friends was related to higher depression scores but lower loneliness scores (Ellis et al., 2020). Further research on the impact of OSS on mental health outcomes may shed light as to how the internet can be used to promote positive health outcomes.

Some research findings suggest that OSS does not protect against negative psychological outcomes (Batenburg & Das, 2015; Liu & Yu, 2013; Utz & Breuer, 2017); however, other studies provide evidence that OSS does serve as a protective factor (Gilmour et al., 2020; Melling & Houguet-Pincham, 2011). This variability may be due to inconsistency among OSS

theories and measurement decisions. Many of these studies do not employ the framework that Cohen and Wills (1985) laid out for measuring in-person SS to the study of OSS.

For example, some studies use metrics such as number of Facebook friends (Lönnqvist & große Deters, 2016; Nabi et al., 2013), which would be classified as a structural measure of OSS, whereas other studies employ functional measures of OSS (Cole et al., 2020; Wright et al., 2013). As the importance of OSS increases, it is equally important to apply traditional and tested theories of SS to the online realm.

One study by Obst & Stafurik (2010), focused on individuals with physical disabilities participating in disability online support communities. They found that OSS and feeling a sense of community online was positively related to well-being. A study by Cole & colleagues (2017) examining OSS in college students found that for people with weaker in-person SS, OSS provided meaningfully additive support. They also reported that both SS and OSS were associated with lower levels of depressive symptoms and that OSS buffered against the adverse effects of peer victimization.

1.6 Summary and Integration

Both in-person and online SS have been associated with improved mental and physical health outcomes. Cohen and Wills (1985) proposed two possible pathways by which this phenomenon may occur, the main effect and buffering models. However, these theories have not been well tested with respect to online social interactions. The question remains: how do Cohen and Wills' (1985) theories of in-person SS apply to online SS? Furthermore, with the added stress of COVID-19, including the limitations imposed on face-to-face social interactions, did the role of online SS change during the pandemic? These questions provide the foundation for the present study. In the offline world, evidence exists for both the main effect and buffering

hypotheses of SS. The current study aims to establish whether similar patterns and effects hold when applying these theories to the online world and in light of the COVID-19 pandemic.

1.7 The Current Study

The current study investigates the relation between both online and in-person SS, stress, and both well-being and depression with fidelity to the established models. Specifically, Cohen and Wills' main effect and buffering models were applied to both SS and OSS, employing both functional and structural measures of both, and using both general stress and COVID-19 specific stress measures. See Table 1 for hypotheses for each of these tests.

Table 1

Proposed Hypotheses

Cohen & Wills model	In-person SS		Online SS	
	Functional	Structural	Functional	Structural
Main effect model	Significant (Hypothesis 1a)	Significant (Hypothesis 1b)	Significant (Hypothesis 2a)	Significant (Hypothesis 2b)
Buffering model	Significant (Hypothesis 3a)	Nonsignificant (Hypothesis 3b)	Significant (Hypothesis 4a)	Nonsignificant (Hypothesis 4b)

I expect to see a main effect regardless of support type and measure type. This is based on the idea that when stress is not a factor, both the availability and receipt of SS will improve mental health outcomes.

1.7.1 Aim 1. Assess the main effect model for both in-person and online SS, using both structural and functional measures. There is ample prior research examining the main effect model with regard to in-person SS. Based on this prior research and theory, I predict that a main effect will emerge for in-person SS when assessing functional SS (**Hypothesis 1a**) and when assessing structural SS (**Hypothesis 1b**). Specifically, I predict that increased SS (both functional and structural) will be associated with lower symptoms of depression and higher well-being.

Less research exists explicitly assessing the main effect model for OSS, however, as outlined above emerging research shows mixed results (Ellis et al., 2020; Gilmour et al., 2020; Liu & Yu, 2013). However, based on the similarities between in-person SS and OSS, and the current study's utilization of consistent measurement strategies for both SS and OSS, I predict that the same patterns will hold in the main effect analyses incorporating OSS. I predict that a main effect will emerge for OSS when assessing functional OSS (**Hypothesis 2a**) and when assessing structural OSS (**Hypothesis 2b**). More specifically, I expect to see a positive association between OSS and well-being and a negative relation between OSS and depressive symptoms.

1.7.2 Aim 2. Assess the buffering model for both in-person and online SS, using both structural and functional measures. There is also a substantial body of research supporting the buffering model with regard to in-person SS. It is important to note that Cohen and Wills (1985) asserted that "For functional measures, our matching model predicts that buffering will be observed when a functional measure is well matched to the stressful events under study, implying that only specific (and appropriate) functional measures will show buffering effects." The functional measures (for both SS and OSS) employed in the present study assess the four primary types of SS. As I have opted to assess cumulative stress (both specifically related to

COVID-19 and general stress), I expected to see evidence of the buffering effect, although it could be an underestimate of the true buffering effect that may be present for support specific to an isolated stressor. Based on this prior research and theory, I predict that an observable buffering effect, or Stress × Support interaction, will emerge for in-person SS when assessing functional SS (**Hypothesis 3a**). Specifically, I expect that higher levels of SS will be associated with higher WB scores and lower depressive symptoms than those with lower levels of SS. I do not expect to see a significant buffering effect when using the structural measure of SS as these measures do not directly assess the type of support that would be effective in response to stressors (**Hypothesis 3b**). Again, as less research exists examining these models in relation to OSS, I predict that the same patterns will hold. Thus I expect to see evidence of a buffering effect when examining functional OSS (**Hypothesis 4a**) and do not expect to see evidence of a buffering effect when employing a structural measure of OSS (**Hypothesis 4b**) in the same directions as in-person SS. Additionally, I will conduct regions of significance (ROS) testing for all significant interactions. ROS testing identifies the point at which a moderator (SS) diminishes the relation between a predictor (stress) and outcome variable (depression/well-being) to 0.

1.7.3 Aim 3. Regarding stress type, I expect that the inclusion or exclusion of both general stress and COVID-19 stress in the model will not significantly change the pattern of results. However, as we are still working to understand the implications of COVID-19 stress, there is little prior research to base this hypothesis on. Therefore, the inclusion of COVID-19 stress will be more exploratory in nature. It is possible that the socially isolating nature of COVID-19 will have an impact on the findings, as online support may be a better match to COVID-19 stress as opposed to in-person SS.

CHAPTER 2

Method

2.1 Participants

Adults who were living in the United States and fluent in English were eligible to participate in the study and were recruited via Qualtrics Panels, an online data collection platform. The final sample size for the study was N=756. The mean age was 48.06 (SD = 17.76, range = 18 to 92 years old. Demographics revealed considerable diversity (please note that demographic options were not mutually exclusive so percentages may sum to greater than 100). Regarding race/ethnicity, the sample was 82.3% Caucasian, 4.9% Hispanic, 7.7% Black or African American, 7.4% Asian, 2% Native American, .1% Pacific Islander, and 2.1% other. All participants were fluent in English and 16.1% of participants reported speaking a second language. Regarding gender, the sample was 47.5% Male, 51.3% Female, .7% Non-binary and 4% Transgender Male. Regarding education level, 2.5% of participants reported some high school or less, 20.9% of participants reported receiving a high school diploma or GED, 11.4% of participants reported an associate or technical degree, 19.6% reported some college but no degree, 24.6% reported having a bachelor's degree, 16.7% reported a master's degree, and 4% reported a doctoral degree. Regarding relationship status, 52.9% of participants reported that they were currently married and living with someone or living with someone in a marital-like relationship, 27.1% reported that they were never married or never lived with someone in a marital-like relationship, 2.6% reported that they were separated, 11.5% reported that they were divorced or formerly lived with someone in a martial like relationship, and 5.3% of participants

reported that they were widowed. Regarding COVID-19 vaccination status, 17.9% reported that they were unvaccinated, 5.3% of participants reported receiving one vaccine dose, 24.5% reported two vaccine doses, 23.0% reported three vaccine doses, and 28.0% reported receiving four or more vaccine doses. Regarding political views, 15.6% reported that they were very liberal, 20.2% reported that they were slightly liberal, 23.4% reported that they were neither liberal nor conservative, 20.4% reported that they were slightly conservative, 15.7% reported that they were very conservative and 2% indicated an affiliation other than liberal or conservative.

2.2 Procedure

All procedures were approved by the Vanderbilt University Institutional Review Board. Data were collected via Qualtrics Panels. Qualtrics Panels works with various panel agencies that have access to pools of research participants. Qualtrics Panels invites subjects to participate in multiple ways. Participants can volunteer through the Qualtrics Panels portal, respond to email invitations, or respond to in-app and SMS notifications. To avoid self-selection bias, these survey invitations only include general information informing participants of the length of the survey and incentives for participation. Qualtrics Panels participants typically receive a $5 credit for completing the survey.

Once participants accepted an invitation to participate, they completed an informed consent and answered various demographic questions through the online platform. All participants who did not complete the consent, indicated they were under the age of 18, or indicated they did not speak English fluently were not allowed to complete the remainder of the survey and those responses were not included in the final data pool. Eligible participants were then presented all measures (outlined below) in a randomized order.

As participants completed all surveys online, I imposed validity checks recommended by DeSimone and Harms (2018) to screen out participants who were not taking the study seriously or not answering the questions honestly. I excluded respondents who gave incorrect answers to any of five quality control questions: e.g., "For us to check that this online survey is functioning properly, please select '4' as your answer to this question." Qualtrics panels automatically removed any participants who did not respond appropriately to the validity checks and these respondents were not included in the final sample of 756. I also examined protocols for speed of responding; however, no respondent completed the survey faster than the recommended cutoff speeds (Wood, Harms, Lowman, & DeSimone, 2017). The average time to complete the survey was around 25 minutes.

All data were collected between December 15, 2022, and January 20, 2023. For reference, this coincided with the circulation of the Omicron COVID-19 variant in the United States. As of December 19, 2022, there were 159,232 new cases of COVID-19 reported globally for the week prior (Malik et al., 2023). The public health emergency declared for COVID-19 ended in May 2023 (CDC Archives, 2023).

2.3 Measures

All measures can be seen in Appendix A. With the exception of the demographics questionnaire, measures were completed in a randomized order.

2.3.1 Demographics. Various demographic data was collected from participants.

2.3.2 Functional Social Support. Measures of functional social support were used to assess both in-person and online social support.

Functional In-person Social Support. The Interpersonal Support Evaluation List (ISEL) was used to assess functional social support. The ISEL (Cohen & Hoberman, 1983) measures

self-esteem, belonging, appraisal, and tangible in-person social support; these subtypes are highly comparable to the four OSS subtypes measured in the current study. Respondents rated 40 items on a scale from 1 (definitely false) to 4 (definitely true) and scores range from 0 - 120. Subscales have demonstrated acceptable reliability (Cohen & Hoberman, 1983) in general population samples and reasonable independence from one another (Brookings & Boldron, 1988; Merz et al., 2014; Young, Berenson, Cohen, & Garcia, 2005). In the present study, instructions were altered slightly to remind participants to focus on in-person, face-to-face experiences only. In the current study, each subscale consisted of 10 items and showed good internal reliability (self-esteem $\alpha = .79$; belonging $\alpha = .87$; appraisal $\alpha = .88$; tangible $\alpha = .87$).

Functional Online Social Support. To measure functional OSS, I used the Online Social Support Scale (OSSS). The OSSS (Nick, Cole, Smith et al., 2018) measures four types of social support historically studied in in-person settings (esteem/emotional, social companionship, informational, instrumental) but in an online context (e.g., on websites, apps, games, over text messaging). The scale also measures other potentially supportive encounters respondents have online (e.g., friending, liking, following). After participants report the frequency with which they use particular online spaces, they rate the frequency of experiencing 40 examples of social support on a 0 (never) to 4 (a lot) scale. Nick, Cole, Smith et al. (2018) demonstrated the OSSS has a clean factor structure, excellent reliability, and acceptable levels of convergent, discriminant, and construct validity among three samples of adults. In the present study, each subscale consisted of 10 items and showed excellent internal reliability (esteem/emotional $\alpha = .97$; social companionship $\alpha = .96$; informational

2.3.3 Structural Social Support.

In-person Structural Social Support. To assess structural in-person social support, measures are typically quantitative in nature. The Social Network Index (SNI) is a measure of in-person structural support (Cohen et al., 1997) that has been used successfully in a large number of studies (e.g. Crookes et al., 2016; Fortmann et al., 2015; Grewal & Golub, 2022). The scale assesses social connectivity across 12 domains: spouse, parents, parents-in-law, children, other close family members, close neighbors, friends, workmates, schoolmates, fellow volunteers, members of religious groups, and members of groups without a religious affiliation. Scoring varies slightly for different items, however, generally, respondents are asked to rate how many individuals they have in each domain (e.g. How many close friends do you have?) and then are asked how many of these individuals they speak to at least once every two weeks (e.g. 0 to 7 or more). Questions were modified slightly to ensure only in-person interactions were measured. For example, the question, "how many of these friends do you see or talk to at least once every 2 weeks?" was changed to "how many of these friends do you see **in-person** at least once every 2 weeks?"

Additionally, I altered some of the language to make the measure more inclusive. For example, the questions referring to parents and parents-in-law assume a heteronormative relationship. For example, the original response options to the question "Are either of your parents living?" were neither, mother only, father only, or both. The language was updated to be inclusive of the LGBTQ+ community as well and new response options to the same question were neither, one parent, or both parents. This change did not alter how the measure was scored.

Cohen et al. (1997) outline two primary approaches to scoring the SNI[1]. The first approach measures number of high-contact roles, or the number of social roles in which the respondent has regular contact. This approach results in scores ranging from 0 to 12. For the current study, I opted to use the second approach in data analysis, which measures number of people in social network. I determined that this approach was a more direct measure of structural SS and also allowed for higher variability in SNI scores among participants. This approach sums the total of number individuals a respondent has regular contact with (at least once every 2 weeks). Cohen et al. (1997) also warned against artificially inflated SNI scores, typically caused by a set of respondents who "interpret the SNI item inquiring about the number of 'other group' members with whom they interact at least once every 2 weeks more broadly than intended, with some respondents reporting up to 100 or more fellow group members." To ensure that SNI scores were not artificially inflated in the current study I followed their suggestion of assigning all values over 6 scores of 7.

Online Structural Social Support. Currently, no well-validated measure of online structural SS exists, thus, I opted to modify the SNI to include questions pertaining to support gained virtually. With input from our research team, I adapted the measure to include an online version for each question. For example, the question "How many of these friends do you see **in-person** at least once every 2 weeks?" is followed with "How many of these friends do you talk to **using technology** at least once every 2 weeks?" I opted to use the phrase "using technology" to include OSS received through various sources, such as email, text, social media sites, video games, etc.

[1] The Social Network Index and detailed scoring information are available at https://www.cmu.edu/dietrich/psychology/stress-immunity-disease-lab. Click on scales and then on Social Network Index.

Finally, there is a component of online social support that was not represented in the original SNI, as technology has given rise to a new relationship domain: online-only friends, or regular contacts with whom the respondent has no physical relationship (Carter, 2004; Domahidi, Festl, & Quandt, 2014). Supplemental questions were asked to include this type of relationship in total OSS scores. The following questions were added: (1) Do you have any friends or acquaintances that you only know online (never met in-person)? and (2) If yes, how many of these individuals do you talk to using technology at least once every 2 weeks? As both the original and modified SNI do not assess a unified construct (e.g. items are not expected to relate to one another) it would not be appropriate to provide an index of internal consistency (Cronbach's alpha) for this measure.

2.3.4 Cumulative Stress. To assess for stress generally, participants completed the 64-item Crisis in Family Systems-Revised (CRISYS-R; Berry et al., 2001). The CRISYS-R has been well-validated in multiple languages and demonstrates both construct validity and excellent test-retest reliability (r=.93) (Berry et al., 2001; Berry et al., 2006; Shalowitz, Berry, Rasinski, & Dannhausen-Brun, 1998). Participants indicated whether they experienced a list of potentially stressful events spanning several domains (financial, legal, career, stability in relationships, safety in the home, safety in the community, medical issues about respondent, medical issues about others, housing problems, difficulty with authority, and prejudice) during the past 6 months. Some sample items are: "Did you or your partner have a baby?", "Did someone treat you unfairly because of your sex?", "Did you get a divorce or break up with a partner?" etc. Participants then rated each experience as positive, negative, or neutral. A summary score based on the total number of events rated as negative is then calculated as a measure of cumulative

stress. Acceptable test-retest reliability has been demonstrated for the negative life events scale for the English (r = .93) versions (Shalowitz, et al., 1998).

2.3.5 COVID-19 Stress. To measure COVID-19 specific stress, I used the Pandemic Stress Questionnaire (PSQ; Kujawa, Green, Compas, Dickey, & Pegg, 2020). The Pandemic Stress Questionnaire (PSQ) is a 25-item measure that assesses COVID-19 stress exposure and the subjective severity of those stressors across several domains (general life disruption, interpersonal, financial, education/professional goals, health-self, and health-others). Example items include: "I had to cancel or postpone important events because of the coronavirus pandemic (e.g., events for a club, sporting events, and major celebrations)," "I had conflicts or arguments with my partner or family members due to coronavirus," "Someone close to me died from COVID-19-19" etc. For each item, participants selected "Yes" or "No" to indicate whether each event happened to them. Endorsed events were rated on a 1 (not at all bad) to 5 (extremely bad) severity scale.

The PSQ demonstrates both convergent validity (moderately correlated with a well-validated measure of perceived stress) and excellent test-retest reliability (events and severity ratings were highly correlated across two time points; rs = .79 and .83). Measures of internal consistency are not appropriate for this measure as it measures discrete events as opposed to an underlying construct.

A summary score was calculated in a manner similar to the general stress measure. Participants who were not exposed to a stressor or were exposed but indicated that the stressor was "not at all bad" received a score of 0. Participants who were exposed to the stressor and reported that it was negative received scores based on their severity ratings (slightly bad = 1, somewhat bad =2, moderately bad =3, or extremely bad =4).

2.3.6 Depressive Symptoms. To assess depression symptoms, participants completed the Beck Depression Inventory – Version 2 (BDI-II; Beck, Steer, & Brown, 1996). The BDI-II is a self-report questionnaire that measures severity of affective, behavioral, and cognitive depressive symptoms in adults. It consists of 21 items asking how the respondent has been feeling over the past two weeks. Each item consists of four response options, scored on a 4-point scale (i.e., 0 = "I don't feel disappointed in myself," 1 = "I am disappointed in myself," 2 = "I am disgusted with myself," 3 = "I hate myself.") Scores are summed so that higher scores reflect more severe levels of depression. The measure has strong internal consistency, convergent validity, and discriminant validity. It also discriminates well between depressed and non-depressed individuals (Dozois & Covin, 2004). A comprehensive review of the psychometric properties of the BDI-II across multiple populations described internal consistency as around 0.9 and the retest reliability ranging from 0.73 to 0.96 (Wang & Gorenstein, 2013). Coefficient alpha in the present study showed excellent internal reliability (α=.95)

2.3.7 Well-being. To measure well-being, participants will complete the Psychological Wellbeing Scale (PWB) -18-item version (Ryff & Keyes, 1995). This measures 6 aspects of psychological well-being and happiness, including autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance. Participants rate the degree to which they agree or disagree with a variety of statements using 7-point Likert scales. Ryff's (1989) original paper revealed that the six scales exhibit acceptable internal consistency ranging from .93 to .86 when used with a sample representative of the general population. The coefficient alpha was calculated for the entire measure, as subscales were not used in data analysis. In the present study, the measure showed good internal reliability (α = .83).

2.4 Power Analysis

A power analysis was conducted using G*Power version 3.1.9.7 (Faul et al., 2009). The power analysis indicated high power to detect a small effect ($f^2 = .02$) at a significance criterion of $\alpha = .05$ (power = .92). The sample size ($N = 756$) was sufficient to detect small effects when using a 3-predictor multiple regression to test the effect of one predictor over and above the two others. These results suggest that for any effect sizes below .02, the study is underpowered, and thus any null results should be treated with caution. For correlations, my sample allowed me to have full power (power = .87) to detect small effects ($r = .1$). In the present study, all significant correlations are greater than $r = .1$.

CHAPTER 3

Results

3.1 Descriptive Statistics and Correlations

Table 2 contains Pearson correlations, means, and standard deviations for all study measures. All four measures of social support were significantly positively correlated with one another. General stress and COVID-19 stress were also significantly positively correlated. As expected, well-being and depression were significantly negatively correlated.

The following findings were of note. Higher stress scores (of both types) were significantly correlated with higher levels of in-person structural SS, online structural SS, and online functional SS. In contrast, in-person functional SS was significantly negatively correlated with general stress and not significantly correlated with COVID-19 stress. Well-being was negatively correlated with both stress types, meaning that individuals reporting higher levels of stress also reported lower levels of well-being. Similarly, depression was significantly positively correlated with both stress types, meaning that individuals who reported higher levels of stress were also reporting greater depressive symptoms. All social support measures (ISEL, SNI, OSNI, and OSSS) correlated with outcome variables in the expected direction such that support was positively correlated with well-being and negatively correlated with depression scores.

3.2 Multiple Linear Regressions

To test the main hypotheses, I conducted a series of multiple linear regressions. In each model, I regressed the outcome variable, either depression or well-being, onto a stress measure

and a social support measure. I then repeated the regression analysis including the stress × social support interaction. An example set of equations is below:

$$Outcome = \beta 0 + \beta 1\ SocialSupport + \beta 2\ \text{Stress} + e$$

$$Outcome = \beta 0 + \beta 1\ SocialSupport + \beta 2\ \text{Stress} + \beta 3\ \text{SS}\times\text{Stress} + e$$

In total, I ran 16 analyses using AMOS (Version 26.0). All predictors were mean centered prior to creating interaction terms (Aiken & West, 1991). I rotated between measures of in-person and online functional social support and between measures of in-person and online structural social support. I also completed analyses using either a general stress measure or a COVID-19 specific stress measure. All regression results are presented in Table 3. See Figure 2 for graphs of each interaction using depression as the outcome variable. See Figure 3 for graphs of each interaction using well-being as the outcome variable.

For all significant interactions, I completed regions of significance (ROS) testing, which defines the values of the moderator (SS) at which the relation between stress and the outcome variable (depression or well-being) is no longer significant (Preacher, Curran, & Bauer; 2006). In other words, it answers the question, what value of SS is needed to negate the main effect between stress and either depression or well-being. Stress and SS values were plotted at +/- 1 standard deviation from the mean.

3.2.1 Aim 1: The main effect model. Regarding Hypothesis 1a, when using a measure of functional in-person SS and general stress, the negative main effect of SS on depression and the positive main effect of stress on depression were significant. Similarly, the positive main effect of SS on well-being and the negative main effect of stress on well-being were significant. When substituting COVID-19 stress for general stress in the same model, the negative main effect for SS on depression and the positive main effect for COVID-19 stress on depression were

significant. The positive main effect of SS on well-being and the negative main effect of stress on well-being were also significant.

Regarding Hypothesis 1b, when using a measure of structural in-person SS and general stress, the negative main effect of SS on depression and positive main effect of stress on depression were significant. Similarly, the positive main effect of SS on well-being and negative main effect of stress on well-being were significant. When substituting COVID-19 stress for general stress in the same model, the negative main effect for SS on depression and positive main effect of COVID-19 stress on depression were significant. The positive main effect of SS on well-being and negative main effect of stress on well-being were significant.

Regarding Hypothesis 2a, when using a measure of functional OSS and general stress, the negative main effect of OSS on depression and positive main effect of stress on depression were significant. Similarly, the positive main effect of OSS on well-being and negative main effect of stress on well-being were significant. When substituting COVID-19 stress for general stress in the same model, the negative main effect for SS on depression and positive main effect of COVID-19 stress on depression were significant. The positive main effect of OSS on well-being and negative main effect of stress on well-being were also significant.

Regarding Hypothesis 2b, when using a measure of structural OSS and general stress, the negative main effect of OSS on depression and positive main effect of stress on depression were significant. Similarly, the positive main effect of OSS on well-being and negative main effect of stress on well-being were significant. When substituting COVID-19 stress for general stress in the same model, the negative main effect for OSS on depression and positive main effect of COVID-19 stress on depression were significant. The positive main effect of SS on well-being and negative main effect of stress on well-being were also significant.

3.2.2 Aim 2: The buffering model. Regarding Hypothesis 3a, I tested a model that included functional in-person SS, stress, and a SS × Stress interaction term. In these analyses, a significant interaction term indicates the presence of a buffering effect. When general stress was included in the model, I did not find a significant buffering effect for either depression or well-being. When I included COVID-19 stress as the stress variable, I found a significant negative buffering effect for depression, but I did not find a significant buffering effect for well-being. As shown in Figure 4, ROS testing identified the values of SS between which the relation between stress and depression is 0 (lower bound of SS = 31.33 and upper bound of SS = 149.27).

Regarding Hypothesis 3b, I tested a model that included structural in-person SS, stress, and a SS × Stress interaction term. I did not expect to see a significant buffering effect when structural measures of SS were included in the model. Contrary to my hypothesis, when general stress was included in the model, I found a significant negative buffering effect for depression and a significant positive buffering effect for well-being. Regarding depression, as shown in Figure 5, ROS testing identified the range of values of SS in which the relation between stress and depression is 0 (lower bound of SS = 34.41 and upper bound of SS = 56.41). Regarding well-being, as shown in Figure 6, ROS testing identified the range of values of SS in which the relation between stress and well-being is 0 (lower bound of SS = 30.11 and upper bound of SS = 71.57).

When COVID-19 stress was included as the stress variable, the negative buffering effect observed for depression was significant, but no significant buffering effect was observed for well-being. As shown in Figure 7, ROS testing identified the values of SS between which the relation between stress and depression is 0 (lower bound of SS = 42.54 and upper bound of SS = 203.21).

Regarding Hypothesis 4a, I tested a model that included functional OSS, stress, and an OSS × Stress interaction term. When general stress was included in the model, I found a significant negative buffering effect for depression and a significant positive buffering effect for well-being. Regarding depression, as shown in Figure 8, ROS testing identified the values of SS between which the relation between stress and depression is 0 (lower bound of SS = 98.94 and upper bound of SS =163.90). Regarding well-being, as shown in Figure 9, ROS testing identified the values of SS between which the relation between stress and well-being is 0 (lower bound of SS =85.99 and upper bound of SS = 212.55).

When COVID-19 stress was included as the stress variable, a significant negative buffering effect was observed for depression. No significant buffering effect was observed for well-being. As shown in Figure 10, ROS testing identified the values of SS between which the relation between stress and depression is 0 (lower bound of SS = 110.54 and upper bound of SS =483.61).

Regarding Hypothesis 4b, I tested a model that included structural OSS, stress, and a SS × Stress interaction term. When general stress was included in the model, I found a significant negative buffering effect for depression and a significant positive buffering effect for well-being. Regarding depression, as shown in Figure 11, ROS testing identified the values of SS between which the relation between stress and depression is 0 (lower bound of SS = 34.49 and upper bound of SS = 51.56). Regarding well-being, as shown in Figure 12, ROS testing identified the values of SS between which the relation between stress and well-being is 0 (lower bound of SS = 32.06 and upper bound of SS = 69.04).

When COVID-19 stress was included as the stress variable, a significant positive buffering effect was observed for depression, but no significant buffering effect was observed for

well-being. As shown in Figure 13, ROS testing identified the values of SS between which the relation between stress and depression is 0 (lower bound of SS = 42.17 and upper bound of SS = 122.93).

CHAPTER 4

Discussion

The current study yielded several findings of note with implications for both clinical practice and future research. First, as hypothesized, the main effect model was supported by all analyses, regardless of stress type, support type, and outcome. Second, the buffering model was partially supported, insofar as support varied based on stress type, support type, and outcome variable, and not all the results were in line with the proposed hypotheses. These findings are in line with systematic reviews of the literature, which have shown that main effects of SS on mental health outcomes are highly replicable whereas the stress-buffering model of SS is observed less consistently (Alloway & Bebbington, 1987; Lakey & Orehek, 2011).

I will expand on each of these findings below.

4.1 Aim 1: The Main Effect Model

First, I found support for the main effect model across all analyses. This finding is in line with the proposed hypotheses (hypotheses 1a, 1b, 2a, and 2b) and provides additional evidence in support of Cohen and Wills' (1985) original theories and prior research on the benefits of social support (Harandi, Taghinasab, & Nayeri, 2017; Reuger et al., 2016; Wang et al., 2018). Put simply, people with higher levels of social support (both online and in-person) scored higher on a measure of well-being and lower on a measure of depression.

4.1.1 OSS and the Main Effect Model. Substantial research confirms the link between in-person social support and positive outcomes (e.g., Cohen, 2021; Eisele et al., 2012; Scott et al., 2020); however, fewer studies have examined the link between online social support and

positive mental health outcomes. Results have been mixed. Some studies report no link between OSS and positive outcomes (Batenburg & Das, 2005; Liu & Yu, 2013; Utz & Breuer, 2017). Other studies provide evidence that OSS resembles in-person SS and is linked with positive mental health outcomes (Gilmour et al., 2020; Melling & Houguet-Pincham, 2011). One of the earliest studies examining online social support (Kraut et al., 1998) found a positive association between internet use and both depressive symptoms and loneliness scores at Time 1; however, these negative effects did not persist in follow-up data collection (2-3 years after the initial time point). In fact, the association between internet use and depression flipped at subsequent time points, such that increased internet use was associated with *lower* levels of depression and the association between internet use and loneliness was no longer significant (Kraut et al., 2002). The mixed findings of these studies highlight the need for continued research examining the link between OSS and health outcomes with a greater focus on what underlying constructs might be contributing to the mixed findings.

Variations in methodological decisions among researchers is one possible explanation for the inconsistent findings – both in regard to study design (e.g. cross-sectional, longitudinal, etc.) and how the constructs of interest are measured. Although there are a large number of studies that have employed well-validated measures of OSS (Cole et al., 2020; Graham et al., 2011; McCloskey et al., 2015), there are a number of alternative methodological approaches prevalent within the literature. For example, one method of measurement employed by Kraut & colleagues (1998) to operationalize OSS was the number of e-mail messages participants sent and received, however this approach ignores other aspects of OSS and assumes that the emails were supportive in nature. Other studies have used metrics such as number of Facebook friends (Lai et al., 2019; Lönnqvist & große Deters, 2016) or coded online messages for valence and instances of support

(Avery, 2019; Zhang,2017) Batenburg & Das (2005) examined OSS only in the context of online breast cancer support communities. They opted to measure OSS as a summary score based on length of visit to the online support group and level of interaction with posts (e.g. creating topic, responding, etc.

In light of the mixed results from previous research, the current study contributes to the growing body of research on OSS in an important way. First, I opted to collect data on both structural and functional OSS. I also used the traditional and well-tested models of in-person SS that unified the body of research on in-person SS. Thus, the conclusions presented here move us closer to a unified conclusion on the impact of OSS on mental health outcomes and provides an example on how to study OSS that is in line with prior theory and research. Additionally, the current study contributes to the growing body of research by providing evidence that OSS is associated with better mental health outcomes.

4.2 Aim 2: The Buffering Model

The second major finding from the present study was partial support for the buffering hypothesis. Initial hypotheses related to the buffering model were based on theory and prior research. I predicted that a significant buffering effect would occur for all analyses including a measure of functional social support (hypotheses 3a and 4a) and that no significant buffering effect would emerge when examining structural social support (hypotheses 3b and 4b). This is based on the premise that the utilization of social support is necessary to offset the negative health effects of stress. Or stated conversely, the existence of support networks alone would not be enough to buffer the negative effects of stress.

4.2.1 Functional in-person SS and the buffering model. One of the initial hypotheses related to the buffering model (hypothesis 3a) posited that a significant interaction would emerge

when examining in-person functional social support × stress for both outcome variables. Of the four analyses relevant to this hypothesis, only one was significant (in-person functional social support x COVID-19 stress on depressive symptoms). This suggests that for those experiencing the same levels of COVID-19 stress, individuals with higher levels of in-person functional social support reported fewer depressive symptoms compared to those with lower levels of in-person functional support. The present study did not find support for the buffering model in the other three analyses: in-person functional SS × general stress on well-being, in-person functional SS × general stress on depression, and in-person functional SS × COVID-19 stress on well-being.

The interaction between in-person functional social support and stress on mental health outcomes is widely supported by prior research (Liu et al., 2020; Moreno-Smith, Lutgendorf, & Sood, 2010; Ross, Altmaier, & Russell, 1989; Wang et al., 2014), so it was surprising to only find partial support in the present study. However, systematic reviews of the literature have concluded that the buffering model is observed less consistently than the main effect model (Alloway & Bebbington, 1987; Lakey & Orehek, 2011). Several studies testing the buffering model have found either partial or no evidence of stress-buffering effects of social support (Burton, Stice, & Seely, 2004; A.N. Cohen, 2004; Monroe, 1983; Monroe et al., 1983; Shi & Whisman, 2023; Zimmerman et al., 2000). One study (Salgado et al., 2012) examined an acculturative stress × support interaction among male Latino day laborers, using the same measure of functional SS used in the current study. Although they found evidence of an interaction on physical health outcomes, they did not find evidence for the buffering hypothesis related to mental health outcomes.

In the current study, one possible explanation regarding the lack of unified support for the in-person functional SS × stress interaction is the historical context during which data collection

occurred. The COVID-19 pandemic provided a unique opportunity to collect SS data amidst an almost universal stressor; however, it also deeply impacted the nature of people's social relationships in a way that differs from many other stressors. Typically, when a person experiences a stressor their support network is engaged, however with COVID-19, there were widespread shelter in place orders, meaning that individuals who followed these guidelines would only be in physical contact with individuals they were living with (Berry et al., 2021).

This aspect of the COVID-19 pandemic increased social isolation and stopped many people from receiving face to face support the way they were typically accustomed to (Kotwal et al., 2021). Additionally, all people were experiencing the COVID-19 stressor simultaneously. This may have depleted the amount of support individuals had the capacity to provide to others as many of their resources may have been focused on their personal experiences with the pandemic. To illustrate the difference, imagine someone receives a stressful medical diagnosis, such as cancer. In typical cases, one would expect that person's support network to rally around them. If everyone in that support network also received a cancer diagnosis simultaneously, they may be too preoccupied with their own circumstances to provide support to one another.

Finally, seeking out in-person support may have been stressful in itself. Many people were shamed by others for ignoring the shelter-in-place orders and conflict within households regarding how stringently to isolate increased (Johnson, Bostwick, & Morrissey, 2021; Sink et al., 2022). Thus, some of the positive impact of in-person SS may have been offset by the negative implications and reception for seeking out such support.

4.2.2 Functional OSS and the Buffering Model. In line with prior research examining in-person functional SS, I predicted that a significant interaction (buffering effect) would emerge when examining online functional social support × stress (hypothesis 4a). This hypothesis was

partially supported by three of the four analyses conducted (functional OSS × general stress on depression, functional OSS × general stress on well-being, and functional OSS × COVID-19 stress on depression). The fourth analysis (functional OSS x COVID-19 stress on well-being) was not significant.

These results may reflect a movement away from in-person SS and towards online sources of support to offset the negative effects of stress during the COVID-19 pandemic. It is also possible that OSS was well-matched to COVID-19 stress. Cohen and Wills (1985) stated that matching SS to the needs elicited by the stressor would increase researchers' ability to detect a buffering effect. In this case, the need for social contact in light of COVID-19-related restrictions may have increased the stress-buffering effect of OSS on depressive symptoms. Regardless of what may be driving these findings, the main take-away is that individuals reporting higher levels of functional OSS also reported higher levels of well-being and lower levels of depression versus those with low levels of OSS when experiencing similar levels of stress.

Although research examining OSS is relatively new, preliminary findings are promising. One study (Zhang, 2019) examined the effect of self-disclosure online on mental health and found that people tend to open up on Facebook during times of stress. They reported that this disclosure was associated with the receipt of OSS and that self-disclosure on Facebook moderated the relation between stressful life events and mental health. Similarly, a study by Denq, Denq, and Hsu (2018) found that as social media use increased, SS seeking also increased significantly. Ybarra and colleagues (2015) reported that in a sample of adolescents, 26% had at least one close friend whom they first met online, however this percentage varied significantly

based on sexual identity, with LGBTQ+ youth reporting higher prevalence rates of online friends. As an at-risk community, this ability to seek support online is important.

One study by Kothgassner and colleagues (2019) used an experimental design to assess OSS. All participants completed the Trier Social Stress Test with support from a virtual reality avatar, a research agent, a real human, or with no support. They reported evidence that SS facilitated via virtual reality was just as effective at buffering stress as was face-to-face support, as long as the participant believed the virtual support was provided by a real human. The findings presented here contribute to the growing body of literature examining the possible uses OSS to offset the negative mental health effects of stress.

4.2.3 Structural SS and the Buffering Model. I predicted that there would be no evidence of a buffering effect when using structural measures of social support, again based on the idea that the utilization of support is necessary for a buffering effect to emerge (hypotheses 3b and 4b). Surprisingly, of the eight analyses examining these hypotheses, six support the presence of a buffering effect of structural social support × stress on outcomes (general stress × structural SS on depression, general stress × structural SS on well-being, general stress ×structural OSS on depression, general stress × structural OSS on well-being, COVID-19 stress × structural SS on depression, COVID-19 stress × structural OSS on depression).

I based these hypotheses on theory that social support can buffer the negative impact of stress via providing a solution to the stressor, aiding in reappraisal of the stressor, inhibiting maladaptive coping responses, and/or promoting adaptive responses (Cohen & Wills, 1985). Each of these pathways falls under the umbrella of functional social support, as they all require actions from one's support network. Cohen and Wills (1985) also proposed that the perception that others can and will provide support when a stressor arises may also impact the link between

stress and outcomes by redefining the potential for harm and increasing the individual's perceived ability to cope with the demands of a stressor. The buffering effect observed in the present study may be related to this latter idea, as the support network does not need to be engaged to result in individual reappraisal making this an aspect of structural SS.

However, the present study measured perceived stress related to negative life events. Participants were asked to rate the severity of stressors that they endorsed, meaning their perception of the stressor is included in their stress scores. It is likely that reappraisal of those stressors based on structural SS would have occurred prior to the self-report and thus is not a sufficient explanation for the significant buffering effect that emerged in the present study. These surprising results warrant further attention as there may be an alternative pathway responsible for the buffering effect of structural support × stress on outcomes.

Although these findings were not in line with my hypotheses, there is a growing body of research presenting evidence of a buffering effect when using measures of structural SS. Schafer and Koltai (2015) found that larger social networks were associated with lower rates of depressive symptoms among women diagnosed with cancer compared to those with smaller social networks. A study examining the quantity of Facebook friends' association with stress and mental health outcomes also found support for the buffering model (Nabi, Prestin, & So, 2013). They found that for individuals reporting more life stressors, number of Facebook friends significantly increased perceptions of SS beyond the effect of interpersonal networks. This increase was associated with lower perceived stress, less physical illness, and greater well-being.

4.3 Strengths, Limitations, Clinical Implications, and Future Directions

The results of the current study offer valuable insights into the complex dynamics of social support and its implications for mental health outcomes, while also highlighting areas for

further exploration. In discussing the present study's strengths and limitations, I will also highlight avenues for future research.

4.3.1 Methodological Considerations. The present study is among the first to examine OSS using well-established methods of assessing in-person SS. The inclusion of both the buffering and main effect models as a basis for the examination of OSS is a crucial step towards unification of the body of research on SS broadly. Similarly, ensuring that both in-person SS and OSS were assessed using functional and structural measures of SS, allowed for a more in-depth look at the impact of both in-person and online SS on mental health outcomes. Despite the strengths of the methodological approach in the current study, there are also some limitations to the study design that may be addressed by future research.

Two methodological limitations of the present study are the cross-sectional design and the use of self-report data. First, the cross-sectional nature of the current study does not allow for causal conclusions. Some research also suggests that the relation between the constructs included in the current study may shift over time. For example, Krause (1995) suggested that emotional support initially reduces the effects of chronic financial strain on depressive symptoms, however, he found that further increments in emotional support related to increased psychological distress. It is important to note that Krause also drew this conclusion from cross-sectional data using a between-subjects design. Both longitudinal and within persons research on this topic is warranted.

Additionally, because neither stress or SS can be randomly assigned as in a true experiment, it is possible that the outcome variables were not entirely independent from the predictor variables. In particular, two contrasting theories related to the study variables are social causation theory and social selection theory (Hudson, 2005). Social causation theory posits that

stress and adversity, initially conceptualized as low SES, contribute to the onset of psychiatric disorders whereas social selection theory posits that psychiatric disorders prevent individuals from overcoming stress and adversity. Regarding social support, social selection theory asserts that individuals experiencing psychological distress may experience a subsequent decline in their social support (Kaniasty & Norris, 2008). Evidence shows support for both theories suggesting that a reciprocal relation exists, such that low levels of SS cause depression and subsequently, the depression decreases the availability of SS, due to factors such as negative affect and social withdrawal (Patten et al., 2010; Wade & Kendler, 2000).

Taylor (2006) outlined the tend and befriend stress response, which describes the biobehavioral bases that drive individuals to affiliate under stress to secure support from others. This response may lead to temporary increases in SS, however, this increase may diminish over time as psychopathology develops and the burden associated with support provision increases. Finally, there is evidence that depression may play a role in the generation of negative life events (Hammen, 1991; Liu & Alloy, 2010). A study by Cui and Vaillant (1997) found that following their first episode of depression, depressed individuals reported higher densities of dependent negative life events (e.g. separation, being fired, financial problems, etc.) compared to a non-depressed control group. In contrast, they did not find differences in the density of independent negative life events (e.g. death or illness of their spouses, parents, or children) between the two groups. Taken together, the cross-sectional design of the current study provides a snapshot of these study variables at the time of data collection, however, the variability of these constructs over time and the reciprocal relation between study variables may have impacted the findings. Future research may employ longitudinal or experimental designs to address the methodological challenges in the current study.

Second, all data were collected via self-report measures, which may be subject to bias for a variety of reasons including poor recall or the drive to appear socially desirable (Althubaiti, 2016). Regarding stress measurement, researchers agree that semi-structured interviews, such as the Life Events and Difficulties Schedule, is the gold standard (Brown & Harris, 1978; Crosswell & Lockwood, 2020). An individual's response to a stressor may be more important than the stressor itself in predicting outcomes and semi-structured interviews allow for follow up questions that aid in quantifying the severity of each reported stressor. Despite the advantages of using a semi-structured interview, this method of data collection is time intensive for both participants and researchers. Self-report checklists assessing negative life events have become a widely used alternative to these time-intensive interviews (Dohrenwend, 2006). However, as mentioned above, some negative life events may be effects of or sequelae to mental illness (Hammen, 1991; Hammen, 2005; Hudgens, 1974). Researchers have also criticized the potential for varied interpretations of items such that endorsement of the same stressor may reflect a hassle for one respondent and a catastrophic event for another and recall bias, although research has shown that individuals can reliably report on major stressors over extended periods of time (Monroe, 2008; Neilson et al., 1989). Mood also impacts event recall and research has shown depressed individuals consistently report a greater number of life stressors (Krackow, Kania, & Travers, 2013; Turner & Wheaton, 1997).

Future studies may consider alternate methods of data collection. For example, in addition to self-report measures and interviews, stress can be assessed using physiological measures and behavioral coding which may rely less on a participant’s subjective interpretations of events (Crosswell & Lockwood, 2020). Future researchers may examine stress-related constructs using different methodological approaches.

Finally, collecting data during the COVID-19 pandemic was both a strength and a limitation of the present study. COVID-19 served as a significant and timely stressor for the current study, offering several advantages in its examination of stress and social support dynamics. The inclusion of COVID-19 stress allowed for measurement of a specific yet variable and uncontrollable stressor that impacted the general population. Prior research often used only cumulative or chronic stress measures that may not align with the types of support needed for specific stressors, potentially limiting the ability to detect stress-support interactions (Cohen & Wills, 1985). By including COVID-19-specific stressors, this study aimed to overcome such limitations.

However, the COVID-19 stressor altered the nature of individual's social interactions and may partially explain why I did not find evidence of a buffering effect when using a measure of functional in-person SS (Long et al., 2022). Future research may continue to test the buffering hypothesis at different time points to determine whether the buffering effect re-emerges for in-person functional SS and general stress and to monitor whether a return to pre-COVID-19 social interactions changes the findings regarding OSS.

4.3.2 Additional Moderators of Interest for OSS. The current study is an essential first step in research on OSS as establishing how OSS fits into traditional frameworks of in-person SS is necessary prior to the completion of research with a narrower scope. Now that the relation between OSS, stress, and mental health outcomes has been established there is an opportunity to adopt a finer lens and explore additional moderators of interest.

In-person SS as a Moderator. One area for future research is whether OSS is more impactful for individuals who have low levels of in-person social support, commonly referred to as the social compensation theory (Kraut et al., 2002). The social compensation theory posits that

individuals with low levels of in-person support may benefit more from OSS, or in other words that there is an in-person SS × OSS interaction. Initial findings are in line with the larger body of research on OSS, with mixed findings regarding the impact of OSS for those with low levels of in-person SS. One possible explanation for variability among study results is a lack of focus on *why* these individuals have low levels of in-person social support.

There may be barriers to forming a strong in-person support network for several reasons, some of which may interfere with one's ability to effectively gather OSS. For example, difficulties with social interactions or a skills deficit, may correlate with low SS in both in-person and online spaces, as the skills deficit may impede relationship formation across contexts (Grace, Lloyd-Evans, Davies, & Crane, 2022). In contrast barriers such as disability or illness limiting social interactions, marginalized group membership, or a lack of similar individuals within ones' geographic community (e.g. Koller, Pouesard, & Rummens, 2017; Pusztai et al., 2022; Gallo et al., 2021) may impede with in-person interactions while having no effect on online relationship formation. Prior research addressing this topic has typically taken one of two approaches: (1) collect measures of existent levels of in-person SS as a study variable or (2) use a study sample that assumes low levels of in-person support, however this approach ignores what may be driving the low levels of in-person SS.

Such research has shown that online social support is beneficial for individuals with unique group membership, such as caregivers for hospice patients with cancer (Benson et al., 2020) and pregnant or parenting adolescents (Valaitis & Sword, 2005). Additionally, research looking into online social support for LGBTQ+ youth has shown that social media participation enhanced well-being, particularly in rural communities (Fox & Ralston, 2016; Mcdonald, 2018). Another study focusing on OSS for LGBTQ+ youth reported that sexual minority youth were

significantly more likely than heterosexual youth to indicate that their online friends were better than their in-person friends at providing support (Ybarra et al., 2015). Theoretically, these findings make sense, however, many of these studies have used unique group membership as a proxy variable for low levels of in-person SS, without actually assessing existing levels of SS. Generally, the studies that directly measuring levels of existing social support have not collected data on *why* the support is low (e.g. personality characteristics versus life circumstances). Future research should examine existing levels of in-person social support as a moderator for the effectiveness of OSS without assuming that specific group membership equates to low levels of effective in-person support and with questions pertaining to rationale as to why in-person SS may be low.

Type of Online Platform as a Moderator. Another topic for future research is how the variation in different online platforms impacts the effectiveness of OSS, both by examining the structure of online support networks (structural OSS) and the receipt of support (functional OSS). The present study examined online social support received across all platforms, including computer-mediated communication (e.g. email and text) and support received via social media and online spaces (e.g. Discord, reddit, Facebook, etc.). These different online platforms are qualitatively different, and an examination of the nature (e.g. esteem, informational, tangible) and effectiveness of support received via unique online spaces is an important and interesting extension of the present study.

Nesi, Choukas-Bradly, & Prinstein (2018) proposed that social media platforms qualitatively change the nature of peer relationships in several ways. Specifically, they highlight the following features that vary based on platform: (1) asynchronicity or time lapse between communication, (2) permanence or the permanent availability of shared content, (3) publicness

or the accessibility of information by large audiences, (4) availability or ease with which content can be accessed and shared, (5) cue absence or the degree to which physical cues can range from including most in-person cues to being entirely anonymous, (6) quantifiability or the allowance of countable social metrics such as number of likes, and (7) visualness or the extent to which photos and videos are emphasized. These varying components of online spaces differentiate not only online interactions from in-person interactions one, but also point to the variability within interactions that exclusively occur in online spaces.

In addition to these variations in online spaces, there is also variability related to whom people are interacting with online. For example, some platforms (e.g. Facebook, text messaging, etc.) are conducive to users maintaining and interacting digitally with existing in-person support networks (Rosseau, Frison, & Eggermont, 2019). Other platforms offer online spaces designed to facilitate new in-person connections (e.g. dating apps) and some offer access to supportive interactions with no expectations of ever transitioning the online relationship to an in-person one. For example, forum-based platforms (e.g. Reddit) offer access to informational support on a variety of topics that may not be as easily accessible in-person, such as legal and medical advice, or stigmatized topics, such as addiction recovery. Future researchers may consider including these various platform features as moderators when examining the effectiveness of online social support or limiting their studies to specific online spaces. This will be important in clarifying how to best utilize OSS for positive outcomes and may allow clinicians to guide clients towards specific online spaces that match their support needs.

4.3.3 Clinical Implications

The findings presented here also have several important clinical implications. The finding that both social support networks (structural SS) and enacted SS (functional SS) are associated

with positive mental health outcomes is clinically important. Clinicians should thoroughly evaluate both in-person and online social support when working with clients. The findings of this study suggest that a thorough evaluation would include questions pertaining to both the availability of support and the client's ability to utilize that support.

A more thorough evaluation of SS will aid in identifying the most impactful targets for intervention. For some, increasing the availability of social support may be an impactful intervention whereas others may find greater benefit in learning how to effectively ask for assistance from an already existing social network. Ensuring that clinicians understand where social support deficits exist will allow for more targeted and effective interventions.

Additionally, future research that considers specific clinical populations and questions is warranted, such as whether psychological diagnoses impact these findings. Conducting studies using clinical samples (e.g. individuals with disorders that impact social skills, such as autism spectrum disorder) is an interesting direction for future research and is important when considering utilization of these findings in clinical settings.

Another clinical question of interest is whether the link between increased social support (both in-person and online) and improved mental health is mediated by other positive health behaviors. For example, behavioral activation is a common primary intervention when treating depression (Mazzucchelli, Kane, & Rees, 2009). Increasing social support may increase behavioral activation and thus decrease barriers to interventions. The link between social support and positive health behaviors has been observed regarding smoking cessation, diet and exercise, and self-care behaviors; however there is less research examining the link between social support and adherence to behavioral interventions for depression (e.g. Coppotelli & Orleans, 1985; Tovar, Rayens, Gokun, & Clark, 2013; Wong, Bayuo, & Wong, 2022).

4.4 Conclusion

In conclusion, the current study provided support for both the main effect and buffering models of in-person SS and OSS, bridged the gap between traditional social support concepts and the online world, and outlined the impact that both types of social support have on depressive symptomology and well-being. The present study took an important next step in the ongoing effort to understand how OSS fits into and alters our understanding of SS as a construct. The findings support the idea that OSS is a tool that warrants further attention. Continued work researching OSS is crucial in understanding how the internet can be utilized in aiding others to form strong social networks. Increasing online social support has fewer barriers than increasing traditional social support, particularly for those struggling with their mental health and for individuals who struggle socially. The option to seek support online could be an important mechanism for change among this group of patients.

Researchers have been studying SS extensively for decades. Cohen and Wills' (1985) models of SS have informed a large body of research that demonstrates clear linkages between SS, stress, and mental health outcomes. The current study offers an important contribution to this line of work by applying their well-established models to support received online and in the context of COVID-19 stress.

References

Adamson, M. (2020). Psychological Stress Associated with the Covid-19 Crisis. Stanford University.

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Thousand Oaks: Sage.

Alloway, R., & Bebbington, P. (1987). The buffer theory of social support – a review of the literature. *Psychological Medicine, 17*(1), 91–108. doi:10.1017/S0033291700013015

Althubaiti, A. (2016). Information bias in health research: definition, pitfalls, and adjustment methods. *Journal of multidisciplinary healthcare*, 211-217.

American Psychological Association. (2021). *Stress and decision-making during the pandemic*. https://www.apa.org/news/press/releases/stress/2021/october-decision-making

American Psychological Association. (2023). *Stress in America TM 2023 A Nation Recovering from Collective Trauma*. https://www.apa.org/news/press/releases/stress/2023/collective-trauma-recovery

Arbuckle, J. L. (2006). Amos 7.0 User's Guide. Chicago: SPSS.

Arbuckle, J. L. (2019). Amos (Version 26.0) [Computer Program]. Chicago: IBM SPSS.

Ayaz, R., Hocaoğlu, M., Günay, T., Yardımcı, O., Turgut, A. & Karateke, A. (2020). Anxiety and depression symptoms in the same pregnant women before and during the COVID-19 pandemic. *Journal of Perinatal Medicine*, *48*(9), 965-970. https://doi.org/10.1515/jpm-2020-0380

Barrera, M., Sandler, I. N., & Ramsay, T. B. (1981). Preliminary development of a scale of social support: studies on college students. *American Journal of Community Psychology*, *9*(4), 435–447. https://doi.org/10.1007/BF00918174.

Batenburg, A. and Das, E. (2015). Virtual support communities and psychological well-being: the role of optimistic and pessimistic social comparison strategies. Journal of Computer-Mediated Communication, 20(6), 585-600. https://doi.org/10.1111/jcc4.12131

Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Beck depression inventory (BDI-II)* (Vol. 10, No. 3). London, UK: Pearson.

Benson, J. J., Oliver, D. P., Washington, K. T., Rolbiecki, A. J., Lombardo, C. B., Garza, J. E., & Demiris, G. (2020). Online social support groups for informal caregivers of hospice patients with cancer. *European journal of oncology nursing: the official journal of European Oncology Nursing Society*, *44*, 101698. https://doi.org/10.1016/j.ejon.2019.101698

Berry, C., Shalowitz, M., Quinn, K., & Wolf, R. (2001). Validation of the Crisis in Family Systems-Revised, a contemporary measure of life stressors. *Psychological reports*, *88*(3 Pt 1), 713–724. https://doi.org/10.2466/pr0.2001.88.3.713

Berry, C. A., Quinn, K. A., Portillo, N., & Shalowitz, M. U. (2006). Reliability and validity of the Spanish Version of the Crisis in Family Systems-Revised. *Psychological reports*, *98*(1), 123–132. https://doi.org/10.2466/pr0.98.1.123-132

Berry, C. R., Fowler, A., Glazer, T., Handel-Meyer, S., & MacMillen, A. (2021). Evaluating the effects of shelter-in-place policies during the COVID-19 pandemic. *Proceedings of the National Academy of Sciences*, *118*(15), e2019706118.

Besser, A., Flett, G. L., & Zeigler-Hill, V. (2022). Adaptability to a sudden transition to online learning during the COVID-19 pandemic: Understanding the challenges for students. *Scholarship of Teaching and Learning in Psychology*, *8*(2), 85–105. https://doi.org/10.1037/stl0000198

Brookings, J. B., & Bolton, B. (1988). Confirmatory factor analysis of the Interpersonal Support Evaluation List. *American journal of community psychology*, *16*(1), 137–147. https://doi.org/10.1007/BF00906076

Brown, G. W., & Harris, T. O. (Eds.). (1989). Life events and illness.

Brown, G. W., & Harris, T. (1978). *Social origins of depression: A study of psychiatric disorder in women*. Routledge.

Burton, E., Stice, E., & Seeley, J. R. (2004). A Prospective Test of the Stress-Buffering Model of Depression in Adolescent Girls: No Support Once Again. *Journal of Consulting and Clinical Psychology, 72*(4), 689-697. https://doi.org/10.1037/0022-006X.72.4.689

Carter, D. M. (2004). Living in virtual communities: Making friends online. *Journal of Urban Technology*, *11*(3), 109–125. https://doi.org/10.1080/10630730500064448

Carver, C. S., & Scheier, M. F. (1999). Stress, coping, and self-regulatory processes. In Handbook of Personality, ed. LA Pervin, OP John, pp. 553–75. New York: Guilford Press

Caspi, A., Bolger, N., & Eckenrode, J. (1987). Linking person and context in the daily stress process. *Journal of Personality and Social Psychology, 52*(1), 184–195. https://doi.org/10.1037/0022-3514.52.1.184

CDC Archives: End of the Federal COVID-19 Public Health Emergency (PHE) Declaration. (2023, September 12). Center for Disease Control and Prevention. https://archive.cdc.gov/#/details?url=https://www.cdc.gov/coronavirus/2019-ncov/your-health/end-of-phe.html

Cheng, J., Zhao, Y. Y., Wang, J., & Sun, Y. H. (2020). Academic burnout and depression of Chinese medical students in the pre-clinical years: the buffering hypothesis of resilience and social support. *Psychology, health & medicine*, *25*(9), 1094-1105.

Chu, P., Saucier, D., & Hafner, E. (2010). Meta-analysis of the relationships between social support and well-being in children and adolescents. Journal of Social and Clinical Psychology, 29(6), 624-645. https://doi.org/10.1521/jscp.2010.29.6.624

Cohen, A. N., Hammen, C., Henry, R. M., & Daley, S. E. (2004). Effects of stress and social support on recurrence in bipolar disorder. *Journal of affective disorders*, *82*(1), 143-147.

Cohen, P., Struening, E. L., Muhlin, G. L., Genevie, L. E., Kaplan, S. R., & Peck, H. B. (1982). Community stressors, mediating conditions and wellbeing in urban neighborhoods. *Journal of Community Psychology*, *10*(4), 377-391.

Cohen, S. (2020). Psychosocial vulnerabilities to upper respiratory infectious illness: Implications for susceptibility to Coronavirus Disease 2019 (COVID-19). *Perspectives on Psychological Science*, 1-14.

Cohen, S., Doyle, W. J., Skoner, D. P., Rabin, B. S., and Gwaltney, J. M., Jr. (1997). Social ties and susceptibility to the common cold. Journal of the American Medical Association, 277, 1940-1944. Journal of the American Medical Association, 277, 1940-1944.

Cohen, S., & Hoberman, H. (1983). Interpersonal support evaluation list (ISEL). *Journal of Applied Social Psychology*, *13*(1), 99-125.

Cohen, S., & McKay, G. (1984). Social support, stress and the buffering hypothesis: A theoretical analysis. In A. Baum, S. E. Taylor, & J. E. Singer (Eds.), Handbook of psychology and health (pp. 253-267). Hillsdale, NJ: Erlbaum.

Cohen, S., Murphy, M. L., & Prather, A. A. (2019). Ten surprising facts about stressful life events and disease risk. *Annual review of psychology*, *70*, 577.

Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological bulletin*, *98*(2), 310–357.

Cole, D. A., Nick, E. A., & Pulliam, K. A. (2020). Are massively multiplayer online role-playing games healthy or not and why? Preliminary support for a compensatory social interaction model. *Computers in Human Behavior*, *102*, 57-66.

Cole, D., Nick, E., Zelkowitz, R., Roeder, K., & Spinelli, T. (2017). Online social support for young people: does it recapitulate in-person social support; can it help?. Computers in Human Behavior, 68, 456-464. https://doi.org/10.1016/j.chb.2016.11.058

Coppotelli, H. C., & Orleans, C. T. (1985). Partner support and other determinants of smoking cessation maintenance among women. *Journal of consulting and clinical psychology*, *53*(4), 455.

Crookes, D. M., Shelton, R. C., Tehranifar, P., Aycinena, C., Gaffney, A. O., Koch, P., Contento, I. R., & Greenlee, H. (2016). Social networks and social support for healthy eating among Latina breast cancer survivors: implications for social and behavioral interventions. *Journal of Cancer Survivorship*, *10*(2), 291–301. https://doi.org/10.1007/s11764-015-0475-6

Crosswell, A. D., & Lockwood, K. G. (2020). Best practices for stress measurement: How to measure psychological stress in health research. *Health psychology open*, *7*(2), 2055102920933072.

Cui, X. J., & Vaillant, G. E. (1997). Does depression generate negative life events?. *The Journal of nervous and mental disease*, *185*(3), 145-150.

Cummins, R. C. (1988). Perceptions of social support, receipt of supportive behaviors, and locus of control as moderators of the effects of chronic stress. *American Journal of Community Psychology*, *16*(5), 685-700.

Denq, B., Denq, W., & Hsu, W. (2018). Stress and its impact on social media usage. Journal of Technical Writing and Communication, 49(2), 232-245. https://doi.org/10.1177/0047281618772076

DeSimone, J. A., & Harms, P. D. (2018). Dirty data: The effects of screening respondents who provide low-quality data in survey research. *Journal of Business and Psychology, 33*(5), 559–577. https://doi.org/10.1007/s10869-017-9514-9

Domahidi, E., Festl, R., & Quandt, T. (2014). To dwell among gamers: Investigating the relationship between social online game use and gaming-related friendships. *Computers in human behavior*, *35*, 107-115.

Dohrenwend, B. P. (2006). Inventorying stressful life events as risk factors for psychopathology: Toward resolution of the problem of intracategory variability. *Psychological Bulletin*, *132*(3), 477-495. https://doi.org/10.1037/0033-2909.132.3.477

Dozois, D. J., & Covin, R. (2004). The Beck Depression Inventory-II (BDI-II), Beck Hopelessness Scale (BHS), and Beck Scale for Suicide Ideation (BSS).

Eisele, M., Zimmermann, T., Köhler, M., Wiese, B., Heser, K., Tebarth, F., Weeg, D., Olbrich, J., Pentzek, M., Fuchs, A., Weyerer, S., Werle, J., Leicht, H., König, H. H., Luppa, M., Riedel-Heller, S., Maier, W., Scherer, M., & AgeCoDe Study Group (2012). Influence of social support on cognitive change and mortality in old age: results from the prospective multicentre cohort study AgeCoDe. *BMC geriatrics*, *12*, 9. https://doi.org/10.1186/1471-2318-12-9

Ellis, W. E., Dumas, T. M., & Forbes, L. M. (2020). Physically isolated but socially connected: Psychological adjustment and stress among adolescents during the initial COVID-19

crisis. *Canadian Journal of Behavioural Science / Revue canadienne des sciences du comportement, 52*(3), 177–187. https://doi.org/10.1037/cbs0000215

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods, 41*, 1149-1160.

Fitzpatrick, K. M., Harris, C., & Drawve, G. (2020). Fear of COVID-19 and the mental health consequences in America. *Psychological Trauma: Theory, Research, Practice, and Policy, 12*(S1), S17–S21. https://doi.org/10.1037/tra0000924

Fofana, N. K., Latif, F., Sarfraz, S., Bashir, M. F., & Komal, B. (2020). Fear and agony of the pandemic leading to stress and mental illness: An emerging crisis in the novel coronavirus (COVID-19) outbreak. *Psychiatry Research, 291*, 113230.

Fortmann, A. L., Roesch, S. C., Penedo, F. J., Isasi, C. R., Carnethon, M. R., Corsino, L., Schneiderman, N., Daviglus, M. L., Teng, Y., Giachello, A., Gonzalez, F., & Gallo, L. C. (2015). Glycemic control among U.S. Hispanics/Latinos with diabetes from the HCHS/SOL Sociocultural Ancillary Study: Do structural and functional social support play a role? *Journal of Behavioral Medicine, 38*(1), 153–159. https://doi.org/10.1007/s10865-014-9587-0

Fox, J. and Ralston, R. (2016). Queer identity online: informal learning and teaching experiences of lgbtq individuals on social media. Computers in Human Behavior, 65, 635-642. https://doi.org/10.1016/j.chb.2016.06.009

Gallo, H. B., Marshall, L. W., Levy-Storms, L., Wilber, K. H., & Loukaitou-Sideris, A. (2021). Voices of experience: what do low-income older adults tell us about mobility, technology, and social participation?. Journal of Applied Gerontology, 41(2), 571-580. https://doi.org/10.1177/07334648211012530

Gariépy, G., Honkaniemi, H., & Quesnel-Vallée, A. (2016). Social support and protection from depression: systematic review of current findings in Western countries. *The British journal of psychiatry : the journal of mental science, 209*(4), 284–293. https://doi.org/10.1192/bjp.bp.115.169094

Gilmour, J., Machin, T., Brownlow, C., & Jeffries, C. (2020). Facebook-based social support and health: A systematic review. *Psychology of Popular Media*, *9*(3), 328.

Godor, B. P., & Van der Hallen, R. (2022). Investigating the susceptibility to change of coping and resiliency during COVID-19. *Scandinavian journal of psychology*, *63*(3), 238–245. https://doi.org/10.1111/sjop.12787

Grace, K., Remington, A., Lloyd-Evans, B., Davies, J., & Crane, L. (2022). Loneliness in autistic adults: A systematic review. *Autism*, *26*(8), 2117-2135.

Graham, A. L., Papandonatos, G. D., Kang, H., Moreno, J. L., & Abrams, D. B. (2011). Development and validation of the online social support for smokers scale. *Journal of medical Internet research*, *13*(3), e69.

Grewal, M. & Golub, J. (2022). Hearing loss is associated with worse socialization in the u.s. hispanic adult population. Otology & Neurotology, 43(9), 1085-1089. https://doi.org/10.1097/mao.0000000000003656

Haber, M. G., Cohen, J. L., Lucas, T., & Baltes, B. B. (2007). The relationship between self-reported received and perceived social support: a meta-analytic review. *American journal of community psychology*, *39*(1-2), 133–144. https://doi.org/10.1007/s10464-007-9100-9

Hammen, C. (1991). Generation of stress in the course of unipolar depression. *Journal of abnormal psychology*, *100*(4), 555.

Hammen C. (2005). Stress and depression. *Annual review of clinical psychology*, *1*, 293–319. https://doi.org/10.1146/annurev.clinpsy.1.102803.143938

Han, S., Riddell, J. R., & Piquero, A. R. (2023). Anti-Asian American Hate Crimes Spike During the Early Stages of the COVID-19 Pandemic. Journal of Interpersonal Violence, 38(3-4), 3513-3533. https://doi.org/10.1177/08862605221107056

Harandi, T. F., Taghinasab, M. M., & Nayeri, T. D. (2017). The correlation of social support with mental health: a meta-analysis. Electronic Physician, 9(9), 5212-5222. https://doi.org/10.19082/5212

Haven, J. A. (1994). *The impact of experimentally provided optimally matched social support on word recall*. Washington University in St. Louis.

Holmes, T. H., & Rahe, R. H. (1967). The social readjustment rating scale. *Journal of psychosomatic research*, *11*(2), 213-218.

Hubley, C., & Scholer, A. A. (2022). Melting COVID-frozen goals: How goal disengagement supports well-being during the COVID-19 pandemic. *Motivation and Emotion*, *46*(6), 752-768.

Hudgens, R. W., Dohrenwend, B. S., & Dohrenwend, B. P. (Eds.) (1974). Stressful life events: Their nature and effects. New York: Wiley and Sons.

Hudson, C. G. (2005). Socioeconomic status and mental illness: tests of the social causation and selection hypotheses. *American journal of Orthopsychiatry*, *75*(1), 3-18.

Johnson, A. J., Bostwick, E. N., & Morrissey, B. S. (2021). Arguing about social distancing and family relationships. *Journal of Social and Personal Relationships*, *38*(10), 2863-2885.

Kaniasty, K. and Norris, F.H. (2008), Longitudinal linkages between perceived social support and posttraumatic stress symptoms: Sequential roles of social causation and social selection. J. Traum. Stress, 21: 274-281. https://doi-org.proxy.library.vanderbilt.edu/10.1002/jts.20334

Karasek, R., Baker, D., Marxer, F., Ahlbom, A., & Theorell, T. (1981). Job decision latitude, job demands, and cardiovascular disease: a prospective study of Swedish men. *American journal of public health*, *71*(7), 694–705. https://doi.org/10.2105/ajph.71.7.694

Kaynak, Ö., Lepore, S. J., & Kliewer, W. L. (2011). Social support and social constraints moderate the relation between community violence exposure and depressive symptoms in an urban adolescent sample. *Journal of Social and Clinical Psychology*, *30*(3), 250.

Koller, D., Pouesard, M., & Rummens, J. (2017). Defining social inclusion for children with disabilities: a critical literature review. Children & Society, 32(1), 1-13. https://doi.org/10.1111/chso.12223

Kothgassner, O. D., Goreis, A., Kafka, J. X., Kaufmann, M., Atteneder, K., Beutl, L., Hennig-Fast, K., Hlavacs, H., & Felnhofer, A. (2019). Virtual social support buffers stress response: An experimental comparison of real-life and virtual support prior to a social stressor. *Journal of*

behavior therapy and experimental psychiatry, *63*, 57–65. https://doi.org/10.1016/j.jbtep.2018.11.003

Kotwal, A. A., Holt-Lunstad, J., Newmark, R. L., Cenzer, I., Smith, A. K., Covinsky, K. E., Escueta, D. P., Lee, J. M., & Perissinotto, C. M. (2021). Social Isolation and Loneliness Among San Francisco Bay Area Older Adults During the COVID-19 Shelter-in-Place Orders. *Journal of the American Geriatrics Society*, *69*(1), 20–29. https://doi.org/10.1111/jgs.16865

Krause, N. (1995). Assessing stress-buffering effects: A cautionary note. *Psychology and Aging, 10*(4), 518–526. https://doi.org/10.1037/0882-7974.10.4.518

Krackow, E., Kania, K., & Travers, R. M. (2013). Does negative mood confer an advantage in the recall of negative life events?. Imagination, Cognition and Personality, 32(3), 291-305. https://doi.org/10.2190/ic.32.3.e

Kraut, R., Kiesler, S., Boneva, B., Cummings, J., Helgeson, V., & Crawford, A. (2002). Internet Paradox Revisited. *Journal of Social Issues, 58*(1), 49–74. https://doi.org/10.1111/1540-4560.00248

Kraut, R., Patterson, M., Lundmark, V., Kiesler, S., Mukopadhyay, T., & Scherlis, W. (1998). Internet Paradox: A Social Technology That Reduces Social Involvement and Psychological Well-Being? *The American Psychologist*, *53*(9), 1017–1031. https://doi.org/10.1037/0003-066X.53.9.1017

Kujawa, A., Green, H., Compas, B. E., Dickey, L., & Pegg, S. (2020). Exposure to COVID-19 pandemic stress: Associations with depression and anxiety in emerging adults in the United States. *Depression and anxiety*, *37*(12), 1280–1288. https://doi.org/10.1002/da.23109

Lai, H. M., Hsieh, P. J., & Zhang, R. C. (2019). Understanding adolescent students' use of Facebook and their subjective wellbeing: a gender-based comparison. *Behaviour & Information Technology*, *38*(5), 533-548.

Lakey B. & Orehek E. (2011). Relational regulation theory: A new approach to explain the link between perceived social support and mental health. *Psychological Review*, 118(3), 482.

LaRocco, J. M., House, J. S., & French Jr, J. R. (1980). Social support, occupational stress, and health. *Journal of health and Social Behavior*, 202-218.

Lepore, S. J., Evans, G. W., & Schneider, M. L. (1991). Dynamic role of social support in the link between chronic stress and psychological distress. *Journal of personality and social psychology*, *61*(6), 899.

Liu, R. T., & Alloy, L. B. (2010). Stress generation in depression: A systematic review of the empirical literature and recommendations for future study. *Clinical psychology review*, *30*(5), 582-593.

Liu, L., Liu, G., Ke, X., & Li, N. (2020). Mediating effect of social support on the association between life events and depression. Medicine, 99(51), e22627. https://doi.org/10.1097/md.0000000000022627

Liu, C. and Yu, C. (2013). Can facebook use induce well-being?. Cyberpsychology, Behavior, and Social Networking, 16(9), 674-678. https://doi.org/10.1089/cyber.2012.0301

Long, E., Patterson, S., Maxwell, K., Blake, C., Pérez, R. B., Lewis, R., ... & Mitchell, K. R. (2022). COVID-19 pandemic and its impact on social relationships and health. *J Epidemiol Community Health*, *76*(2), 128-132.

Lönnqvist, J. E., & große Deters, F. (2016). Facebook friends, subjective well-being, social support, and personality. *Computers in Human Behavior*, *55*, 113-120.

Maison, D., Jaworska, D., Adamczyk, D., & Affeltowicz, D. (2021). The challenges arising from the COVID-19 pandemic and the way people deal with them. A qualitative longitudinal study. *PloS one*, *16*(10), e0258133.

Malik, S., Uniyal, P., Bora, J., Haque, S., & Swed, S. (2023). SARS-CoV-2/Omicron subvariants: global outbreak upsurge and expected upcoming threats. *International journal of surgery (London, England)*, *109*(2), 94–95. https://doi.org/10.1097/JS9.0000000000000240

Mazzucchelli, T., Kane, R., & Rees, C. (2009). Behavioral activation treatments for depression in adults: a meta-analysis and review. *Clinical Psychology: Science and Practice*, *16*(4), 383-411.

McCloskey, W., Iwanicki, S., Lauterbach, D., Giammittorio, D. M., & Maxwell, K. (2015). Are Facebook "friends" helpful? Development of a Facebook-based measure of social support and examination

of relationships among depression, quality of life, and social support. *Cyberpsychology, Behavior, and Social Networking*, *18*(9), 499-505.

McDonald, K. (2018). Social Support and Mental Health in LGBTQ Adolescents: A review of the literature. *Issues in mental health nursing*, *39*(1), 16–29. https://doi.org/10.1080/01612840.2017.1398283

Melling, B., & Houguet-Pincham, T. (2011). Online peer support for individuals with depression: A summary of current research and future considerations. *Psychiatric Rehabilitation Journal, 34*(3), 252–254. https://doi.org/10.2975/34.3.2011.252.254

Merz, E. L., Roesch, S. C., Malcarne, V. L., Penedo, F. J., Llabre, M. M., Weitzman, O. B., Navas-Nacher, E. L., Perreira, K. M., Gonzalez, F., Ponguta, L. A., Johnson, T. P., & Gallo, L. C. (2014). Validation of interpersonal support evaluation list-12 (ISEL-12) scores among English- and Spanish-speaking Hispanics/Latinos from the HCHS/SOL Sociocultural Ancillary Study. *Psychological assessment*, *26*(2), 384–394. https://doi.org/10.1037/a0035248

Milovanska-Farrington, S. (2022). Job loss and food insecurity during the Covid-19 pandemic. *Journal of Economic Studies*, *50*(2), 300-323.

Moreno-Smith, M., Lutgendorf, S. K., & Sood, A. K. (2010). Impact of stress on cancer metastasis. Future Oncology, 6(12), 1863-1881. https://doi.org/10.2217/fon.10.142

Monroe, S. M. (1983). Social support and disorder: Toward an untangling of cause and effect. *American Journal of Community Psychology, 11*(1), 81-97. https://doi.org/10.1007/BF00898420

Monroe S. M. (2008). Modern approaches to conceptualizing and measuring human life stress. *Annual review of clinical psychology*, *4*, 33–52. https://doi.org/10.1146/annurev.clinpsy.4.022007.141207

Monroe, S. M., Imhoff, D. F., Wise, B. D., & Harris, J. E. (1983). Prediction of psychological symptoms under high-risk psychosocial circumstances: Life events, social support, and symptom specificity. *Journal of Abnormal Psychology, 92*(3), 338-350. https://doi.org/10.1037/0021-843X.92.3.338

Nabi, R. L., Prestin, A., & So, J. (2013). Facebook friends with (health) benefits? Exploring social network site use and perceptions of social support, stress, and well-being. *Cyberpsychology, behavior, and social networking*, *16*(10), 721-727.

Neilson, E., Brown, G. W., & Marmot, M. (1989). *Myocardial infarction*. The Guilford Press.

Nick, E. A., Cole, D. A., Cho, S. J., Smith, D. K., Carter, T. G., & Zelkowitz, R. L. (2018). The Online Social Support Scale: Measure development and validation. *Psychological assessment*, *30*(9), 1127–1143. https://doi.org/10.1037/pas0000558

Nesi J. (2020). The Impact of Social Media on Youth Mental Health: Challenges and Opportunities. *North Carolina medical journal*, *81*(2), 116–121. https://doi.org/10.18043/ncm.81.2.116

Nesi, J., Choukas-Bradley, S., & Prinstein, M. J. (2018). Transformation of adolescent peer relations in the social media context: Part 1—A theoretical framework and application to dyadic peer relationships. *Clinical child and family psychology review*, *21*(3), 267-294.

O'Connor, R. C., Wetherall, K., Cleare, S., McClelland, H., Melson, A. J., Niedzwiedz, C. L., ... & Robb, K. A. (2021). Mental health and well-being during the COVID-19 pandemic: longitudinal analyses of adults in the UK COVID-19 Mental Health & Wellbeing study. *The British journal of psychiatry*, *218*(6), 326-333.,

Obst, P. & Stafurik, J. (2010). Online we are all able bodied: online psychological sense of community and social support found through membership of disability-specific websites promotes well-being for people living with a physical disability. Journal of Community & Applied Social Psychology, 20(6), 525-531. https://doi.org/10.1002/casp.1067

Olstad, R., Sexton, H., & Søgaard, A. J. (2001). The Finnmark Study. A prospective population study of the social support buffer hypothesis, specific stressors and mental distress. *Social Psychiatry and Psychiatric Epidemiology*, *36*, 582-589.

Patten, S. B., Williams, J. V., Lavorato, D. H., & Bulloch, A. G. (2010). Reciprocal effects of social support in major depression epidemiology. *Clinical practice and epidemiology in mental health : CP & EMH*, *6*, 126–131. https://doi.org/10.2174/1745017901006010126

Pinquart, M., & Sörensen, S. (2000). Influences of socioeconomic status, social network, and competence on subjective well-being in later life: A meta-analysis. *Psychology and Aging, 15*(2), 187-224. https://doi.org/10.1037/0882-7974.15.2.187

Porcelli P. (2020). Fear, Anxiety and Health-Related Consequences After the Covid-19 Epidemic. *Clinical neuropsychiatry, 17*(2), 103–111. https://doi.org/10.36131/CN20200215

Preacher, K. J., Curran, P. J., & Bauer, D. J. (2006). Computational tools for probing interaction effects in multiple linear regression, multilevel modeling, and latent curve analysis. *Journal of Educational and Behavioral Statistics*, *31*, 437-448.

Pusztai, G., Demeter-Karászi, Z., Alter, E., Marincsák, R., & Dabney-Fekete, I. D. (2022). Administrative data analysis of student attrition in hungarian medical training. BMC Medical Education, 22(1). https://doi.org/10.1186/s12909-022-03276-z

Ross, R. R., Altmaier, E. M., & Russell, D. W. (1989). Job stress, social support, and burnout among counseling center staff.. Journal of Counseling Psychology, 36(4), 464-470. https://doi.org/10.1037/0022-0167.36.4.464

Rousseau, A., Frison, E., & Eggermont, S. (2019). The reciprocal relations between Facebook relationship maintenance behaviors and adolescents' closeness to friends. *Journal of Adolescence*, *76*, 173-184.

Rueger, S. Y., Malecki, C. K., Pyun, Y., Aycock, C., & Coyle, S. (2016). A meta-analytic review of the association between perceived social support and depression in childhood and adolescence.. Psychological Bulletin, 142(10), 1017-1067. https://doi.org/10.1037/bul0000058

Ruiz-Fernández, M. D., Ramos-Pichardo, J. D., Ibáñez-Masero, O., Cabrera-Troya, J., Carmona-Rega, M. I., & Ortega-Galán, Á. M. (2020). Compassion fatigue, burnout, compassion satisfaction and

perceived stress in healthcare professionals during the COVID-19 health crisis in Spain. *Journal of clinical nursing*, *29*(21-22), 4321-4330.

Ryff, C. D., Almeida, D. M., Ayanian, J. S., Carr, D. S., Cleary, P. D., Coe, C., … Williams, D. (2010). National Survey of Midlife Development in the United States (MIDUS II), 2004-2006: Documentation of psychosocial constructs and composite variables in MIDUS II Project 1. Ann Arbor, MI: Inter-university Consortium for Political and Social Research.

Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of personality and social psychology*, *57*(6), 1069.

Ryff, C. D., & Keyes, C. L. M. (1995). The structure of psychological well-being revisited. *Journal of personality and social psychology*, *69*(4), 719.

Salgado, H., Castañeda, S. F., Talavera, G. A., & Lindsay, S. P. (2012). The role of social support and acculturative stress in health-related quality of life among day laborers in northern san diego. Journal of Immigrant and Minority Health, 14(3), 379-385. https://doi.org/10.1007/s10903-011-9568-0

Sarason, I. G., Levine, H. M., Basham, R. B., & Sarason, B. R. (1983). Assessing social support: The Social Support Questionnaire. *Journal of Personality and Social Psychology*, *44*(1), 127–139. https://doi.org/10.1037/0022-3514.44.1.127

Schaefer, C., Coyne, J. C., & Lazarus, R. S. (1981). The health-related functions of social support. *Journal of behavioral medicine*, *4*(4), 381–406. https://doi.org/10.1007/BF00846149

Schafer, M. H., & Koltai, J. (2015). Cancer Diagnosis and Mental Health among Older White Adults: Moderating Role for Social Networks? *Society and Mental Health*, *5*(3), 182–202. https://www.jstor.org/stable/48684275

Scott, H. R., Pitman, A., Kozhuharova, P., & Lloyd-Evans, B. (2020). A systematic review of studies describing the influence of informal social support on psychological wellbeing in people bereaved by sudden or violent causes of death. *BMC Psychiatry, 20*, 20. doi:http://dx.doi.org/10.1186/s12888-020-02639-4

Shalowitz, M. U., Berry, C. A., Rasinski, K. A., & Dannhausen-Brun, C. A. (1998). A new measure of contemporary life stress: development, validation, and reliability of the CRISYS. *Health services research*, *33*(5 Pt 1), 1381–1402.

Shi, Y., & Whisman, M. A. (2023). Marital satisfaction as a potential moderator of the association between stress and depression. *Journal of Affective Disorders*, *327,* 155-158.

Siedlecki, K. L., Salthouse, T. A., Oishi, S., & Jeswani, S. (2014). The Relationship Between Social Support and Subjective Well-Being Across Age. *Social indicators research*, *117*(2), 561–576. https://doi.org/10.1007/s11205-013-0361-4

Sinko, L., He, Y., Kishton, R., Ortiz, R., Jacobs, L., & Fingerman, M. (2022). "The Stay at Home Order is Causing Things to Get Heated Up": Family Conflict Dynamics During COVID-19 From The Perspectives of Youth Calling a National Child Abuse Hotline. *Journal of family violence*, *37*(5), 837–846. https://doi.org/10.1007/s10896-021-00290-5

Solomon, Z., Mikulincer, M., & Hobfoll, S. E. (1986). Effects of social support and battle intensity on loneliness and breakdown during combat. *Journal of Personality and Social Psychology, 51*(6), 1269–1276. https://doi.org/10.1037/0022-3514.51.6.1269

Taylor, S. E. (2006). Tend and Befriend: Biobehavioral Bases of Affiliation Under Stress. Current Directions in Psychological Science, 15(6), 273-277. https://doi.org/10.1111/j.1467-8721.2006.00451.x

Thompson, R. A., & Ontai, L. (2000). Striving to do well what comes naturally: social support, developmental psychopathology, and social policy. *Development and psychopathology, 12*(4), 657–675. https://doi.org/10.1017/s0954579400004065\

Tovar, E., Rayens, M. K., Gokun, Y., & Clark, M. C. (2013). Mediators of adherence among adults with comorbid diabetes and depression: the role of self-efficacy and social support. Journal of Health Psychology, 20(11), 1405-1415. https://doi.org/10.1177/1359105313512514

Turner, R. J., & Wheaton, B. (1997). Checklist measurement of stressful life events. In S. Cohen, R. C. Kessler, & L. U. Gordon (Eds.), *Measuring stress: A guide for health and social scientists* (pp. 29–58). Oxford University Press.

U.S. Bureau of Labor Statistics. (2024, March). *Charts related to the latest "The employment situation" news release | more chart packages*. U.S. Bureau of Labor Statistics. https://www.bls.gov/charts/employment-situation/civilian-unemployment-rate.htm

Utz, S., & Breuer, J. (2017). The relationship between use of social network sites, online social support, and well-being: Results from a six-wave longitudinal study. *Journal of Media Psychology: Theories, Methods, and Applications*, *29*(3), 115.

van den Brink, R. H. S., Schutter, N., Hanssen, D. J. C., Elzinga, B. M., Rabeling-Keus, I. M., Stek, M. L., ... & Voshaar, R. O. (2018). Prognostic significance of social network, social support and loneliness for course of major depressive disorder in adulthood and old age. *Epidemiology and psychiatric sciences*, *27*(3), 266-277.

Valaitis, R. and Sword, W. (2005). Online discussions with pregnant and parenting adolescents: perspectives and possibilities. Health Promotion Practice, 6(4), 464-471. https://doi.org/10.1177/1524839904263897

Vera, E., Yoon, E., Chander, N., Kim, D., Liu, H., Kolas, D., Norgord, R., Gomez, M., Daniels, R., Matthews, K., & Ahmad Mustaffa, E. (2020). A meta-analysis of support variables and well-being in ethnic minority populations. *Journal of Applied Social Psychology*, *50*(11), 660-675. https://doi.org/10.1111/jasp.12703

Wade, T. D., & Kendler, K. S. (2000). The relationship between social support and major depression: cross-sectional, longitudinal, and genetic perspectives. *The Journal of nervous and mental disease*, *188*(5), 251-258.

Wang, X., Cai, L., Qian, J., & Peng, J. (2014). Social support moderates stress effects on depression. International Journal of Mental Health Systems, 8(1). https://doi.org/10.1186/1752-4458-8-41

Wang, Y. P., & Gorenstein, C. (2013). Psychometric properties of the Beck Depression Inventory-II: a comprehensive review. *Revista brasileira de psiquiatria (Sao Paulo, Brazil: 1999)*, *35*(4), 416–431. https://doi.org/10.1590/1516-4446-2012-1048

Wang, J., Mann, F., Lloyd-Evans, B., Ma, R., & Johnson, S. (2018). Associations between loneliness and perceived social support and outcomes of mental health problems: A systematic review. *BMC Psychiatry, 18,* 16. doi:http://dx.doi.org/10.1186/s12888-018-1736-5

Wilson, J. M., Lee, J., Fitzgerald, H. N., Oosterhoff, B., Sevi, B., & Shook, N. J. (2020). Job insecurity and financial concern during the COVID-19 pandemic are associated with worse mental health. *Journal of occupational and environmental medicine*, *62*(9), 686-691.

Wong, A. K. C., Bayuo, J., & Wong, F. K. Y. (2022). Investigating predictors of self-care behavior among homebound older adults: The role of self-efficacy, eHealth literacy, and perceived social support. *Journal of Nursing Scholarship*, 54, 278–285. https://doi-org.proxy.library.vanderbilt.edu/10.1111/jnu.12730

Wood, D., Harms, P. D., Lowman, G. H., & DeSimone, J. A. (2017). Response speed and response consistency as mutually validating indicators of data quality in online samples. *Social Psychological and Personality Science, 8*(4), 454–464. https://doi.org/10.1177/1948550617703168

Wright, K. B., Rosenberg, J., Egbert, N., Ploeger, N. A., Bernard, D. R., & King, S. (2013). Communication competence, social support, and depression among college students: A model of Facebook and face-to-face support network influence. *Journal of health communication*, *18*(1), 41-57.

Ybarra, M. L., Mitchell, K. J., Palmer, N. A., & Reisner, S. L. (2015). Online social support as a buffer against online and offline peer and sexual victimization among U.S. LGBT and non-LGBT youth. *Child abuse & neglect*, *39*, 123–136. https://doi.org/10.1016/j.chiabu.2014.08.006

Young, J. F., Berenson, K., Cohen, P., & Garcia, J. (2005). The role of parent and peer support in predicting adolescent depression: A longitudinal community study. *Journal of Research on Adolescence, 15*(4), 407–423. https://doi.org/10.1111/j.1532-7795.2005.00105.x

Zamarripa, J., Delgado-Herrada, M., Morquecho-Sánchez, R., Baños, R., de la Cruz-Ortega, M., & Duarte-Félix, H. (2021). Adaptability to social distancing due to COVID-19 and its moderating effect on stress by gender. *Salud mental*, *43*(6), 273-278.

Zimmerman, M. A., Ramirez-Valles, J., Zapert, K. M., & Maton, K. I. (2000). A longitudinal study of stress-buffering effects for urban African-American male adolescent problem behaviors and mental health. *Journal of Community Psychology*, *28*(1), 17-33.

Zhang, R. (2017). The stress-buffering effect of self-disclosure on Facebook: An examination of stressful life events, social support, and mental health among college students. *Computers in Human Behavior*, *75*, 527-537.

Table 2

Correlations and Descriptive Statistics for Key Study Variables

Variables	*M* (*SD*)	1.	2.	3.	4.	5.	6.	7.	8.
1. Functional social support (ISEL)	119.64 (23.17)	1.0	.389***	.435***	.379***	-.203***	-.031	.729***	-.553***
2. Structural social support (SNI)	14.05 (12.20)		1.0	.556***	.888***	.124**	.387***	.216***	-.130***
3. Online functional social support (OSSS)	123.81 (41.51)			1.0	.625***	.102*	.338***	.260***	-.169***
4. Online structural social support (OSNI)	14.31 (12.75)				1.0	.144***	.404***	.213***	-.126***
5. General stress (CRISYS-R)	4.00 (6.82)					1.0	.432***	-.298***	.470***
6. COVID-19 stress (PSQ)	14.0347 (16.86)						1.0	-.149***	.287***
7. Well-being (PWB)	92.23 (16.42)							1.0	-.700***
8. Depression (BDI-II)	11.81 (12.40)								1.0

Note. ISEL = Interpersonal Support Evaluation List, SNI = Social Network Index, OSSS = Online Social Support Scale, OSNI = Online Social Network Index, CRIYSYS-R = Crisis in the Family Systems - Revised, PSQ = Pandemic Stress Questionnaire, PWB = Psychological Well-being Scale, BDI-II = Beck Depression Inventory – Version 2.

*$p < .05$. **$p < .01$. ***$p < .001$.

Table 3

Results from Multiple Linear Regression

Model	Predictor	Dependent Variable = Depression			Dependent Variable = Well-being		
		B	SE(B)	β	B	SE(B)	β
Functional In-person Social Support & General Stress (Hypotheses 1a & 3a)							
Main effect model	Functional SS	-0.254***	0.015	-.474	0.501***	0.019	.700
	Stress	0.676***	0.051	.372	-0.355***	0.065	-.146
Buffering model	Functional SS	-0.254***	0.015	-.474	0.505***	0.019	.704
	Stress	0.667***	0.056	.367	-0.401***	0.070	-.165
	SS x Stress	-0.001	0.002	-.012	-0.006	0.003	-.055

*$p < .05$. **$p < .01$. ***$p < .001$.

Table 3 continued

Model	Predictor	Dependent Variable = Depression			Dependent Variable = Well-being		
		B	SE(B)	β	B	SE(B)	β
Structural In-person Social Support & General Stress Model (Hypotheses 1b & 3b)							
Main effect model	Structural SS	-0.194***	0.032	-.191	0.357***	0.048	.264
	Stress	0.897***	0.058	.493	-0.810***	0.085	-.335
Buffering model	Structural SS	-0.160***	0.031	-0.158	0.326***	0.048	.241
	Stress	1.089***	0.061	0.599	-0.986***	0.093	-.407
	SS x Stress	-0.025***	0.003	-.251	0.023***	0.005	.172

*$p < .05$. **$p < .01$. ***$p < .001$.

Table 3 continued

Model	Predictor	Dependent Variable = Depression			Dependent Variable = Well-being		
		B	SE(B)	β	B	SE(B)	β
Functional Online Social Support & General Stress Model (Hypotheses 2a & 4a)							
Main effect model	Online Functional SS	-0.062***	0.010	-.206	0.113***	0.015	.283
	Stress	0.884***	0.057	.486	-0.783***	0.085	-.323
Buffering model	Online Functional SS	-0.059***	0.010	-.198	0.111***	0.015	.278
	Stress	1.130***	0.066	.622	-1.005***	0.100	-.415
	SS x Stress	-0.009***	0.001	-.265	0.008***	0.002	.179

*$p < .05$. **$p < .01$. ***$p < .001$.

Table 3 continued

Model	Predictor	Dependent Variable = Depression			Dependent Variable = Well-being		
		B	SE(B)	β	B	SE(B)	β
Structural Online Social Support & General Stress Model (Hypotheses 2b & 4b)							
Main effect model	Online Structural SS	-0.193***	0.031	-.198	0.346***	0.046	.267
	Stress	0.906***	0.058	.498	-0.825***	0.086	-.341
Buffering model	Online Structural SS	-0.162***	0.030	-.167	0.321***	0.045	.248
	Stress	1.162***	0.062	.640	-1.038***	0.096	-.429
	SS x Stress	-0.028***	0.003	-.302	0.024***	0.005	.191

*$p < .05$. **$p < .01$. ***$p < .001$.

Table 3 continued

Model	Predictor	Dependent Variable = Depression			Dependent Variable = Well-being		
		B	SE(B)	β	B	SE(B)	β
Functional In-person Social Support & COVID-19 Stress Model (Hypotheses 1a & 3a)							
Main effect model	Functional SS	-0.290***	0.016	-.540	0.520***	0.019	.725
	Stress	0.196***	0.021	.267	-0.104***	0.026	-.106
Buffering model	Functional SS	-0.289***	0.015	-.539	0.523***	0.019	.728
	Stress	0.193***	0.021	.263	-0.100***	0.026	-0.102
	SS x Stress	-0.003***	0.001	-.100	-0.001	0.001	-.021

*$p < .05$. **$p < .01$. ***$p < .001$.

Table 3 continued

Model	Predictor	Dependent Variable = Depression			Dependent Variable = Well-being		
		B	SE(B)	β	B	SE(B)	β
Structural In-person Social Support & COVID-19 Stress Model (Hypotheses 1b & 3b)							
Main effect model	Structural SS	-0.288***	0.037	-.283	0.445***	0.053	.329
	Stress	0.292***	0.027	.397	-0.270***	0.038	-.276
Buffering model	Structural SS	-0.261***	0.038	-.257	0.438***	0.054	.324
	Stress	0.327***	0.029	.444	-0.276***	0.042	-.282
	SS x Stress	-0.005**	0.002	-.115	0.001	0.002	.024

*$p < .05$. **$p < .01$. ***$p < .001$.

Table 3 continued

Model	Predictor	Dependent Variable = Depression			Dependent Variable = Well-being		
		B	SE(B)	β	B	SE(B)	β
Functional Online Social Support & COVID-19 Stress (Hypotheses 2a & 4a)							
Main effect model	Online Functional SS	-0.082***	0.012	-.272	0.130***	0.017	.322
	Stress	0.273***	0.026	.371	-0.239***	0.038	-.244
Buffering model	Online Functional SS	-0.084***	0.012	-.276	0.131***	0.017	0.325
	Stress	0.321***	0.031	.437	-0.255***	0.045	-.260
	SS x Stress	-0.002**	0.001	-.126	0.001	0.001	.036

*$p < .05$. **$p < .01$. ***$p < .001$.

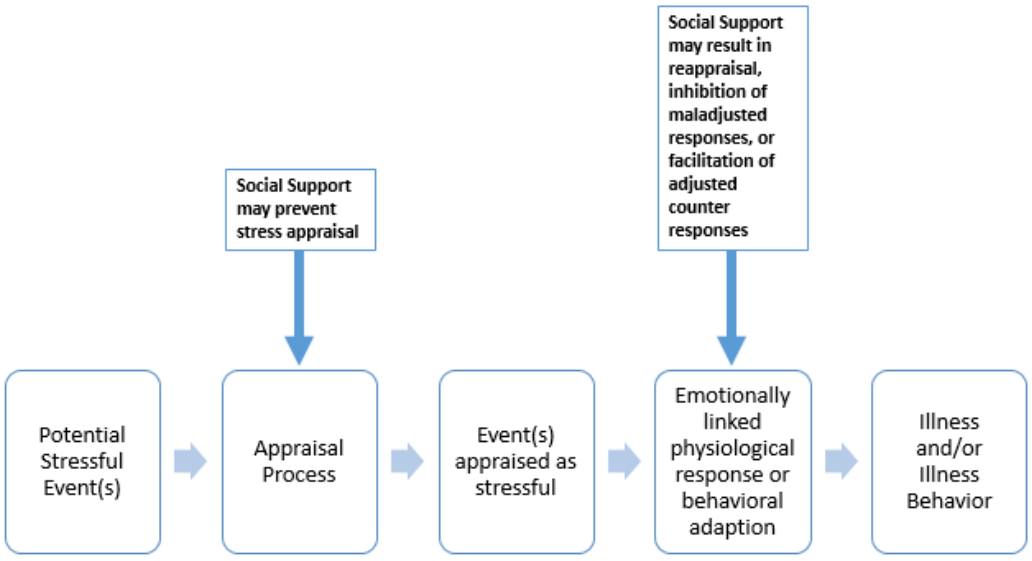
Table 3 continued

Model	Predictor	Dependent Variable = Depression			Dependent Variable = Well-being		
		B	SE(B)	β	B	SE(B)	β
Structural Online Social Support & COVID-19 Stress (Hypotheses 2b & 4b)							
Main effect model	Online Structural SS	-0.282***	0.036	-.290	0.431***	0.051	.333
	Stress	0.298***	0.027	.405	-0.278***	0.038	-.284
Buffering model	Online Structural SS	-0.251***	0.036	.258	0.424***	0.052	.327
	Stress	0.348***	0.030	.473	-0.286***	0.043	-.292
	SS x Stress	-0.006***	0.002	-.151	0.002	0.002	.030

*$p < .05$. **$p < .01$. ***$p < .001$.

Figure 1

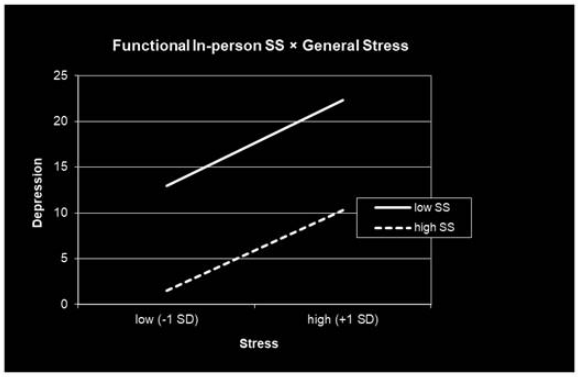
Social Support and the Link Between Stress and Illness

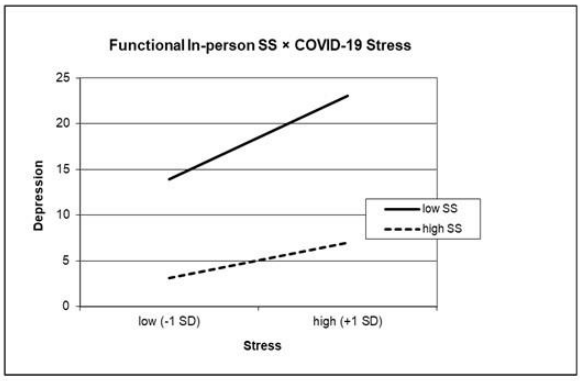


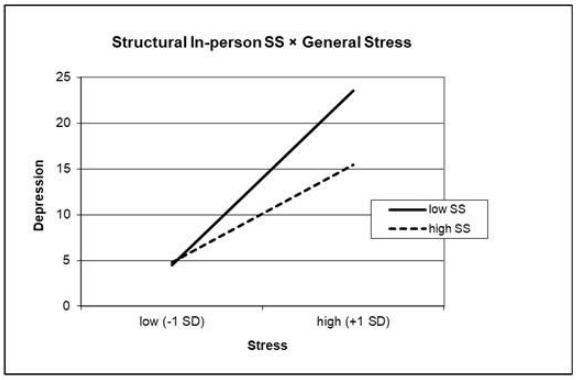
Note. Adapted from "Stress, social support, and the buffering hypothesis," by S. Cohen, 1985, Psychological Bulletin, 98(2), p. 313. Copyright 1985 by the American Psychological Association.

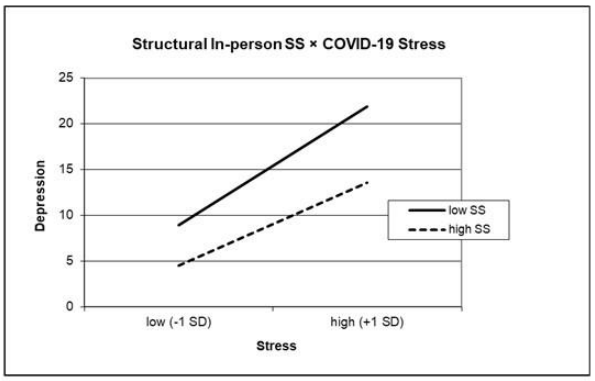
Figure 2

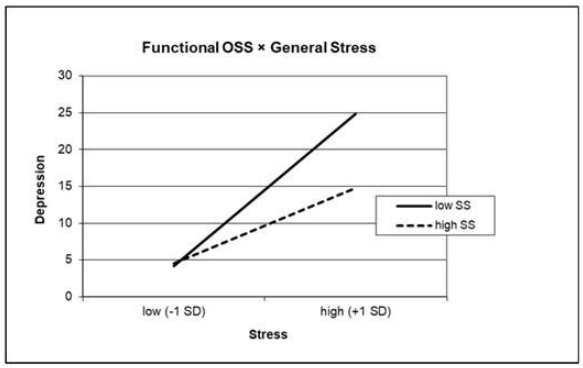
Graphed Stress × Support Interactions: Depression

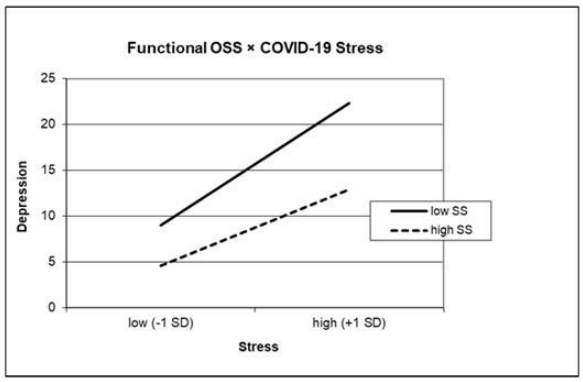


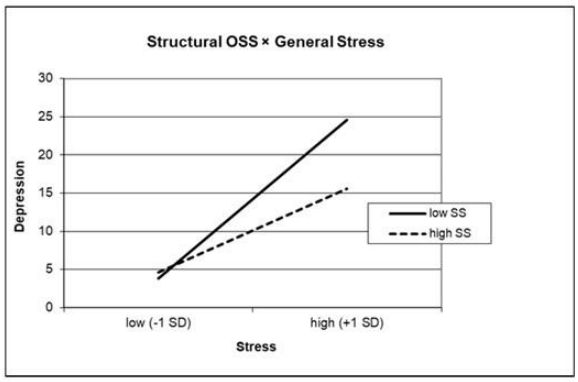


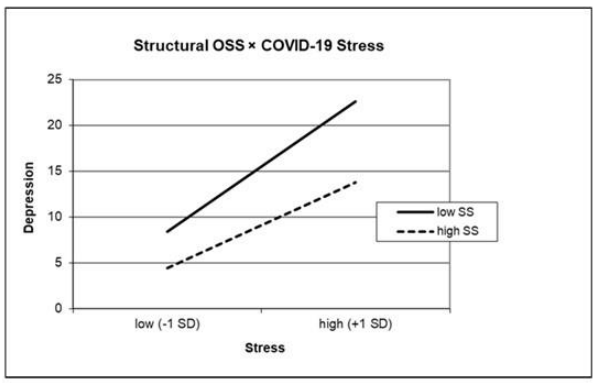








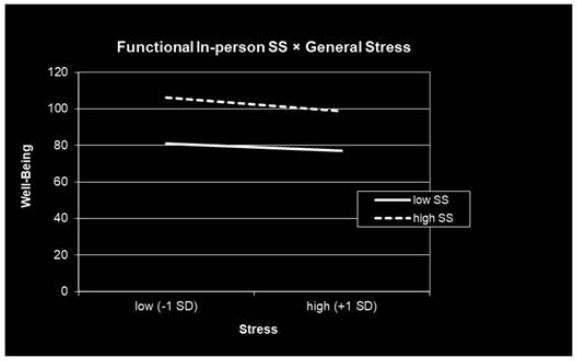


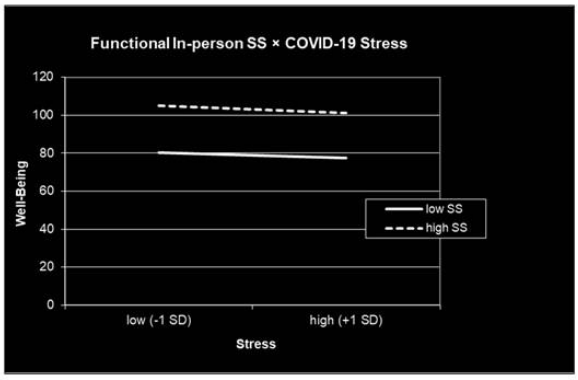


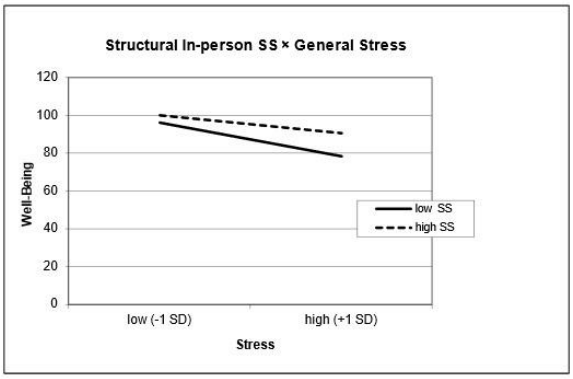
Note: Inverted graphs (black) indicate a non-significant interaction ($p > .05$).

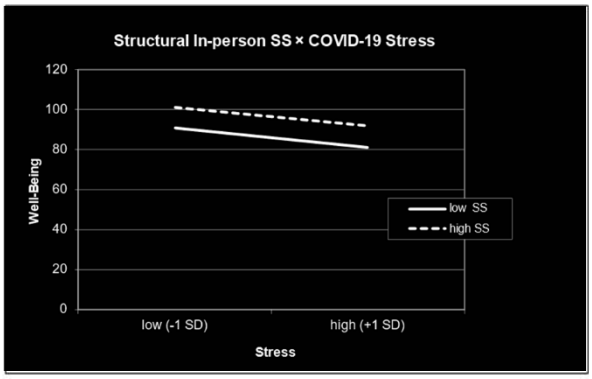
Figure 3

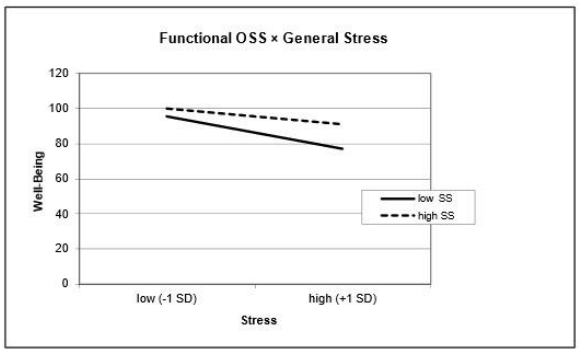
Graphed Stress × Support Interactions: Well-being

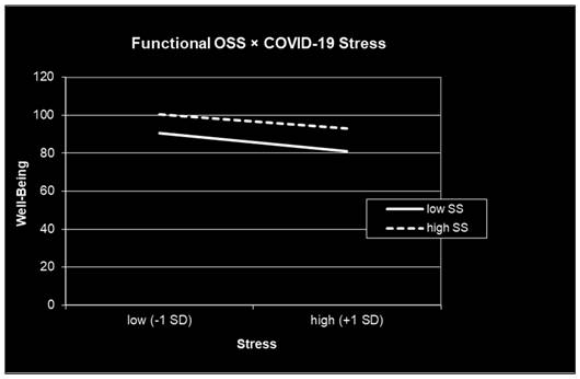


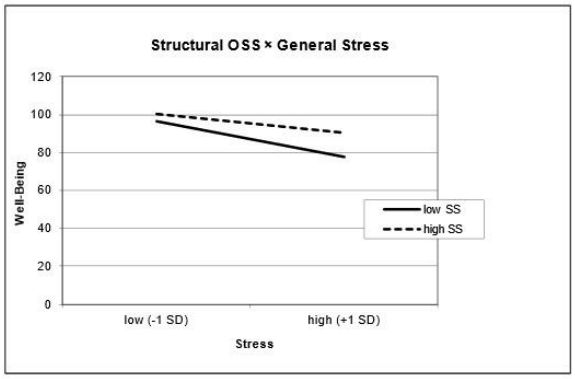












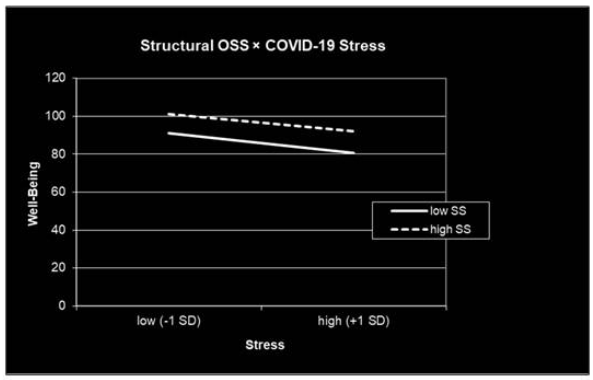
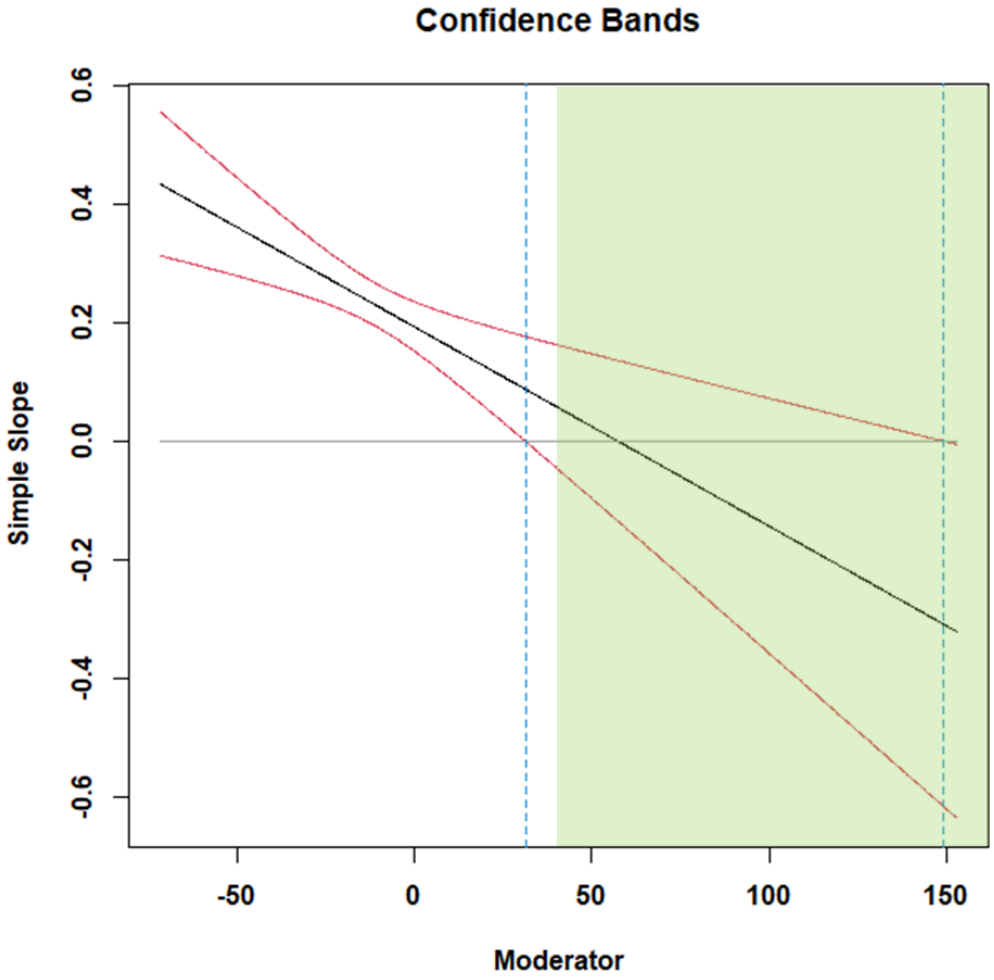


Figure 4

Regions of Significance: Functional In-person SS, COVID-19 Stress, and Depression

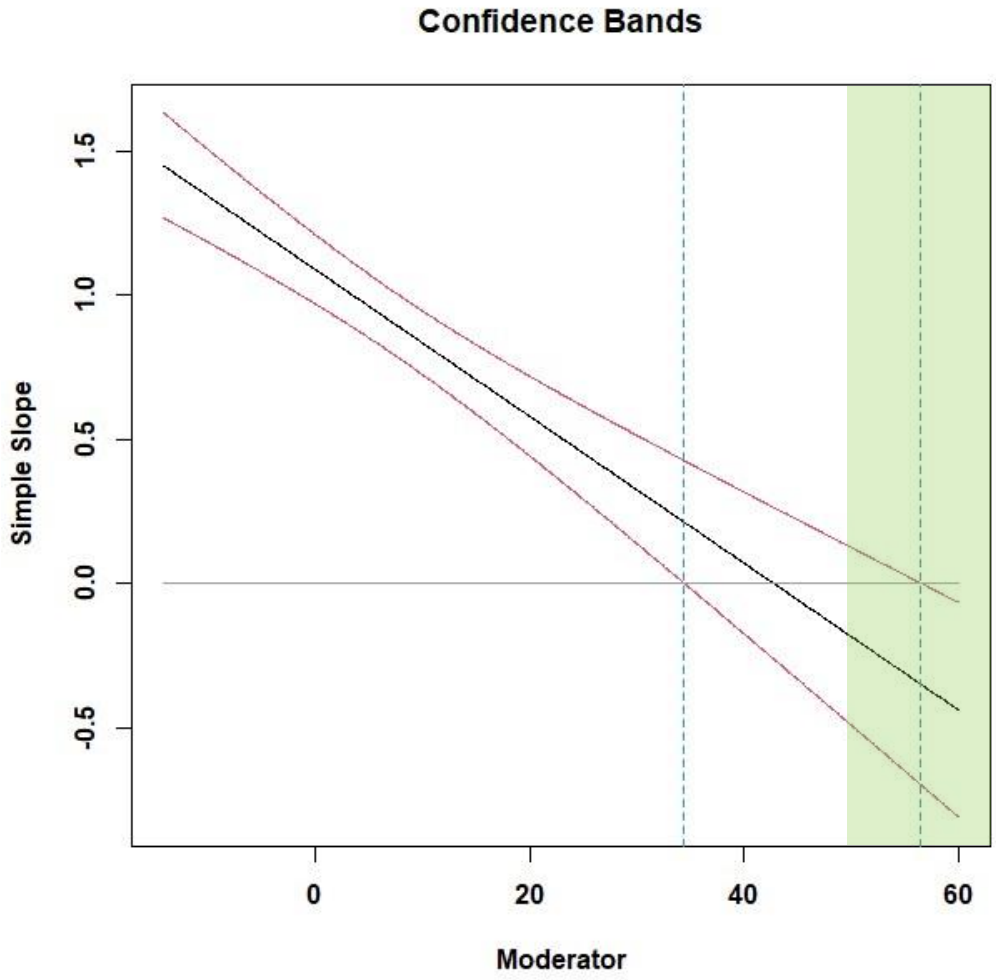


Note: The shaded region represents data values outside the range of the current data set. Simple slope is the relation between stress and depression. Moderator represents SS.

Range of Centered SS: -71.6 to 40.36

Figure 5

Regions of Significance: Structural In-person SS, General Stress, and Depression

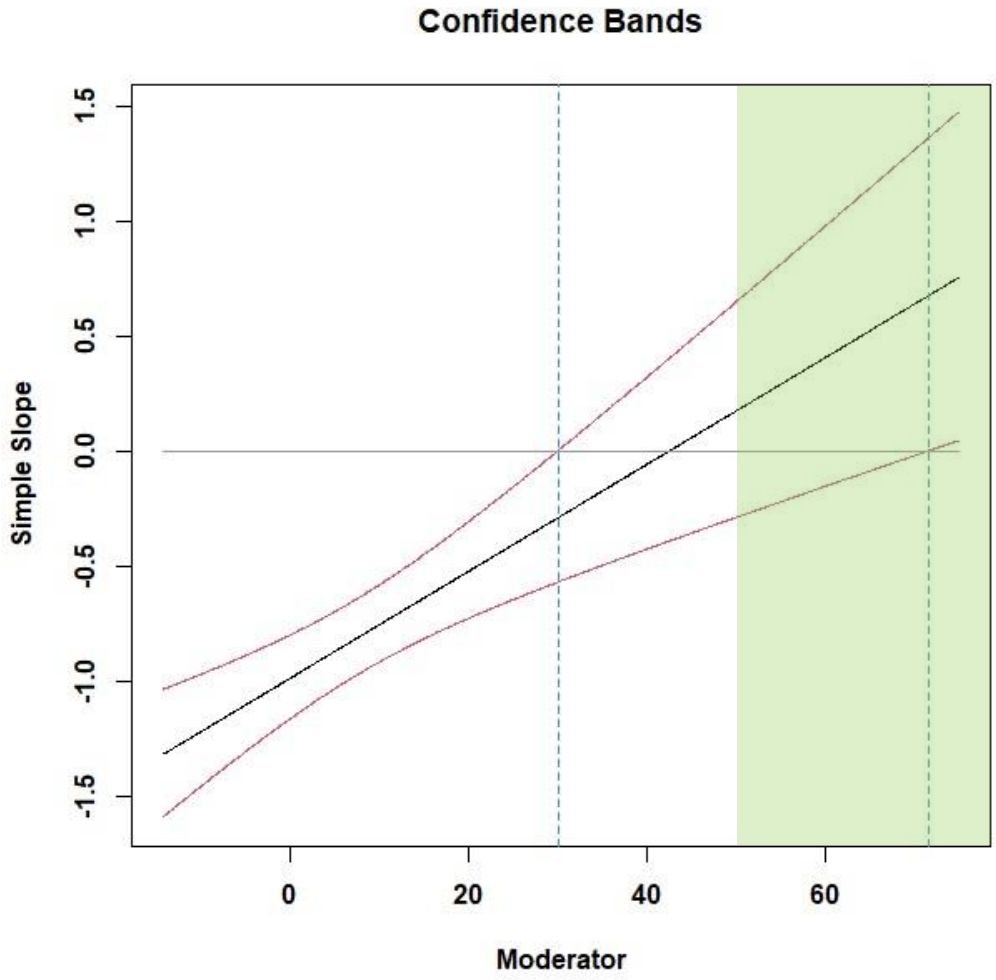


Note: The shaded region represents data values outside the range of the current data set. Simple slope is the relation between stress and depression. Moderator represents SS.

Range of Centered SS: -14.05 to 51.95

Figure 6

Regions of Significance: Structural in-person SS, General Stress, and Well-being

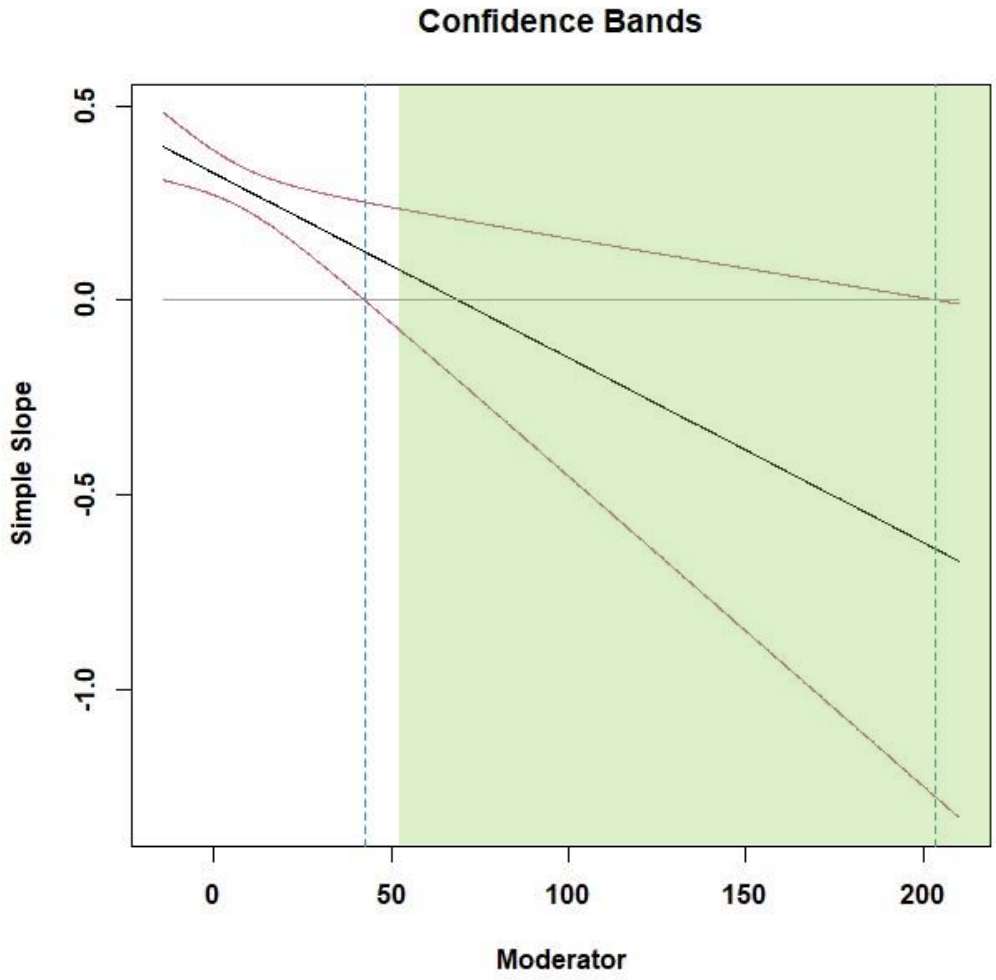


Note: The shaded region represents data values outside the range of the current data set. Simple slope is the relation between stress and well-being. Moderator represents SS.

Range of Centered SS: -14.05 to 51.95

Figure 7

Regions of Significance: Structural In-person SS, COVID-19 Stress, and Depression

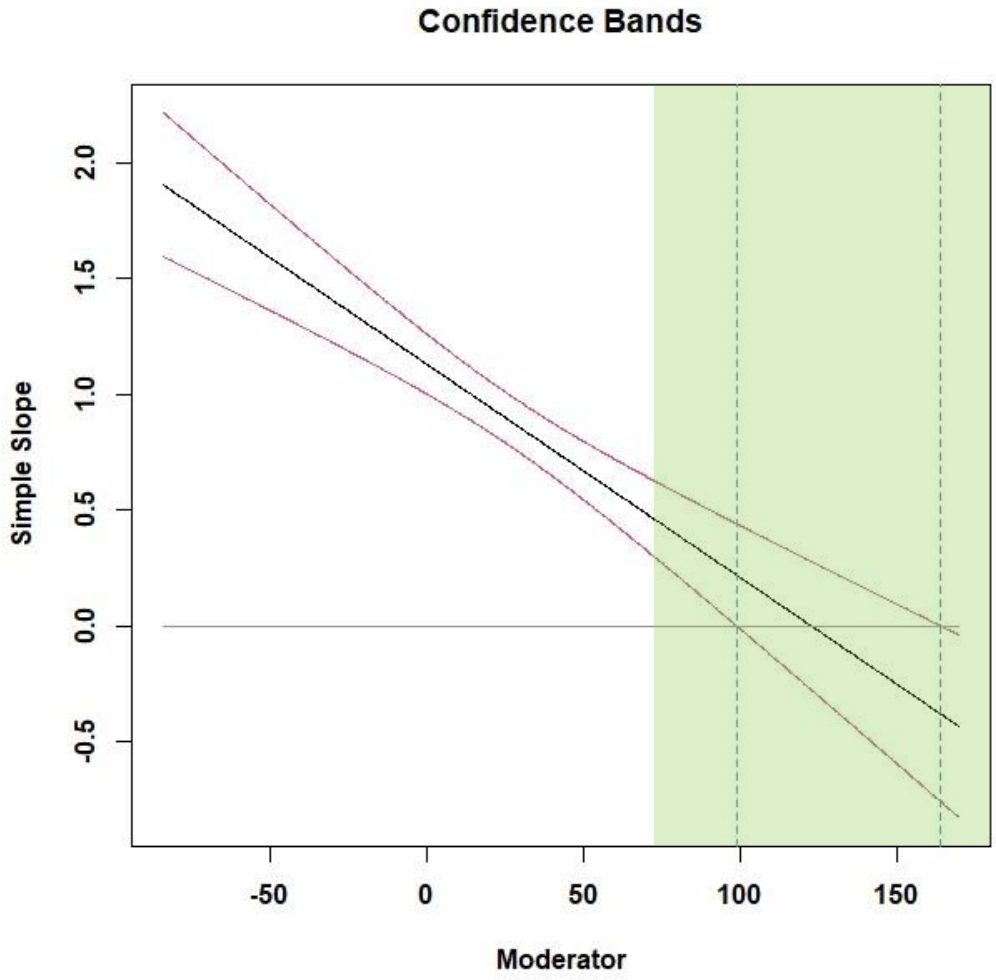


Note: The shaded region represents data values outside the range of the current data set. Simple slope is the relation between stress and depression. Moderator represents SS.

Range of Centered SS: -14.05 to 51.95

Figure 8

Regions of Significance: Functional OSS, General Stress, and Depression

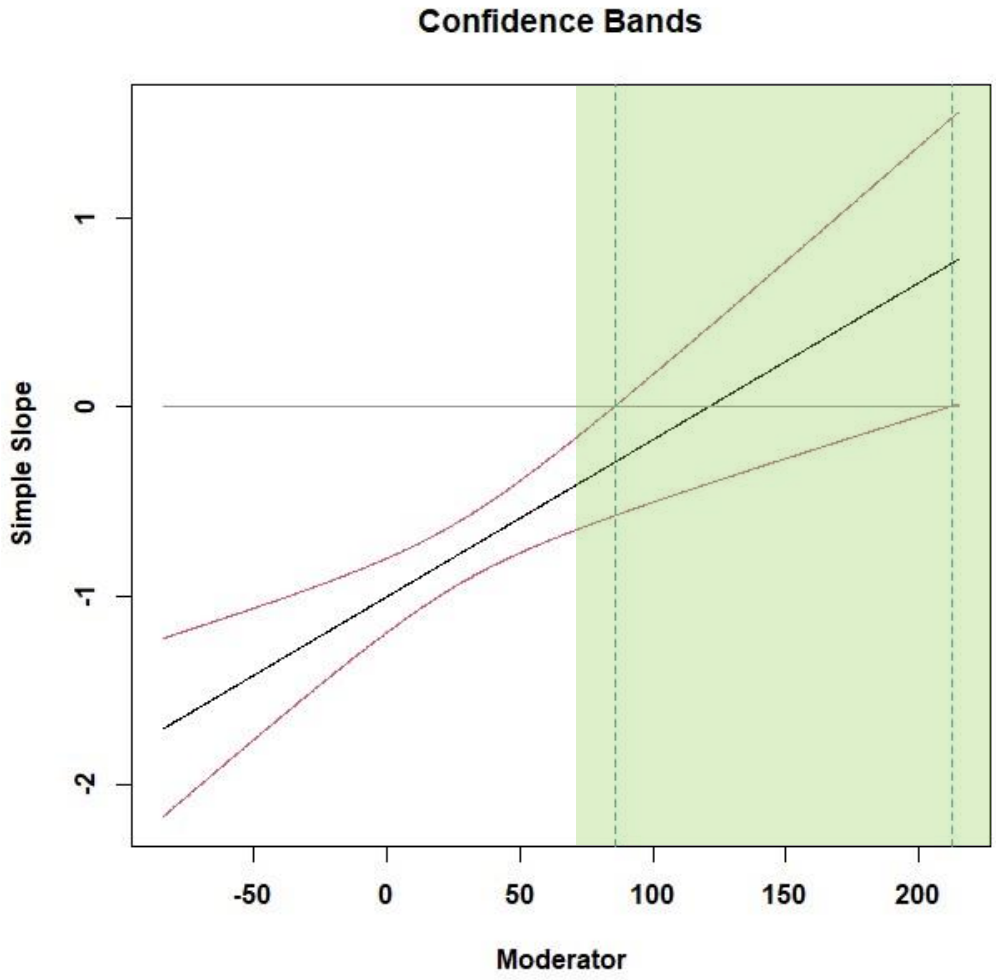


Note: The shaded region represents data values outside the range of the current data set. Simple slope is the relation between stress and depression. Moderator represents SS.

Range of Centered SS: -83.80 to 76.20

Figure 9

Regions of Significance: Functional OSS, General Stress, and Well-being

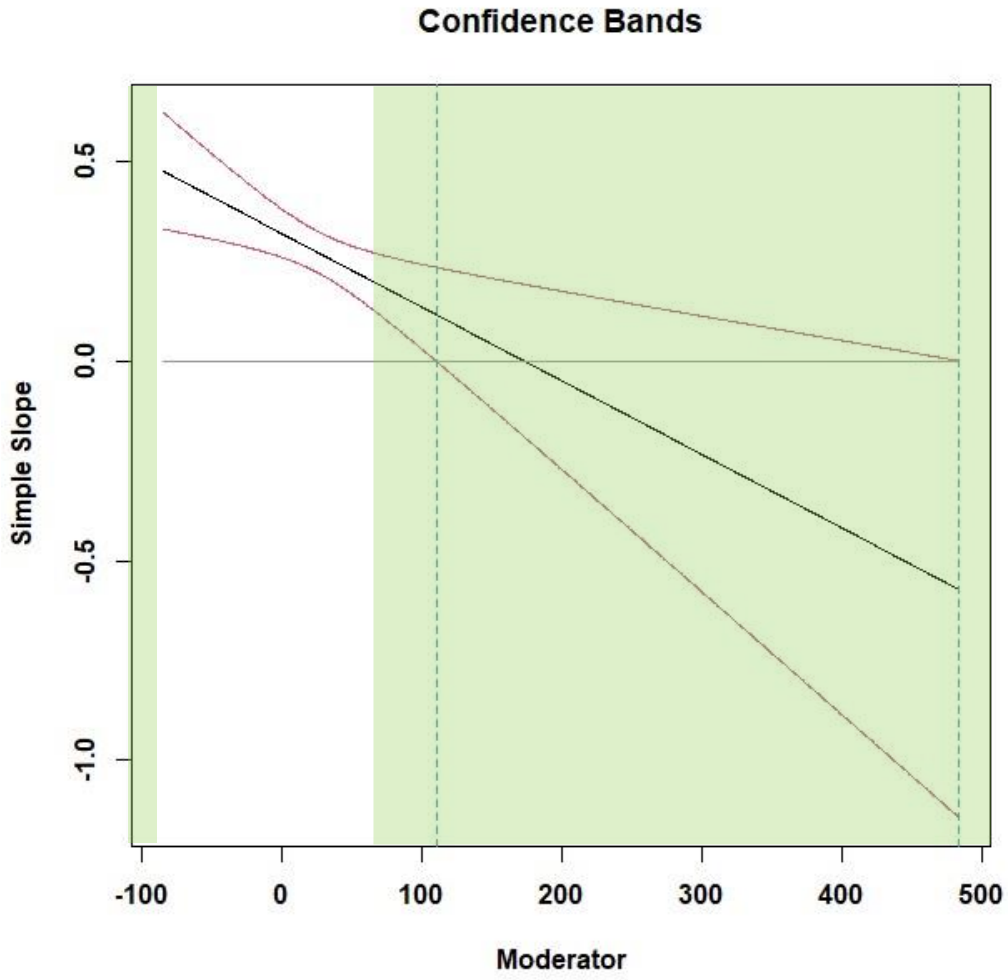


Note: The shaded region represents data values outside the range of the current data set. Simple slope is the relation between stress and well-being. Moderator represents SS.

Range of Centered SS: -83.80 to 76.20

Figure 10

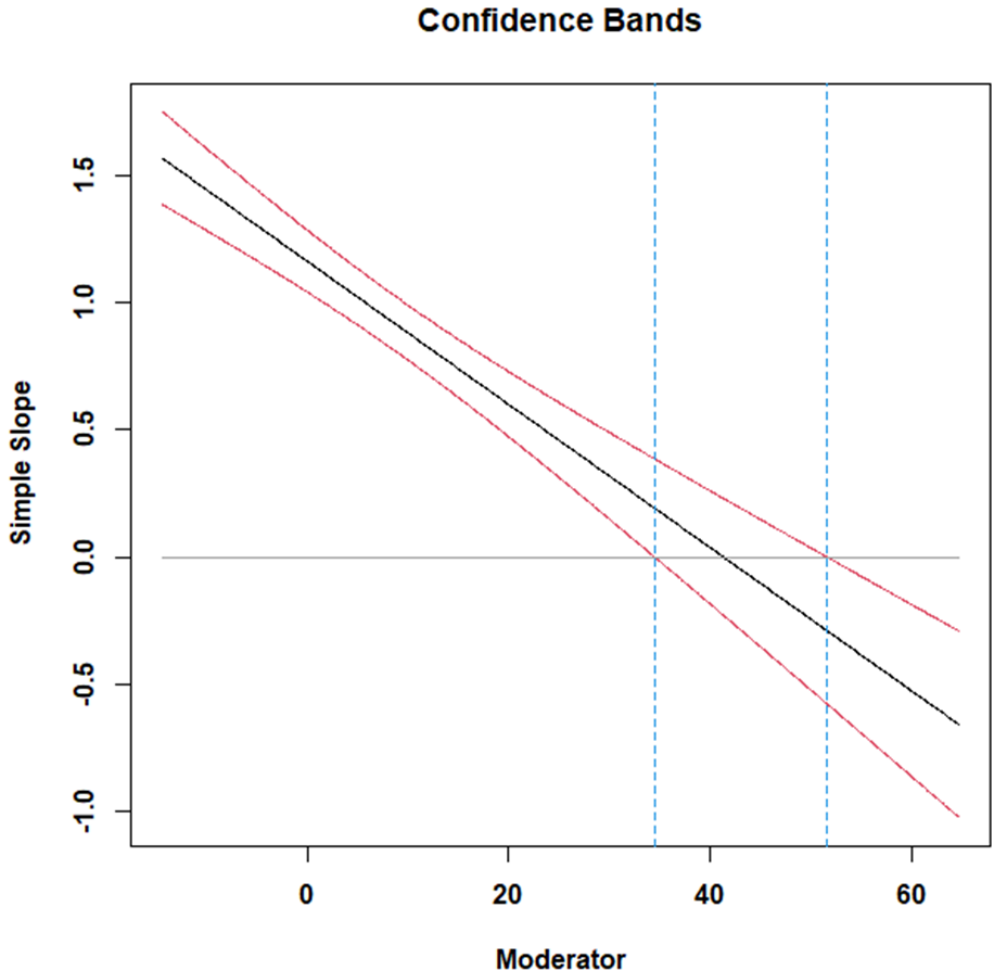
Regions of Significance: Functional OSS, COVID-19 Stress, and Depression



Note: The shaded region represents data values outside the range of the current data set. Simple slope is the relation between stress and depression. Moderator represents SS.

Range of Centered SS: -83.80 to 76.20

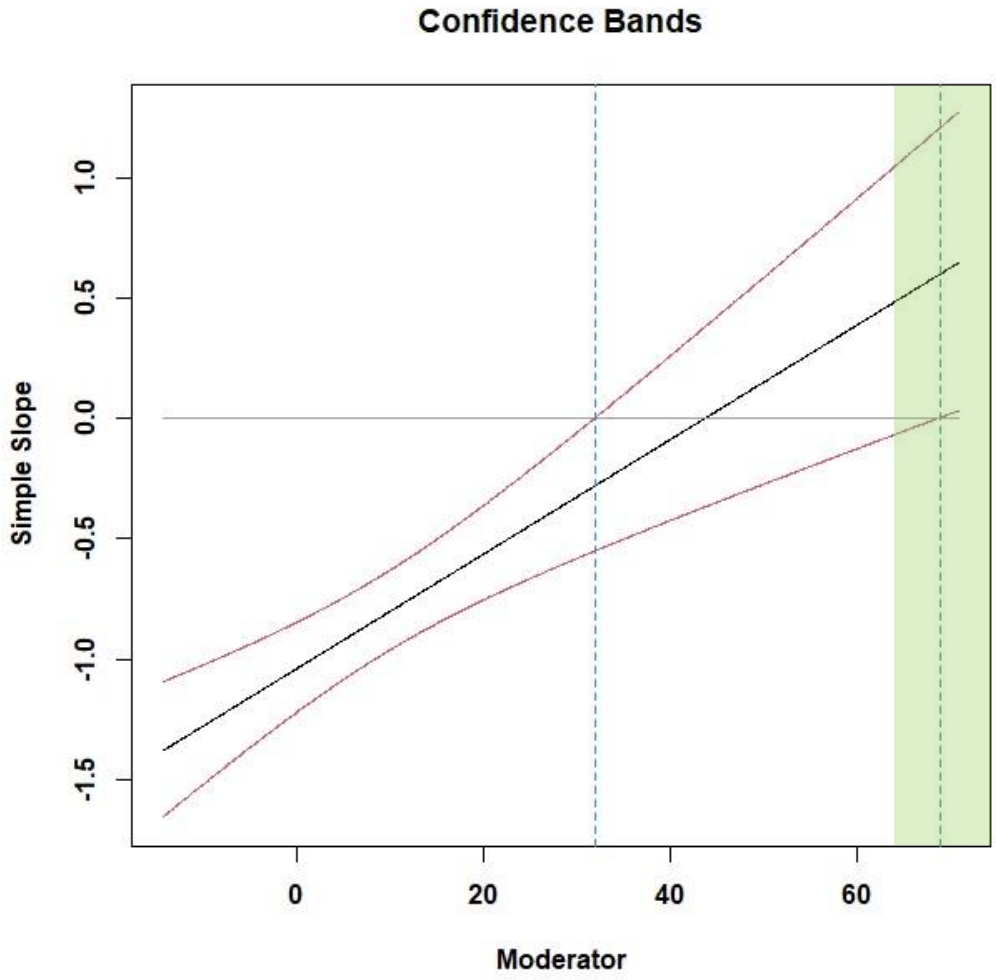
Figure 11
Regions of Significance: Structural OSS, General Stress, and Depression



Note: All values are within the range of the current data set. Simple slope is the relation between stress and depression. Moderator represents SS.

Range of Centered SS: -14.31 to 64.69

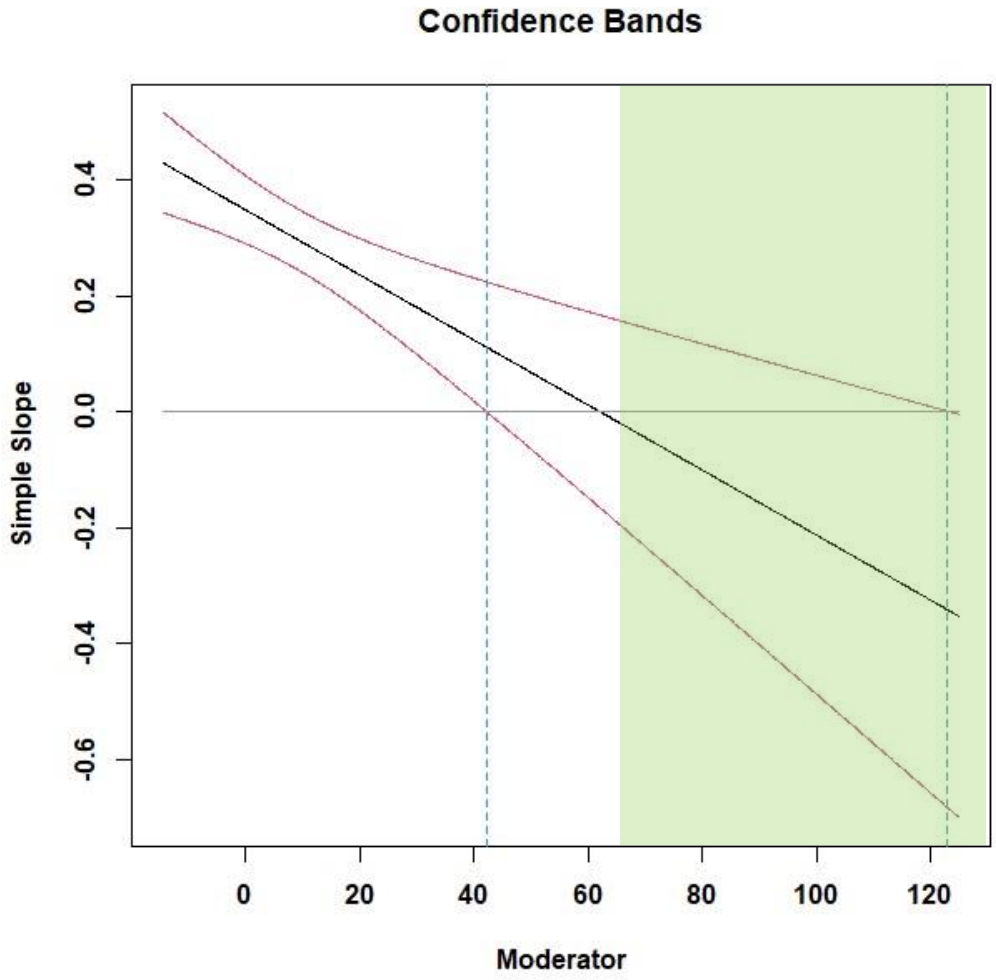
Figure 12
Regions of Significance: Structural OSS, General Stress, and Well-being



Note: The shaded region represents data values outside the range of the current data set. Simple slope is the relation between stress and well-being. Moderator represents SS.

Range of Centered SS: -14.31 to 64.69

Figure 13
Regions of Significance: Structural OSS, COVID-19 Stress, and Depression



Note: The shaded region represents data values outside the range of the current data set. Simple slope is the relation between stress and depression. Moderator represents SS.

Range of Centered SS: -14.31 to 64.69

Appendix A

Appendix of Measures

Demographics

1. Choose one or more races that you consider yourself to be:
    a. White or Caucasian
        i. If yes: are you of Spanish, Hispanic, or Latino origin?
    b. Black or African-American
    c. American Indian/Native American or Alaska Native
    d. Asian
    e. Native Hawaiian or Other Pacific Islander
    f. Other
    g. Prefer not to say
2. What is the highest level of education you have completed?
    a. Some high school or less
    b. High school diploma or GED
    c. Some college, but no degree
    d. Associates or technical degree
    e. Bachelor's degree
    f. Master's Degree
    g. Doctoral degree
    h. Prefer not to say
3. What is your gender?
    a. Male
    b. Female
    c. Non-binary
    d. Transgender Female
    e. Transgender Male
    f. Other
    g. Prefer not to say
4. What is your age?
    a. Free Response {numerical value}
5. What is your COVID-19 vaccination status?
    a. Unvaccinated
    b. One Vaccine Dose
    c. Two Vaccine Doses
    d. Three Vaccine Doses
    e. Four or more vaccine doses
    f. Prefer not to say
6. Which of the following best describes your marital status? Select all that apply.
    a. Currently married & living together, or living with someone in marital-like relationship
    b. Never married & never lived with someone in a marital-like relationship
    c. Separated
    d. Divorced or formerly lived with someone in a marital-like relationship
    e. Widowed
    f. Prefer not to say

Note: Inverted graphs (black) indicate a non-significant interaction (p > .05).

7. Which languages are you capable of speaking fluently? (Check all that apply)
    a. English
    b. Spanish
    c. Portuguese
    d. French
    e. Mandarin
    f. Arabic
    g. Other
    h. Prefer not to say
8. How would you describe your political view?
    a. Very Liberal
    b. Slightly Liberal
    c. Neither conservative nor liberal
    d. Slightly Conservative
    e. Very Conservative
    f. Other
    g. Prefer not to say

Interpersonal Support Evaluation List

Interpersonal Support Evaluation List (ISEL) -- General Population

This scale is made up of a list of statements each of which may or may not be true about you. For each statement check "definitely true" if you are sure it is true about you and "probably true" if you think it is true but are not absolutely certain. Similarly, you should check "definitely false" if you are sure the statement is false and "probably false" is you think it is false but are not absolutely certain.

Please only answer the following questions as they pertain to your IN-PERSON relationships.

1. There are several people that I trust to help solve my problems.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

2. If I needed help fixing an appliance or repairing my car, there is someone who would help me.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

3. Most of my friends are more interesting than I am.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

4. There is someone who takes pride in my accomplishments.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

5. When I feel lonely, there are several people I can talk to.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

6. There is no one that I feel comfortable to talking about intimate personal problems.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

7. I often meet or talk with family or friends.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

8. Most people I know think highly of me.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

9. If I needed a ride to the airport very early in the morning, I would have a hard time finding someone to take me.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

10. I feel like I'm not always included by my circle of friends.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

11. There really is no one who can give me an objective view of how I'm handling my problems.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

12. There are several different people I enjoy spending time with.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

13. I think that my friends feel that I'm not very good at helping them solve their problems.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

14. If I were sick and needed someone (friend, family member, or acquaintance) to take me to the doctor, I would have trouble finding someone.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

15. If I wanted to go on a trip for a day (e.g., to the mountains, beach, or country), I would have a hard time finding someone to go with me.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

16. If I needed a place to stay for a week because of an emergency (for example, water or electricity out in my apartment or house), I could easily find someone who would put me up.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

17. I feel that there is no one I can share my most private worries and fears with.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

18. If I were sick, I could easily find someone to help me with my daily chores.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

19. There is someone I can turn to for advice about handling problems with my family.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

20. I am as good at doing things as most other people are.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

21. If I decide one afternoon that I would like to go to a movie that evening, I could easily find someone to go with me.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

22. When I need suggestions on how to deal with a personal problem, I know someone I can turn to.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

23. If I needed an emergency loan of $100, there is someone (friend, relative, or acquaintance) I could get it from.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

24. In general, people do not have much confidence in me.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

25. Most people I know do not enjoy the same things that I do.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

26. There is someone I could turn to for advice about making career plans or changing my job.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

27. I don't often get invited to do things with others.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

28. Most of my friends are more successful at making changes in their lives than I am.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

29. If I had to go out of town for a few weeks, it would be difficult to find someone who would look after my house or apartment (the plants, pets, garden, etc.).

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

30. There really is no one I can trust to give me good financial advice.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

31. If I wanted to have lunch with someone, I could easily find someone to join me.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

32. I am more satisfied with my life than most people are with theirs.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

33. If I was stranded 10 miles from home, there is someone I could call who would come and get me.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

34. No one I know would throw a birthday party for me.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

35. It would me difficult to find someone who would lend me their car for a few hours.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

36. If a family crisis arose, it would be difficult to find someone who could give me good advice about how to handle it.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

37. I am closer to my friends than most other people are to theirs.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

38. There is at least one person I know whose advice I really trust.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

39. If I needed some help in moving to a new house or apartment, I would have a hard time finding someone to help me.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

40. I have a hard time keeping pace with my friends.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

Online Social Support Scale

How much do you use the following sites, apps, services, or games to connect or interact with other people? 0 = Never, 1 = Monthly or less, 2 = Weekly, 3 = Daily, 4 = Multiple times a day

Texting 0 1 2 3 4

Facebook 0 1 2 3 4

Instagram 0 1 2 3 4

Email 0 1 2 3 4

Twitter 0 1 2 3 4

Snapchat 0 1 2 3 4

Tumblr 0 1 2 3 4

YouTube 0 1 2 3 4

Pinterest 0 1 2 3 4

Reddit 0 1 2 3 4

Yik Yak 0 1 2 3 4

Kik 0 1 2 3 4

LinkedIn 0 1 2 3 4

Tik Tok 0 1 2 3 4

Be Real 0 1 2 3 4

GroupMe 0 1 2 3 4

WhatsApp or other chat services 0 1 2 3 4

Google+ 0 1 2 3 4

Zoom 0 1 2 3 4

Whatsgoodly 0 1 2 3 4

Dating Sites/Apps (e.g. Tinder) 0 1 2 3 4

Multiplayer Video Games 0 1 2 3 4

Discord 0 1 2 3 4

Other Websites/Apps

If you selected other websites and apps please list those here: **FREE RESPONSE**

This scale is made up of a list of statements each of which may or may not be true about your online relationships. Please only answer the following questions as they pertain to your <u>ONLINE social interactions</u> (including text, facetime, social media, online forums, online games, etc.).

Use the following scale: 0 = Never, 1 = Rarely, 2 = Sometimes, 3 = Pretty Often, 4 = A Lot

1.People show that they care about me online. 0 1 2 3 4

2. Online, people say or do things that make me feel good about myself. 0 1 2 3 4

3. People encourage me when I'm online. 0 1 2 3 4

4. People pay attention to me online. 0 1 2 3 4

5. I get likes, favorites, upvotes, views, etc. online. 0 1 2 3 4

6. I get positive comments online. 0 1 2 3 4

7. When I'm online, people tell me they like the things I say or do. 0 1 2 3 4

8. Online, people are interested in me as a person. 0 1 2 3 4

9. People support me online. 0 1 2 3 4

10. When I'm online, people make me feel good about myself. 0 1 2 3 4

11. When I'm online, I talk or do things with other people. 0 1 2 3 4

12. People spend time with me online. 0 1 2 3 4

13. People hang out and do fun things with me online. 0 1 2 3 4

14. Online, I belong to groups of people with similar interests. 0 1 2 3 4

15. People talk with me online about things we have in common. 0 1 2 3 4

16. Online, I connect with people who like the same things I do. 0 1 2 3 4

17. I am part of groups online. 0 1 2 3 4

18. When I'm online, people joke and kid around with me. 0 1 2 3 4

19. People relate to me through things I say or do online. 0 1 2 3 4

20. Online, people make me feel like I belong. 0 1 2 3 4

21. When I'm online, people give me useful advice. 0 1 2 3 4

22. Online, people provide me with helpful information. 0 1 2 3 4

23. If I had a problem, people would help me online by saying what they would do. 0 1 2 3 4

24. Online, people would tell me where to find help if I needed it. 0 1 2 3 4

25. People help me learn new things when I'm online. 0 1 2 3 4

26. People offer suggestions to me online. 0 1 2 3 4

27. People tell me things I want to know online. 0 1 2 3 4

28. When I'm online, people help me understand my situation better. 0 1 2 3 4

29. If I had a problem, people would share their point of view online. 0 1 2 3 4

30. People help me see things in new ways when I'm online. 0 1 2 3 4

31. People online would help me with money or other things if I needed it. 0 1 2 3 4

32. When I'm online, people help me with school or work. 0 1 2 3 4

33. Online, people help me get things done. 0 1 2 3 4

34. If I needed a hand doing something, I go online to find people who will help out. 0 1 2 3 4 35. Online, people offer to do things for me. 0 1 2 3 4

36. Online, people help me with causes or events that I think are important. 0 1 2 3 4

37. When I'm online, people have offered me things I need. 0 1 2 3 4

38. When I need something, I go online to find someone who might lend it to me. 0 1 2 3 4

39. When I need a hand with school or work things, I get help from others online. 0 1 2 3 4

40. I contact people online to get help or raise money for things I think are important. 0 1 2 3 4

Social Network Index (Modified)

Social Network Index

Instructions: This questionnaire is concerned with how many people you see or talk to on a regular basis including family, friends, workmates, neighbors, etc. Please read and answer each question carefully.

1. How many children do you have? (If you 0 skip to question 2.)

0 1 2 3 4 5 6 7 or more

1a. How many of your children do you see or talk in person at least once every 2 weeks?

0 1 2 3 4 5 6 7 or more

1b. How many of your children do you talk to using technology (e.g. phone, social media) at least once every 2 weeks?

0 1 2 3 4 5 6 7 or more

2. Are either of your parents living? (If '0' skip to question 3.)

(0) neither (1) one parent (2) both parents

2a. Do you see either of your parents in person at least once every 2 weeks?

(0) neither (1) one parent (2) both parents

2b. Do you talk to either of your parents using technology at least once every 2 weeks?

(0) neither (1) one parent (2) both parents

3. Are either of your in-laws (or partner's parents) living? (If you have none, select neither, and skip to question 4.)

(0) neither (1) one in law (2) both in-laws

3a. Do you see either of your partner's parents at least once every 2 weeks?

(0) neither (1) one in-law (2) both in-laws

3b. Do you talk to either of your partner's parents using technology at least once every 2 weeks?

(0) neither (1) one in-law (2) both in-laws

4. How many other relatives (other than your spouse, parents, & children) do you feel close to? (If '0' skip to question 5.)

0 1 2 3 4 5 6 7 or more

4a. How many of these relatives do you see at least once every 2 weeks?

0 1 2 3 4 5 6 7 or more

4b. How many of these relatives do you talk to using technology at least once every 2 weeks?

0 1 2 3 4 5 6 7 or more

5. How many close friends do you have? (meaning people that you feel at ease with, can talk to about private matters, and can call on for help) (If 0 is selected skip to question 6)

0 1 2 3 4 5 6 7 or more

5a. How many of these friends do you see at least once every 2 weeks?

0 1 2 3 4 5 6 7 or more

5b. How many of these friends do you talk to using technology least once every 2 weeks?

0 1 2 3 4 5 6 7 or more

6. Do you belong to a church, temple, or other religious group? (If 'no' skip to question 7)

No Yes

6a. How many members of your church or religious group do you see at least once every 2 weeks? (This includes at group meetings and services.)

0 1 2 3 4 5 6 7 or more

6b. How many members of your church or religious group do you talk to using technology at least once every 2 weeks? (This includes virtual group meetings and services.)

0 1 2 3 4 5 6 7 or more

7. Do you attend any classes (school, university, technical training, or adult education) on a regular basis? (If 'no' skip to question 8.)

No Yes

7a. How many fellow students or teachers do you see in-person at least once every 2 weeks? (This includes at class meetings.)

0 1 2 3 4 5 6 7 or more

7b. How many fellow students or teachers do you interact with using technology at least once every 2 weeks? (This includes class meetings conducted via Zoom or other online platforms)

0 1 2 3 4 5 6 7 or more

8. Are you currently employed either full or part-time? (If not, check 'no' and skip to question 9.)

(0) No (1) Yes, self-employed (2) Yes, employed by others

8a. How many people do you supervise in-person?

0 1 2 3 4 5 6 7 or more

8b. How many people do you supervise remotely?

0 1 2 3 4 5 6 7 or more

8c. How many people at work (other than those you supervise) do you talk to in-person at least once every 2 weeks?

0 1 2 3 4 5 6 7 or more

8d. How many people at work (other than those you supervise) do you talk to using technology at least once every 2 weeks?

0 1 2 3 4 5 6 7 or more

9. a. How many of your neighbors do you visit or talk to in-person at least once every 2 weeks?

0 1 2 3 4 5 6 7 or more

b. How many of your neighbors do you talk to using technology at least once every 2 weeks?

0 1 2 3 4 5 6 7 or more

10. Are you currently involved in regular volunteer work? (If no skip to question 11.)

No Yes

10a. How many people involved in this volunteer work do you talk to or see in-person at least once every 2 weeks?

0 1 2 3 4 5 6 7 or more

10b. How many people involved in this volunteer work do you talk to using technology at least once every 2 weeks?

0 1 2 3 4 5 6 7 or more

11. Do you belong to any groups in which you talk to one or more members of the group at least once every 2 weeks? Examples include social clubs, recreational groups, trade unions, commercial groups, professional organizations, groups concerned with children like the PTA or Boy Scouts, groups concerned with community service, etc. (If 'no' skip to question 12.)

No Yes

11a. How many people involved in these groups do you talk to or see in-person at least once every 2 weeks?

0 1 2 3 4 5 6 7 or more

11b. How many people involved in this group do you talk to using technology at least once every 2 weeks?

0 1 2 3 4 5 6 7 or more

12. Do you have any friends or acquaintances that you only interact with online (never met in-person)?

No Yes

12a. How many of these individuals do you talk to using technology at least once every 2 weeks?

0 1 2 3 4 5 6 7 or more

Pandemic Stress Questionnaire

The following questions asks about stressors that you may have experienced due to the COVID-19 Pandemic. Please indicate the severity of each event for you When rating how bad each event was when it happened, please consider how much of a negative impact it had on your life, how often the event occurred, and how long it was a problem for you. If a statement is not applicable, please select "Did not happen to me."

1. I had difficulty obtaining basic supplies because of the coronavirus pandemic (e.g., food, medicine, toilet paper).
    a. Did not happen to me.
    b. Yes, and it was not bad at all.
    c. Yes, and it was somewhat bad.
    d. Yes, and it was moderately bad.
    e. Yes, and it was extremely bad.

2. I had to move unexpectedly because of the coronavirus pandemic.
    a. Did not happen to me.
    b. Yes, and it was not bad at all.
    c. Yes, and it was somewhat bad.
    d. Yes, and it was moderately bad.
    e. Yes, and it was extremely bad.
3. I was unexpectedly separated from family, friends, or others close to me because of the coronavirus pandemic (e.g., due to moves or travel restrictions).
    a. Did not happen to me.
    b. Yes, and it was not bad at all.
    c. Yes, and it was somewhat bad.
    d. Yes, and it was moderately bad.
    e. Yes, and it was extremely bad.
4. I had problems with my visa or the Student and Exchange Visitor Information System because of the coronavirus pandemic (e.g., unable to renew).
    a. Did not happen to me.
    b. Yes, and it was not bad at all.
    c. Yes, and it was somewhat bad.
    d. Yes, and it was moderately bad.
    e. Yes, and it was extremely bad.
5. I had to cancel travel or experienced a major disruption in travel plans because of the coronavirus pandemic.
    a. Did not happen to me.
    b. Yes, and it was not bad at all.
    c. Yes, and it was somewhat bad.
    d. Yes, and it was moderately bad.
    e. Yes, and it was extremely bad.
6. I had to cancel or postpone important events because of the coronavirus pandemic (e.g., events for a club, sporting events, major celebrations).
    a. Did not happen to me.
    b. Yes, and it was not bad at all.
    c. Yes, and it was somewhat bad.
    d. Yes, and it was moderately bad.

e. Yes, and it was extremely bad.

7. I had to take on additional responsibilities caring for others (e.g., children, other family members) due to the coronavirus pandemic.
    a. Did not happen to me.
    b. Yes, and it was not bad at all.
    c. Yes, and it was somewhat bad.
    d. Yes, and it was moderately bad.
    e. Yes, and it was extremely bad.
8. I was unable to be with close family, friends, or partners because of the coronavirus pandemic.
    a. Did not happen to me.
    b. Yes, and it was not bad at all.
    c. Yes, and it was somewhat bad.
    d. Yes, and it was moderately bad.
    e. Yes, and it was extremely bad.
9. I had conflicts or arguments with my partner or family members due to coronavirus (e.g. conflicts about living arrangements, shared workspace, and schedule expectations).
    a. Did not happen to me.
    b. Yes, and it was not bad at all.
    c. Yes, and it was somewhat bad.
    d. Yes, and it was moderately bad.
    e. Yes, and it was extremely bad.
10. I experienced racism or discrimination due to the coronavirus pandemic.
    a. Did not happen to me.
    b. Yes, and it was not bad at all.
    c. Yes, and it was somewhat bad.
    d. Yes, and it was moderately bad.
    e. Yes, and it was extremely bad.
11. Someone close to me died from COVID-19.
    a. Did not happen to me.
    b. Yes, and it was not bad at all.
    c. Yes, and it was somewhat bad.
    d. Yes, and it was moderately bad.
    e. Yes, and it was extremely bad.

12. I experienced significant financial strain due to the pandemic (e.g., due to travel, purchasing supplies, paying for housing).
    a. Did not happen to me.
    b. Yes, and it was not bad at all.
    c. Yes, and it was somewhat bad.
    d. Yes, and it was moderately bad.
    e. Yes, and it was extremely bad.
13. I temporarily or permanently lost a job or had my work hours greatly reduced due to the coronavirus pandemic.
    a. Did not happen to me.
    b. Yes, and it was not bad at all.
    c. Yes, and it was somewhat bad.
    d. Yes, and it was moderately bad.
    e. Yes, and it was extremely bad.
14. Someone I rely on for financial support (e.g., partner, parent) temporarily or permanently lost a job or had their work hours greatly reduced because of the coronavirus pandemic.
    a. Did not happen to me.
    b. Yes, and it was not bad at all.
    c. Yes, and it was somewhat bad.
    d. Yes, and it was moderately bad.
    e. Yes, and it was extremely bad.
15. My workload increased substantially because of the coronavirus pandemic.
    a. Did not happen to me.
    b. Yes, and it was not bad at all.
    c. Yes, and it was somewhat bad.
    d. Yes, and it was moderately bad.
    e. Yes, and it was extremely bad.
16. I was unable to complete important requirements for my education or professional goals due to the coronavirus pandemic (e.g., coursework, taking the SAT or GRE, thesis).
    a. Did not happen to me.
    b. Yes, and it was not bad at all.
    c. Yes, and it was somewhat bad.
    d. Yes, and it was moderately bad.
    e. Yes, and it was extremely bad.

17. I had problems with online courses and/or remote work (e.g., slow connection, no computer or internet access, major differences in time zone).
    a. Did not happen to me.
    b. Yes, and it was not bad at all.
    c. Yes, and it was somewhat bad.
    d. Yes, and it was moderately bad.
    e. Yes, and it was extremely bad.
18. I had symptoms of COVID-19 (e.g., cough, fever, trouble breathing) but was unable to get tested.
    a. Did not happen to me.
    b. Yes, and it was not bad at all.
    c. Yes, and it was somewhat bad.
    d. Yes, and it was moderately bad.
    e. Yes, and it was extremely bad.
19. I was tested for COVID-19.
    a. Did not happen to me.
    b. Yes, and it was not bad at all.
    c. Yes, and it was somewhat bad.
    d. Yes, and it was moderately bad.
    e. Yes, and it was extremely bad.
20. I was diagnosed with COVID-19.
    a. Did not happen to me.
    b. Yes, and it was not bad at all.
    c. Yes, and it was somewhat bad.
    d. Yes, and it was moderately bad.
    e. Yes, and it was extremely bad.
21. I had difficulty accessing or paying for physical or mental health care for myself or my dependents due to the coronavirus pandemic.
    a. Did not happen to me.
    b. Yes, and it was not bad at all.
    c. Yes, and it was somewhat bad.
    d. Yes, and it was moderately bad.
    e. Yes, and it was extremely bad.
22. I was quarantined for 2 weeks or longer due to possible exposure to COVID-19 or due to international travel.

a. Did not happen to me.
b. Yes, and it was not bad at all.
c. Yes, and it was somewhat bad.
d. Yes, and it was moderately bad.
e. Yes, and it was extremely bad.

23. Someone close to me had symptoms of COVID-19 (e.g., cough, fever, trouble breathing) but was unable to get tested.
    a. Did not happen to me.
    b. Yes, and it was not bad at all.
    c. Yes, and it was somewhat bad.
    d. Yes, and it was moderately bad.
    e. Yes, and it was extremely bad.
24. Someone close to me was diagnosed with COVID-19.
    a. Did not happen to me.
    b. Yes, and it was not bad at all.
    c. Yes, and it was somewhat bad.
    d. Yes, and it was moderately bad.
    e. Yes, and it was extremely bad.
25. Someone close to me was quarantined for 2 weeks or longer due to possible exposure to COVID-19 or due to international travel.
    a. Did not happen to me.
    b. Yes, and it was not bad at all.
    c. Yes, and it was somewhat bad.
    d. Yes, and it was moderately bad.
    e. Yes, and it was extremely bad.

Crisis in the Family Systems – Revised (CRISYS-R)[2]

INSTRUCTIONS: The following questions ask about everyday life events that people experience. Please indicate whether the event has occurred in the past 12 months and whether it was positive, negative, or neutral for you. If a question is not applicable, please select "Did not happen to me."

[2] The appendix includes more than 64 questions. The published CRISYS-R includes sub-questions (e.g. 13a, 13b, 13c). All questions from the original measure were included but are presented independently here.

1. Did your income increase by a lot?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
2. Did you go deeply in debt?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
3. Did your income decrease by a lot?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
4. Did you give money to support family or friends not living with you?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
5. Did you go without food because you didn't have the money to pay for it?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
6. Did you go without some clothing because you couldn't pay for it?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
7. Did you miss a rent or mortgage payment because you couldn't pay for it?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.

d. Yes, and it was negative.

8. Did the utility or phone company threaten to cut off your service because you couldn't pay the bills?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
9. Was your telephone, electricity, or gas turned off?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
10. Did you go without furniture because you did not have the money to pay for it?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
11. Did you go without appliances because you did not have the money to pay for them?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
12. Did you lose your housing?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
13. Did you miss an appointment or have to change your plans because you had no transportation to get there?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
14. Did you have legal problems?

a. Did not happen to me.
b. Yes, and it was positive.
c. Yes, and it was neutral.
d. Yes, and it was negative.

15. Did you go without legal advice when you needed it?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
16. Was anyone in your family pulled over or questioned by the police?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
17. Were you or your partner questioned about your legal status?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
18. Did anyone in your family get arrested?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
19. Did anyone in your family go to jail?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
20. Did anyone bully your child or children?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.

d. Yes, and it was negative.

21. Did your child or children challenge your family values and beliefs?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
22. Did any of your children get bad grades or bad marks in school?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
23. Did your child or children get into trouble?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
24. Were any of your children involved with someone who you think is a gang member?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
25. Did you have trouble reading or understanding something that was important to you?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
26. Did you have trouble communicating with someone about something that was important to you?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
27. Did you return to school?
    a. Did not happen to me.
    b. Yes, and it was positive.

c. Yes, and it was neutral.

d. Yes, and it was negative.

28. Did you have trouble with your teacher(s)?

    a. Did not happen to me.

    b. Yes, and it was positive.

    c. Yes, and it was neutral.

    d. Yes, and it was negative.

29. Did your regular childcare arrangements change in any way?

    a. Did not happen to me.

    b. Yes, and it was positive.

    c. Yes, and it was neutral.

    d. Yes, and it was negative.

30. Did you get married?

    a. Did not happen to me.

    b. Yes, and it was positive.

    c. Yes, and it was neutral.

    d. Yes, and it was negative.

31. Did you and your partner disagree about raising your children?

    a. Did not happen to me.

    b. Yes, and it was positive.

    c. Yes, and it was neutral.

    d. Yes, and it was negative.

32. Did you and your partner disagree about your roles and responsibilities?

    a. Did not happen to me.

    b. Yes, and it was positive.

    c. Yes, and it was neutral.

    d. Yes, and it was negative.

33. Did you miss an important family event that you wanted to attend?

    a. Did not happen to me.

    b. Yes, and it was positive.

    c. Yes, and it was neutral.

    d. Yes, and it was negative.

34. Did you get a divorce or break up with a partner?

    a. Did not happen to me.

b. Yes, and it was positive.
c. Yes, and it was neutral.
d. Yes, and it was negative.

35. Did you get back together with a partner?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
36. Did a family member die?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
37. Did anything happen in your neighborhood that made you feel unsafe?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
38. Did you feel emotionally or physically abused?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
39. Did your child or children feel emotionally or physically abused?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
40. Were you a victim of a crime while you were in your own home?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
41. Were you a victim of a crime while you were outside or away from your home?

a. Did not happen to me.
b. Yes, and it was positive.
c. Yes, and it was neutral.
d. Yes, and it was negative.

42. Did you hear violence outside your home (for example, gunfire)?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
43. Did you see violence?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
44. Did your child or children see violence?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
45. Was your child (or were your children) a victim of a crime?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
46. Was anyone else in your household a victim of a crime?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
47. Did you see drug dealing in your building or neighborhood?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.

48. Did you or your partner get pregnant?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
49. Did you or your partner have a baby?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
50. Did any of your children get pregnant or get someone else pregnant?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
51. Did you or your partner have a miscarriage?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
52. Did you or your partner have an abortion?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
53. Did you ever use alcohol or drugs to get through a day?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
54. Did your partner ever drink too much or use drugs?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.

d. Yes, and it was negative.

55. Did you become ill or did you have a flare up of a chronic illness?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
56. Did your child or children become ill or have a flare up of a chronic illness?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
57. Did you go without medical care when you needed it?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
58. Did you get admitted to the hospital?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
59. Did your child or children get admitted to the hospital?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
60. Did another family member become ill?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
61. Did a relative or friend move into your home?
    a. Did not happen to me.
    b. Yes, and it was positive.

c. Yes, and it was neutral.

d. Yes, and it was negative.

62. Did a relative or friend move out of your home?

a. Did not happen to me.

b. Yes, and it was positive.

c. Yes, and it was neutral.

d. Yes, and it was negative.

63. Did you move?

a. Did not happen to me.

b. Yes, and it was positive.

c. Yes, and it was neutral.

d. Yes, and it was negative.

64. Did rats, mice, or insects bother you in your home?

a. Did not happen to me.

b. Yes, and it was positive.

c. Yes, and it was neutral.

d. Yes, and it was negative.

65. Did you have trouble with your landlord?

a. Did not happen to me.

b. Yes, and it was positive.

c. Yes, and it was neutral.

d. Yes, and it was negative.

66. Did you have trouble with your neighbors?

a. Did not happen to me.

b. Yes, and it was positive.

c. Yes, and it was neutral.

d. Yes, and it was negative.

67. Did you have trouble with social service agencies?

a. Did not happen to me.

b. Yes, and it was positive.

c. Yes, and it was neutral.

d. Yes, and it was negative.

68. Did you have trouble with medical or health professionals?

a. Did not happen to me.

b. Yes, and it was positive.
c. Yes, and it was neutral.
d. Yes, and it was negative.

69. Did someone treat you unfairly because of your age?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
70. Did someone treat you unfairly because of your sex?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
71. Did someone treat you unfairly because of your race?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
72. Did someone treat you unfairly because you didn't have a lot of money?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
73. Did someone treat you unfairly because of the way you speak?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
74. Did you work in the last 12 months?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
75. Did you begin a new job or get promoted?

a. Did not happen to me.
b. Yes, and it was positive.
c. Yes, and it was neutral.
d. Yes, and it was negative.

76. Did you get laid off?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
77. Did you have trouble with superiors at work?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
78. Did you look for a job?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.
79. Did a friend die?
    a. Did not happen to me.
    b. Yes, and it was positive.
    c. Yes, and it was neutral.
    d. Yes, and it was negative.

Beck Depression Inventory II

Instructions: Please read each group of statements carefully, and then pick out the one statement in each group that best describes the way you have been feeling during **the past two weeks, including today.**

1. Sadness

0 I do not feel sad.
1 I feel sad much of the time.
2 I am sad all the time.
3 I am so sad or unhappy that I can't stand it.

2. Pessimism

0 I am not discouraged about my future.

1 I feel more discouraged about my future than I used to be.

2 I do not expect things to work out for me.

3 I feel my future is hopeless and will only get worse.

3. Past Failure

0 I do not feel like a failure.

1 I have failed more than I should have.

2 As I look back, I see a lot of failures.

3 I feel I am a total failure as a person.

4. Loss of Pleasure

0 I get as much pleasure as I ever did from the things I enjoy.

1 I don't enjoy things as much as I used to.

2 I get very little pleasure from the things I used to enjoy.

3 I can't get any pleasure from the things I used to enjoy.

5. Guilty Feelings

0 I don't feel particularly guilty.

1 I feel guilty over many things I have done or should have done.

2 I feel quite guilty most of the time.

3 I feel guilty all of the time.

6. Punishment Feelings

0 I don't feel I am being punished.

1 I feel I may be punished.

2 I expect to be punished.

3 I feel I am being punished.

7. Self-Dislike

0 I feel the same about myself as ever.

1 I have lost confidence in myself.

2 I am disappointed in myself.

3 I dislike myself.

8. Self-Criticalness

0 I don't criticize or blame myself more than usual.

1 I am more critical of myself than I used to be.

2 I criticize myself for all of my faults.

3 I blame myself for everything bad that happens.

9. Suicidal Thoughts or Wishes

0 I don't have any thoughts of killing myself.

1 I have thoughts of killing myself, but I would not carry them out.

2 I would like to kill myself.

3 I would kill myself if I had the chance.

10. Crying

0 I don't cry any more than I used to.

1 I cry more than I used to.

2 I cry over every little thing.

3 I feel like crying, but I can't.

11. Agitation

0 I am no more restless or wound up than usual.

1 I feel more restless or wound up than usual.

2 I am so restless or agitated that it's hard to stay still.

3 I am so restless or agitated that I have to keep moving or doing something.

12. Loss of Interest

0 I have not lost interest in other people or activities.

1 I am less interested in other people or things than before.

2 I have lost most of my interest in other people or things.

3 It's hard to get interested in anything.

13. Indecisiveness

0 I make decisions about as well as ever.

1 I find it more difficult to make decisions than usual.

2 I have much greater difficulty in making decisions than I used to.

3 I have trouble making any decisions.

14. Worthlessness

0 I do not feel I am worthless.

1 I don't consider myself as worthwhile and useful as I used to.

2 I feel more worthless as compared to other people.

3 I feel utterly worthless.

15. Loss of Energy

0 I have as much energy as ever.

1 I have less energy than I used to have.

2 I don't have enough energy to do very much.

3 I don't have enough energy to do anything.

16. Changes in Sleeping Pattern

0 I have not experienced any change in my sleeping pattern.

1 I sleep somewhat more than usual.

1 I sleep somewhat less than usual.

2 I sleep a lot more than usual.

2 I sleep a lot less than usual.

3 I sleep most of the day.

3 I wake up 1-2 hours early and can't get back to sleep.

17. Irritability

0 I am no more irritable than usual.

1 I am more irritable than usual.

2 I am much more irritable than usual.

3 I am irritable all the time.

18. Changes in Appetite

0 I have not experienced any changes in my appetite.

1 My appetite is somewhat less than usual.

1 My appetite is somewhat greater than usual.

2 My appetite is much less than before.

2 My appetite is much greater than usual.

3 I have no appetite at all.

3 I crave food all the time.

19. Concentration Difficulty

0 I can concentrate as well as ever.

1 I can't concentrate as well as usual.

2 It's hard to keep my mind on anything for very long.

3 I find I can't concentrate on anything.

20. Tiredness or Fatigue

0 I am no more tired or fatigued than usual.

1 I get more tired or fatigued more easily than usual.

2 I am too tired or fatigued to do a lot of the things I used to do.

3 I am too tired or fatigued to do most of the things I used to do.

21. Loss of Interest in Sex

0 I have not noticed any recent change in my interest in sex.

1 I am less interested in sex than I used to be.

2 I am much less interested in sex now.

3 I have lost interest in sex completely.

Psychological Well-being Scale

Instructions: Indicate how much you agree or disagree with each statement below.

1. "I like most parts of my personality."

a. Strongly agree
b. Somewhat agree
c. A little agree
d. Neither agree nor disagree
e. A little disagree
f. Somewhat disagree
g. Strongly disagree

2. "When I look at the story of my life, I am pleased with how things have turned out so far."

a. Strongly agree
b. Somewhat agree
c. A little agree
d. Neither agree nor disagree
e. A little disagree
f. Somewhat disagree
g. Strongly disagree

3. "Some people wander aimlessly through life, but I am not one of them."

a. Strongly agree
b. Somewhat agree
c. A little agree
d. Neither agree nor disagree
e. A little disagree
f. Somewhat disagree
g. Strongly disagree

4. "The demands of everyday life often get me down."

a. Strongly agree
b. Somewhat agree
c. A little agree
d. Neither agree nor disagree
e. A little disagree
f. Somewhat disagree

g. Strongly disagree

5. "In many ways I feel disappointed about my achievements in life."

a. Strongly agree
b. Somewhat agree
c. A little agree
d. Neither agree nor disagree
e. A little disagree
f. Somewhat disagree
g. Strongly disagree

6. "Maintaining close relationships has been difficult and frustrating for me."

a. Strongly agree
b. Somewhat agree
c. A little agree
d. Neither agree nor disagree
e. A little disagree
f. Somewhat disagree
g. Strongly disagree

7. "I live life one day at a time and don't really think about the future."

a. Strongly agree
b. Somewhat agree
c. A little agree
d. Neither agree nor disagree
e. A little disagree
f. Somewhat disagree
g. Strongly disagree

8. "In general, I feel I am in charge of the situation in which I live."

a. Strongly agree
b. Somewhat agree
c. A little agree
d. Neither agree nor disagree
e. A little disagree
f. Somewhat disagree
g. Strongly disagree

9. "I am good at managing the responsibilities of daily life."

a. Strongly agree
b. Somewhat agree
c. A little agree
d. Neither agree nor disagree
e. A little disagree
f. Somewhat disagree
g. Strongly disagree

10. "I sometimes feel as if I've done all there is to do in life."

a. Strongly agree
b. Somewhat agree
c. A little agree
d. Neither agree nor disagree
e. A little disagree
f. Somewhat disagree
g. Strongly disagree

11. "For me, life has been a continuous process of learning, changing, and growth."

a. Strongly agree
b. Somewhat agree
c. A little agree
d. Neither agree nor disagree
e. A little disagree
f. Somewhat disagree
g. Strongly disagree

12. "I think it is important to have new experiences that challenge how I think about myself and the world."

a. Strongly agree
b. Somewhat agree
c. A little agree
d. Neither agree nor disagree
e. A little disagree
f. Somewhat disagree
g. Strongly disagree

13. "People would describe me as a giving person, willing to share my time with others."

a. Strongly agree
b. Somewhat agree
c. A little agree
d. Neither agree nor disagree
e. A little disagree
f. Somewhat disagree
g. Strongly disagree

14. "I gave up trying to make big improvements or changes in my life a long time ago"

a. Strongly agree
b. Somewhat agree
c. A little agree
d. Neither agree nor disagree
e. A little disagree
f. Somewhat disagree
g. Strongly disagree

15. "I tend to be influenced by people with strong opinions."

a. Strongly agree
b. Somewhat agree
c. A little agree
d. Neither agree nor disagree
e. A little disagree
f. Somewhat disagree
g. Strongly disagree

16. "I have not experienced many warm and trusting relationships with others."

a. Strongly agree
b. Somewhat agree
c. A little agree
d. Neither agree nor disagree
e. A little disagree
f. Somewhat disagree
g. Strongly disagree

17. "I have confidence in my own opinions, even if they are different from the way most other people think."

a. Strongly agree
b. Somewhat agree
c. A little agree
d. Neither agree nor disagree
e. A little disagree
f. Somewhat disagree
g. Strongly disagree

18. "I judge myself by what I think is important, not by the values of what others think is important."

a. Strongly agree
b. Somewhat agree
c. A little agree
d. Neither agree nor disagree
e. A little disagree
f. Somewhat disagree
g. Strongly disagree