SELF-COMPASSION AND ONLINE STUDENT CONNECTEDNESS AS PROTECTIVE FACTORS AGAINST STRESS AND LONELINESS IN EMERGING ADULTHOOD

by

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ABSTRACT

SELF-COMPASSION AND ONLINE STUDENT CONNECTEDNESS AS PROTECTIVE FACTORS AGAINST STRESS AND LONELINESS IN EMERGING ADULTHOOD

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The University of Texas at Arlington, 2023

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The current state of US youth and emerging adult mental health is described as a crisis that the COVID-19 pandemic has further exacerbated (US Office of the Surgeon General, 2021). This dissertation examined whether daily hassles and COVID-19 pandemic-related stress were related to negative psychological and physical health outcomes in emerging adulthood. Additionally, the current study aimed to examine loneliness as a mediator of the relationship between stressors and physical and psychological outcomes in adolescents. More importantly, this study examined the protective roles of self-compassion (i.e., how emerging adults treat themselves during hard times; Neff, 2003) and online student connectedness in these relationships. Emerging adult college students taking classes solely online (N = 214) completed an online survey measuring demographics, self-compassion, online student connectedness, daily hassles, COVID-19 stressors, and loneliness. Participants also answered questions about health outcomes such as depression, anxiety, perceived stress, life satisfaction, sleep quality, and physical health. Results of confirmatory factor analyses showed that self-compassion was best conceptualized as having two factors (i.e., a positive factor and a negative factor). In the moderated mediation analyses conducted, stressors predicted adverse health outcomes with the exception of low life satisfaction. Significant indirect effects suggested that loneliness was a mechanism at least partly responsible for the relationships between stressors and health. The negative factor of self-

compassion (i.e., uncompassionate self-responding; USR) changed the relationships between (1) loneliness and perceived stress, (2) loneliness and depressive symptoms, and (3) loneliness and life satisfaction, such that low USR protected individuals from the negative influence of loneliness on such outcomes. Both factors of self-compassion (i.e., USR and CSR) influenced the indirect effects of stressors on health via loneliness. Online student connectedness did not change any direct relationships or many indirect relationships in the model; however, the indirect relationship between stressors and physical health via loneliness was significant at high and mean online student connectedness, but not low levels, which was contrary to expectations. Additionally, both factors of self-compassion as well as online student connectedness predicted health outcomes directly, while only USR and online student connectedness predicted health outcomes via loneliness. Findings of the current study draw attention to the importance of loneliness, self-compassion, and online student connectedness as targets for intervention to prevent adverse health outcomes in emerging adults.

Keywords: COVID-19 stress, daily hassles, loneliness, psychological health, physical health, self-compassion, online student connectedness, emerging adulthood

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CHAPTER 1

INTRODUCTION

> This is the moment to demand change – with our voices and with our actions. Only when we do will we be able to protect, strengthen, and support the health and safety of all children, adolescents, and young adults – and ensure everyone has a platform to thrive. (United States Office of the Surgeon General, 2021, p. 40)

The above quotation comes from a public advisory issued by the United States Surgeon General. The current state of mental health in US youth (i.e., children, adolescents, and emerging adults) is described as a crisis that the COVID-19 pandemic has further exacerbated. According to the advisory, mental health issues, including depressive symptoms and anxiety, have doubled since the pandemic began (United States Office of the Surgeon General, 2021). This finding is especially troubling when one considers that mental health challenges in emerging adults were rising before the pandemic. Indeed, Kalb et al. (2018) reported a 15% increase in the probability of psychiatric emergency department visits for emerging adults from 2011-2015. Twenge et al. (2019) also found that emerging adults who reported serious psychological distress in the past month increased by 71% between 2008 and 2017. The advisory also describes physical health as a point of concern in youth, as physical and mental health are closely linked. For example, better physical health is associated with lower levels of depression (C.-Y. S. Lee & Dik, 2017) and anxiety, as well as higher life satisfaction (Reed et al., 2016) in emerging adults. Additionally, young adults with more anxiety (Bogusch et al., 2016) and depressive symptoms (Wickham et al., 2020) experience poorer sleep quality. Due to the increasing psychological and physical health issues for emerging adults in the United States, research into antecedents of health outcomes to target appropriate settings and issues for prevention/intervention efforts is crucial.

This dissertation aimed to understand how emerging adults' daily lives may shape their health experiences. As part of this dissertation, I tested a conceptual model (Figure 1) that elaborated on a pathway linking stressors with profound health consequences via loneliness. The model posited that stressors set in motion changes in loneliness. Loneliness, in turn, is associated with poorer mental and physical health outcomes. Here the stressors, namely daily hassles and pandemic-related stressors, lead to more loneliness.

Understanding what factors may protect or intervene when emerging adults experience stressors and loneliness is also important. In this dissertation, I focused on two possible factors. First, I examined how self-compassion may help emerging adults' mental and physical health. Second, I assessed the influence of online student connectedness (OSC) on emerging adult health.

There are many ways to organize a review of the relevant literature. I opted to use the theoretical model summarized in Figure 1 as an organizing theme. First, I will examine the literature on stressors influencing emerging adults' health. Next, I will discuss the literature on loneliness and how loneliness is also considered a grave threat to public health. Finally, I will discuss two factors that may be useful to target for prevention/intervention efforts.

Stressors in Emerging Adulthood

As stated previously, I examined emerging adult life stressors as predictors of loneliness and health outcomes. Specifically, I focused on the following types of stressors in this project: daily hassles (i.e., chronic, frustrating everyday stressors; Kanner et al., 1981; Wright et al., 2010) and COVID-19-related stress (i.e., the degree to which emerging adults believed the pandemic had altered their lives at home, in school, and in the community as well as how much they worry about the pandemic). In the following sections, I will discuss both types of stressors.

Daily Hassles and Health Outcomes

Daily hassles are everyday stressors, including interpersonal, financial, or academic concerns (Blankstein et al., 1991; Kanner et al., 1981). Existing research regarding daily hassles has highlighted the relationship between such stressors and negative psychological (e.g., depression; X. Liu et al., 2022) and physical (e.g., health complaints; S. T. Tran et al., 2021) health outcomes. For example, multiple studies have found a positive correlation between daily hassles and depressive symptoms in undergraduate students (Blankstein & Flett, 1992; Bouteyre et al., 2007), particularly among emerging adults (e.g., Asselmann et al., 2017; Bate et al., 2023; Y. Ling et al., 2016; X. Liu et al., 2022; Wang, 2021; Williams & Moroz, 2009). Additionally, higher levels of general daily hassles experienced by college students are associated with higher levels of anxiety (e.g., Asselmann et al., 2017; Blankstein & Flett, 1992; Chen & Hong, 2010; Wang, 2021), loneliness (e.g., Lai et al., 2019), and perceived stress (McIntyre et al., 2008). Daily hassles also predict lower levels of life satisfaction in community adults and emerging adult college students, both concurrently (Udayar et al., 2021) and over time (Day et al., 2005).

The impact of general daily hassles extends to physical health as well. In a study of community adults, Graf and colleagues (2017) found that increases in daily hassles over 14 days predicted decreases in self-assessed physical health. Similarly, higher baseline levels of daily hassles predict more physical health complaints at the same time (Williams & Moroz, 2009) and 14 days later in emerging adult college students (S. T. Tran et al., 2021). Another important marker of physical health in emerging adults is sleep quality. Research suggests that more daily hassles/stressors (Williams & Moroz, 2009) are related to poorer sleep quality in college students (Kaubrys et al., 2021), particularly emerging adults (Williams & Moroz, 2009).

As seen above, daily hassles are related to psychological (e.g., anxiety; Asselmann et al., 2017) and physical (e.g., somatic complaints; S. T. Tran et al., 2021) health outcomes in emerging adults. However, reviewing the literature on pandemic-related stress and health outcomes is critical, as the COVID-19 pandemic emerged as a pervasive stressor across all age groups.

Pandemic-Related Stress and Health Outcomes

The ongoing COVID-19 pandemic is a unique stressful event with which many individuals, including emerging adults, struggle to cope. Indeed, researchers find that stressors and worry associated with the pandemic predict adverse outcomes in adults, such as depressive symptoms and anxiety both concurrently (Fitzpatrick et al., 2020; Nikolaidis et al., 2020; Satici et al., 2021; N. T. Tran et al., 2021) and over time (Haikalis et al., 2022; Nikolaidis et al., 2022). Studies specifically focusing on emerging adults have shown similar results (Cao et al., 2020; Harriger et al., 2021; C. H. Liu et al., 2020; Hyun et al., 2022; Kujawa et al., 2020; Repo et al., 2022; Tamarit et al., 2023). Additionally, COVID-19 stressors/worries are related to higher perceived stress in undergraduate students (N. T. Tran et al., 2021) and emerging adults (Tamarit et al., 2023). Consistent with these findings, Anderson et al. (2022) reported that adult (especially young adult) mental health-related emergency department visits increased significantly from January 2019 to August 2021, with visits spiking following COVID-19 surges.

COVID-19-related stress is also associated with lower levels of positive health outcomes. Studies of community adults (Oh & Neal, 2021; Satici et al., 2021), adolescents and emerging adults (Tamarit et al., 2023), and emerging adult college student samples (Gallegos et al., 2021) have revealed a negative correlation between COVID-19 stress/worry and life satisfaction. Emerging adults' pandemic stress also predicts increased sleep problems concurrently (Hyun et

al., 2021) and decreased sleep quality over time (Gusman et al., 2021). Given these findings, it was imperative to continue studying COVID-19 stress as a predictor of health outcomes in emerging adults as part of the current study. Such research builds the foundation for early identification of those who may be more at-risk for adverse health outcomes and points to parts of the COVID-19 pandemic as targets of interventions in the future.

Loneliness

Loneliness (i.e., a negative feeling resulting from an individual being unsatisfied with their social relationships; Hawkley & Cacioppo, 2013; Peplau & Perlman, 1982) is not the same as being alone. Instead, one can feel lonely when surrounded by others (de Jong-Gierveld et al., 2006), or they can be alone without feeling lonely. Even before the COVID-19-related social distancing measures were enacted, loneliness was considered an emerging health crisis in the United States (Hawkley & Cacioppo, 2010; Murthy, 2020; Weissbourd et al., 2021), with as much as 25% of the general population reporting feelings of serious loneliness in the two months leading up to the pandemic (Weissbourd et al., 2021). Levels of loneliness increased globally in young adults in the decades leading up to the pandemic, with a steeper increase after 2000 (see Buecker et al., 2021 for a large-scale review). Though social isolation does not equate to loneliness, social isolation/quarantine has been found to predict loneliness in young adults during quarantine (Sampogna et al., 2021). If individuals interpret isolation as harming their social relationships, this could lead to increased feelings of loneliness.

Loneliness increases the risk of various physical (e.g., sleep quality; Perez et al., 2022) and psychological (e.g., depression; Varma et al., 2021) health issues, including early mortality (Holt-Lunstad et al., 2015). Loneliness is considered such a health risk that there are now policies in place worldwide that emphasize the importance of screening for social isolation and

loneliness (Escalante et al., 2021; Humana, 2022) and connecting people to resources accordingly (Escalante et al., 2021; Her Majesty's Government Department for Digital, Culture, Media and Sport, 2018). Thus, for the current study, loneliness is an essential variable to examine in emerging adults in the context of the ongoing COVID-19 pandemic.

Stressors and Loneliness

Daily Hassles and Loneliness. Few studies have examined a direct relationship between general/overall daily hassles and loneliness. This limitation is partly because some researchers identify loneliness as a daily hassle (e.g., Bobo et al., 1986; Golovey et al., 2018; Segal & VanderVoort, 1993). However, loneliness is not best understood as a type of stressful event or behavior encountered daily; it is better conceptualized as a feeling arising when one's actual relationships do not match their desired relationships (Peplau & Perlman, 1982) or when one feels as if their social needs are not being met by either the quality or quantity of their social relationships (Hawkley & Cacioppo, 2013). Thus, as defined in the current project, loneliness is not a daily hassle but may be related to, or influenced by, daily hassles.

Lai et al. (2019) examined the influence of daily hassles and loneliness on diurnal cortisol levels and depression in emerging adults. They found that daily hassles were positively correlated to loneliness and depressive symptoms, and loneliness and depressive symptoms were positively related. In addition, when conducting research with adults recently laid off, Lorenz et al. (2018) found that loneliness was positively correlated with harmful support resources and negatively associated with positive support resources. Both constructs (i.e., harmful and positive support resources) were derived from the Daily Hassles Scale (Perkonigg & Wittchen, 1995). Due to the relationship between daily hassles and loneliness reported in prior literature, I

expected daily hassles to predict higher loneliness in emerging adult college students in the current study.

Pandemic-Related Stress and Loneliness. The COVID-19 pandemic and its associated lockdown measures have been predictors of loneliness in many individuals. However, young adults and students were most at risk for loneliness increases during lockdown (Bu et al., 2020). This coincides with research in which C. M. Lee and colleagues (2020) found that loneliness in young adults increased from pre-pandemic levels and that perceived social concerns related to the pandemic predicted higher loneliness. These results highlight the importance of emerging adults' *perceptions* of their current relationships in developing loneliness. While this indicates the need for more research concerning which parts of the pandemic predict loneliness, Gao et al. (2023) found that COVID-19 stress/fear specifically predicted loneliness in older adults. Furthermore, pandemic stress is related to concurrent levels of loneliness (Bell et al., 2021; Haikalis et al., 2022), as well as increases in loneliness over time (Lampraki et al., 2022). Given this information, I expected COVID-19-related stress to predict higher levels of loneliness in the proposed study.

Loneliness and Health Outcomes

Loneliness is also a risk factor for emerging adults' adverse physical and psychological health outcomes. For example, emerging adults who report feeling lonelier also report higher levels of depressive symptoms (e.g., C. H. Liu et al., 2020; Matthews et al., 2016; Varma et al., 2021) and anxiety (e.g., C. H. Liu et al., 2020; Varma et al., 2021). In the context of the pandemic, Repo et al. (2022) found that young adults' pre-pandemic loneliness not only predicted anxiety symptoms before and during the pandemic but also predicted *increases* in anxiety throughout the pandemic. Increases in loneliness from pre-pandemic levels also

predicted increases in depression in a sample of U.S. young adults (C. M. Lee et al., 2020). For emerging adult college students, increases in anxiety and depression from before the pandemic were also predicted by loneliness (Haikalis et al., 2022). Conversely, loneliness has been shown to negatively relate to outcomes such as life satisfaction in emerging adults (Gan et al., 2020), particularly young adult college students during the COVID-19 pandemic (Padmanabhanunni & Pretorius, 2021).

Higher reported loneliness in emerging adults is also related to poorer physical outcomes. Specifically, loneliness predicts poorer sleep quality (Matthews et al., 2017; Perez et al., 2022) and physical health (Mahon et al., 1997; Perez et al., 2022) in emerging adults. In two samples of adults in the United States, Jaremka and colleagues (2014) found that lonelier individuals reported decreases in sleep quality over two to four years, suggesting that the effects of loneliness get worse over time. This finding aligns with research showing that adolescent loneliness is associated with poorer self-rated health in early adulthood (Goosby et al., 2013). Due to the relationships between loneliness and health outcomes reported here, I expected higher levels of loneliness to predict adverse psychological and physical health outcomes in emerging adults in the current project.

Loneliness as a Mediator

While stressors and loneliness uniquely predict adverse physical and psychological health outcomes in emerging adults, I proposed a model in which loneliness mediates the relationship between stressors and health. Specifically, I expected more stressors to predict higher loneliness, which would then predict adverse health outcomes. To date, there is a lack of research focused on loneliness as a mediator between daily hassles and health outcomes. However, loneliness mediates the relationship between early life stressors and perceived stress in adults (Crespo-

Sanmiguel et al., 2021). Furthermore, fear of COVID-19 has been linked to lower mental well-being via increased loneliness in adults (Kayis et al., 2021). While not directly related to the pandemic, other researchers have found loneliness to mediate the effect of social contact on social anxiety and depression in young adults with autism (Schiltz et al., 2021) and the effect of social isolation on poor sleep quality and mental distress in older adults (Gyasi et al., 2022). Based on the results of past research pointing to loneliness as a mediator of relationships between stressors and health, I hypothesized that emerging adults who reported more daily hassles and pandemic-related stress would also report higher loneliness, which would predict more negative psychological and physical health outcomes.

Self-Compassion

Beyond understanding the indirect effect of stressors on emerging adult health outcomes via loneliness, I also examined self-compassion as a protective factor in these relationships. Self-compassion involves three elements: fully experiencing life moment-to-moment (i.e., mindfulness), being kind to oneself during hard times or when feeling inadequate (i.e., self-kindness), and reminding oneself that troubles are part of the human condition and are experienced by everyone (i.e., common humanity; Neff, 2003). In developing and validating the Self-Compassion Scale, Neff included six subscales: three positive subscales (i.e., mindfulness, self-kindness, and common humanity) and three negative subscales (i.e., overidentification, self-judgment, and isolation). The three negative subscales represent alternate responses to suffering compared to the three positive subscales/components.

In the sections below, I will first discuss the role of self-compassion as a moderator of the relationship between stressors and loneliness, as I expected self-compassion to moderate this path in my model (see the a path in Figure 1). I will then explore the relationships between

stressors and health outcomes in which self-compassion acts as a moderator (see the c' path in Figure 1). Finally, I will summarize current literature in which self-compassion is treated as a moderator (i.e., protective factor) of the relationship between loneliness and health outcomes (see the b path in Figure 1) or the indirect relationship of stressors on health outcomes via loneliness as a mediator.

Stressors, Loneliness, and Self-Compassion

Existing studies show that total self-compassion is negatively related to loneliness in emerging adult undergraduate students (Akin, 2010; Raymond, 2018; Sugianto et al., 2020) and older adults (Ghezelseflo & Mirza, 2020). In the same samples, positive subscales of self-compassion (i.e., self-kindness, mindfulness, and common humanity) predicted lower loneliness. In contrast, negative subscales (i.e., self-judgment, over-identification, and isolation) predicted higher loneliness. Furthermore, in a longitudinal study of community adults, E. E. Lee and colleagues (2021) found that baseline levels of self-compassion and increases in self-compassion predicted decreased loneliness after five years. Beyond a direct relationship between self-compassion and loneliness, recent evidence shows that self-compassion protects adults from loneliness after dealing with stressors. Stigma stress, for example, is more strongly related to increased loneliness for sexual minority adults with low self-compassion than those with high self-compassion (Chan et al., 2020). Due to its direct relationship to loneliness and its potential protective role in the relationship between stressors and loneliness, I predicted that self-compassion would moderate the relationship between stressors and loneliness in emerging adults in the current study.

Self-Compassion, Stressors, Loneliness, and Health Outcomes

Self-compassion is also associated with psychological and physical health outcomes across adolescence and adulthood. For example, according to a review of 50 studies focused on participants ages 14-24 conducted by Egan et al. (2022), self-compassion is negatively related to adolescents' and emerging adults' anxiety and depression symptoms. In young adults and undergraduate students, higher levels of self-compassion predict higher life satisfaction (Mülazım & Eldeleklioğlu, 2016; Nathani, 2022), even after controlling for gender and age (Yu & Chang, 2020). Additionally, recent meta-analyses suggest that higher self-compassion is associated with better sleep quality (Brown et al., 2021) and physical health (Phillips & Hine, 2021) in adulthood.

Self-compassion further plays a role in moderating direct relationships involving stressors and health outcomes. In examining self-compassion as a protective factor against COVID-19 stress, multiple researchers have found that the relationship between COVID-19 stress/fear/worry and psychological distress (i.e., anxiety, depression, and perceived stress) is more robust in emerging adults (Keng & Hwang, 2022; Liang et al., 2022; H. Zhang et al., 2022) and community adults (Beshai et al., 2022; Lau et al., 2020; Matos et al., 2022) who report lower self-compassion. The same pattern was found concerning fear of COVID-19 and physical symptoms in emerging adult undergraduate students (H. Zhang et al., 2022). Other studies have suggested that self-compassion attenuates the relationship between daily stressors and negative affect over time (Krieger et al., 2015; Mey et al., 2023) and the relationship between daily stressors and poor sleep quality (Hu et al., 2018). These findings coincide with research on college students, who are less likely to experience depressive symptoms due to academic stress if they have higher self-compassion (Kyeong, 2013; K. J. Lee & Lee, 2020).

In addition to moderating the direct effects mentioned above, self-compassion has been examined as a moderator of relationships involving loneliness. For instance, Ashoori and Kachooei (2021) found that adults with multiple sclerosis were less likely to experience negative psychological well-being due to social loneliness if they had high self-compassion. Similarly, in a recent study of older adults in care homes conducted by Gao and colleagues (2023), both the relationship between loneliness and depression and the indirect relationship between COVID-19 fear and depression via loneliness were stronger for those with low self-compassion. Lastly, self-compassion has been explored as a protective factor against COVID-19-related stressors and work loneliness in employees in the United States (Andel et al., 2021). Specifically, the indirect effect of COVID-related stressors on depressive symptoms via work loneliness as a mediator was more robust for employees with low self-compassion.

Based on the results of studies highlighting self-compassion as a protective factor against adverse health outcomes in those who experience more stressors and loneliness, I hypothesized that self-compassion would moderate all relationships in the mediation model. Specifically, emerging adults high in self-compassion would be less likely to be lonely when they experience stressors. In addition, these emerging adults who were more self-compassionate would also be less likely to experience adverse health outcomes due to stressors. Finally, they would be less likely to report adverse health outcomes when feeling lonely. Findings in which self-compassion acts as a moderator can point to the importance of self-compassion as a target for interventions aimed at reducing loneliness and improving health in the face of stressors.

Online Student Connectedness

Online student connectedness (OSC) is another variable that may moderate the relationship between life stressors and loneliness, especially during the pandemic. According to

Bolliger and Inan (2012), OSC refers to how much students feel they belong and have relationships in their online classes. Even before the COVID-19 pandemic, in the fall of 2019, 37% (7.25 million) of college students in the United States were enrolled in at least one distance education course, with that increasing to 74% (14.1 million) in the fall of 2020 (U.S. Department of Education Institute of Education Services National Center for Education Statistics [NCES], 2022). Throughout the pandemic, overall levels of undergraduate student enrollment dropped by 4.2% from spring 2022 to fall 2022. However, enrollment in primarily online institutions (POIs) increased 3.2% from fall 2021 to fall 2022 (National Student Clearinghouse Research Center, 2022). Thus, finding ways to increase students' feelings of connectedness could help protect students from the negative impact of stressors and loneliness and is even more imperative now that more students are choosing online modes of education.

Specific components of OSC include community, comfort, facilitation, and interaction/collaboration (Bolliger & Inan, 2012). Community involves students feeling a social presence in their classes and is associated with students' satisfaction with their courses (Tayebinik & Puteh, 2012), decreased isolation (Northrup, 2002), and reduced student dropout rates (DiRamio & Wolverton, 2006). Comfort, on the other hand, is when a student feels safe enough to participate in their classes (Bolliger & Inan, 2012). Comfort includes feeling at ease with the technology used for online schooling. Shin (2003) noted that students who feel less comfortable in class are less likely to engage with peers and ask teachers for help. Teachers can increase students' comfort in online schooling by giving students opportunities to connect and collaborate (Bolliger & Inan, 2012). Facilitation strategies such as course organization, instructor questioning, and timely feedback are related to increased student participation (Hosler & Arend, 2012) and positive student perceptions of learning (Martin et al., 2018; Shea et al., 2006) in

online courses. Finally, interaction/collaboration consists of a two-way stream of communication to process and integrate new knowledge (Bolliger & Inan, 2012). Wicks et al. (2015) found that high-collaboration student groups engaged in more self-regulation and learning presence, strategies that can lead to increased academic performance (Zimmerman, 2008) and academic self-efficacy (Fernandez-Rio et al., 2017). Given this information, it is unsurprising that the Centers for Disease Control and Prevention list school connectedness (whether online or in-person) as one of the most critical factors in protecting students' mental and physical health (n.d.).

The following sections will follow the same organization as the section on self-compassion as a moderator. I will first discuss the role of online student connectedness (OSC) as a moderator of the relationship between stressors and loneliness. I expected OSC to moderate this path in my model (see the a path in Figures 1 and 3). I will then explore the relationships between stressors, loneliness, and health outcomes that OSC moderates (see the b and c' paths in Figures 1 and 2).

Stressors, Loneliness, and Online Student Connectedness

Current research on school connectedness focuses on online and in-person learning in college students. Researchers have found that school connectedness was negatively related to loneliness, both for in-person schooling (Renshaw & Bolognino, 2016) and online schooling in the context of the COVID-19 pandemic (Arslan, 2021; Di Malta et al., 2022; Dingle et al., 2022; Dinu et al., 2022). In a study of emerging adult college students taking online classes during the pandemic, increases in college belongingness over one month predicted decreases in loneliness over time (Graf & Bolling, 2022). There needs to be more research dedicated to examining student connectedness as a moderator of relationships involving stressors and loneliness. Current

research shows that school connectedness moderates the relationship between peer victimization and loneliness in adolescent girls (Carney et al., 2020). This finding suggests that online student connectedness could moderate the relationship between other stressors and loneliness in emerging adults.

Connectedness, Stressors, Loneliness, and Health Outcomes

Online student connectedness may also be protective against adverse health outcomes due to stressors and loneliness in emerging adulthood. Existing research on school connectedness/belongingness in college students during the pandemic suggests an inverse relationship between connectedness and adverse health outcomes such as psychological distress, depression, and anxiety symptoms (Di Malta et al., 2022; Dingle et al., 2022; Dinu et al., 2022). School connectedness is also associated with higher life satisfaction in college students (Renshaw & Bolognino, 2016).

Beyond direct relationships, student connectedness also protects against the negative impact of stressors and loneliness on health. When studied in college students taking classes online, higher school belongingness/connectedness protected students from the negative influence of loneliness on psychological adjustment (Arslan, 2021), particularly life satisfaction and symptoms of anxiety and depression (Di Malta et al., 2022). Furthermore, while not particularly involving emerging adults or college students, Hertz et al. (2022) found that school connectedness moderated the relationship between mode of instruction (i.e., virtual vs. in-person) and health outcomes such as perceived stress, persistent depressive symptoms, and overall mental health-related quality of life in adolescents during the pandemic. Such associations between school connectedness and health outcomes suggest that OSC could

moderate the relationship between stressors and health outcomes and the relationship between loneliness and health outcomes in emerging adulthood.

Based on the above information, I expected OSC to moderate all relationships in my conceptual model. Specifically, I expected the relationships between stressors and loneliness, stressors and health outcomes, and loneliness and health outcomes to be stronger for emerging adults with low OSC than those with high OSC.

Age and Gender as Covariates

Though age and gender differences were not part of my hypotheses/conceptual model, existing research on such differences in variables relevant to this study prompted the inclusion of age and gender as covariates in my analyses. Gender differences have been found for psychological health outcomes, such that females are more likely to report internalizing symptoms (Needham & Hill, 2010) such as anxiety, depression, and perceived stress (N. T. Tran et al., 2022), with gender differences being even more pronounced for emerging adults compared to other age groups (W. Zhang et al., 2021). Furthermore, loneliness, which is included in all models in the current study, is higher for females, according to some researchers (Pinquart & Sorenson, 2001; von Soest et al., 2020), and higher for males according to others (Barreto et al., 2021; Wiseman et al., 1995). Gender differences exist in COVID-19 stress and health outcomes as well. For instance, in a study by Halliburton and colleagues (2021), transgender and non-binary adults reported the most COVID-related stress of lack of social contact, followed by females and then males. In the same study, males had lower anxiety and depression than all other groups (i.e., female, non-binary, and transgender). Finally, females report lower self-compassion (see Yarnell et al., 2015 for a meta-analytic review) and higher school connectedness (Zhao & Zhao, 2015) than males.

Age is a predictor of the variables mentioned above as well. In one study conducted during the COVID-19 pandemic, age predicted whether emerging adults were more likely to be categorized in a risk group compared to a low symptoms group in terms of anxiety and depressive symptoms, such that older emerging adults were more likely than younger emerging adults to be in the risk trajectory group (Liang et al., 2022). Other researchers found that, during the pandemic, emerging adults were more likely to have higher anxiety and depression than other age groups (W. Zhang et al., 2021), and that age was negatively associated with perceived stress in adults (N. T. Tran et al., 2022). In a longitudinal study of over 3,000 Norwegian adolescents and young adults, loneliness increased from early adolescence to mid-20s before decreasing (von Soest et al., 2020). Similarly, Halliburton et al. (2021) found that COVID-19 stress related to lack of social contact and mental health concerns increased until age 26. Finally, self-compassion increases with age (Murn & Steele, 2019). The relationship in which self-compassion predicts better physical health is significant for adults but not adolescents (Phillips & Hine, 2021). Based on the information presented in this section suggesting that there may be gender and age differences in multiple variables/relationships relevant to my conceptual models, gender and age were included as covariates in the main analyses in the present study.

Current Study

The current study examined loneliness as a mediator of the relationship between stressors and physical and psychological health outcomes in emerging adults. Through this study, I also aimed to explore the roles of self-compassion and online student connectedness (OSC) as moderators of the relationship between stressors and emerging adult health outcomes via loneliness.

Hypothesis 1

Hypothesis 1 states that stressors (i.e., daily hassles and COVID-related stressors) would directly influence emerging adult physical and psychological health outcomes (see path c' of Figure 1). Specifically, more stressors would predict higher depressive symptoms, anxiety symptoms, and perceived stress (1a). In addition, more stressors would also predict lower life satisfaction and poorer physical health and sleep quality in emerging adults (1b).

Hypothesis 2

In Hypothesis 2, I predicted that loneliness would mediate the relationship between stressors and emerging adult health outcomes. Specifically, I expected emerging adults who experienced more stressors to report higher loneliness (see the path a in Figure 1). Greater loneliness would then predict higher depression, perceived stress, and anxiety (2a) as well as lower life satisfaction and poorer physical health and sleep quality (2b) in emerging adults (see path b in Figure 1).

Hypothesis 3

Hypothesis 3 states that self-compassion would moderate the relationships between stressors and health outcomes in emerging adults via loneliness. I hypothesized that the relationship between stressors and loneliness would be stronger for emerging adults with low self-compassion than those with high self-compassion (3a). I also expected the relationship between stressors and health outcomes to be stronger for emerging adults with low self-compassion (3b). Finally, I expected the relationship between loneliness and health outcomes to be stronger for emerging adults with low self-compassion (3c). The purpose of examining self-compassion as a protective factor in the current study was to see if it would be a worthy target of prevention/intervention efforts in the future. Currently, self-compassion interventions typically

focus on increasing self-compassion as a singular construct (e.g., Bluth et al., 2016; Neff & Germer, 2013). Therefore, I based my hypotheses on Neff's (2003) use of the total self-compassion score as a protective factor rather than either the positive (e.g., mindfulness) or negative (e.g., self-judgment) facets of the construct.

Hypothesis 4

Finally, Hypothesis 4 involves the moderating influence of online student connectedness and the relationships between stressors and health outcomes via loneliness. I hypothesized that the relationship between stressors and loneliness would be stronger for emerging adults with low online student connectedness than those with high online student engagement (4a). I also predicted that the relationship between stressors and health outcomes would be stronger for emerging adults with low online student connectedness (4b). Finally, I expected the relationship between loneliness and health outcomes to be stronger for emerging adults with low online student connectedness (4c). In the proposed study, I used only the total OSC score in the analyses for my main hypotheses, as I did not have differential hypotheses for the different components of online student connectedness.

Some researchers (e.g., Maxwell et al., 2011) assert that mediation analyses are not useful when using correlational and cross-sectional data because such data do not allow researchers to make causal inferences. While the data collected for the present study was cross-sectional and correlational rather than longitudinal and/or experimental, mediation analyses were still appropriate. According to Hayes (2022), mediation is a mathematical/statistical tool that does not automatically assume cause-and-effect relationships between variables. Instead, he states that causal inferences depend more on research design and logical analysis of the data and that researchers are responsible for interpreting their data with caution. Thus, it is more about having

a strong theoretical foundation for one's model and using mediation to signal "processes that may be at work amid random background noise or other processes we haven't incorporated into our models" (Hayes, 2022, p. 17). As presented in this introduction, previous research pointed to a potential causal/directional relationship in which stress-related variables would predict loneliness and health outcomes in emerging adults, providing justification/rationale for using mediation analyses using cross-sectional data.

CHAPTER 2

METHOD

Participants

Participants needed to be 18 to 25 years old and fully online college students to be included in the study. A total of 214 participants met the qualifications and passed the attention checks. There were 106 female (49.5%), 97 male (45.3%), and 11 non-binary (5.1%) individuals in the study.[1] The average age of participants was *M* = 21.63 years, *SD* = 2.07. The racial composition of the sample was as follows: White (64.0%), Black/African American (13.6%), Asian (13.1%), Multiracial (5.1%), Other (2.3%), American Indian or Alaska Native (0.9%), and Native Hawaiian or Pacific Islander (0.9%), with 28.8% of participants further indicating that they were Hispanic. Tables 1 and 2 show participant demographics, and Table 3 shows participant college majors/programs. For a linear regression model with ten predictors, a population multiple partial correlation of .40, and a significance level of .001, a sample size of approximately 171 was needed to achieve .80 power.

Participants were excluded if they did not consent (*N* = 8), failed screening/eligibility questions (*N* = 69), failed more than one attention check question (*N* = 21), or gave nonsensical answers to open-ended questions (*N* = 1) were excluded from the study.

Measures

Specific questionnaires/items used in the complete survey are described below. Descriptive statistics for all scales can be found in Table 4. The entire measure was designed to be completed in approximately 15 minutes to increase participation in the study.

[1] Due to there being three gender categories big enough to include in analyses, gender was coded using effects codes. Weighted effects codes were used to account for the difference in sample size between groups.

Demographic Questions

After the informed consent, participants answered several demographic questions (See Appendix A). They indicated their age, classification (e.g., freshman), major/program, gender, sex at birth, ethnicity, and race. They also indicated whether they had had the COVID-19 virus. Emerging adults also reported which/how many extracurricular activities they participated in, as I anticipated that their extracurricular involvement could be related to their feelings of connectedness (Martinez et al., 2016). They were presented with an item asking them to check all of the student clubs/activities of which they were a member, as well as the opportunity to fill in the names of specific activities if they checked anything other than zero. However, extracurricular involvement did not predict any variables in the study, which could have been due to low variability of answers (i.e., many participants answered that they did not participate in *any* activities). Thus, extracurricular involvement was not included as a covariate in the main analyses.

Self-Compassion

Emerging adults' self-compassion was measured using the Self-Compassion Scale Short Form (SCS-SF; Raes et al., 2011). See Appendix B for the full scale. The SCS-SF contained 12 items assessing participants' self-kindness, mindfulness, common humanity, isolation, over-identification, and self-judgment, with the negative subscales being reverse-coded. Emerging adults read each statement (e.g., "I try to see my failings as part of the human condition.") and indicated how often they engaged in each behavior on a 5-point Likert-type scale from 1 (*Almost never*) to 5 (*Almost always*). A total self-compassion score was computed by first reverse-coding the six negative items and then taking the mean of all 12 items, with higher total scores

indicating higher levels of self-compassion. In this study, the total SCS-SF score had high reliability (see Table 4). Additionally, the positive and negative factors (consisting of the three positive and three negative subscales, respectively) of self-compassion were reliable.

As part of this dissertation project, I examined the factor structure of the SCS-SF (Raes et al., 2011). After developing the scale, Raes et al. (2011) found a higher-order factor structure in which a total self-compassion score accounted for the intercorrelations between six subscale scores. In this case, three subscales are positive and correspond to the three components of self-compassion (i.e., mindfulness, self-kindness, and common humanity). Conversely, three subscales are negative and correspond to alternate ways of responding to suffering (i.e., overidentification, self-judgment, and isolation).

Other researchers (e.g., Muris et al., 2021) have argued against Neff's (2003) conceptualization of self-compassion, as they found that a two-factor structure of self-compassion (i.e., a positive factor and a negative factor) was better for predicting adverse psychological outcomes than the total self-compassion score most often used. Due to the current discourse surrounding the factor structure of self-compassion in general, I conducted two confirmatory factor analyses (i.e., a one-factor structure and a two-factor structure) using the six subscales to determine which factor(s) to use in the main analyses. The results of these analyses coincided with those reported by Muris et al. (2021); the two-factor model fit the data better than the one-factor model. Thus, the two factors, called Uncompassionate Self-Responding (USR; the negative factor) and Compassionate Self-Responding (CSR; the positive factor) were used in the main analyses rather than the total self-compassion score.

Online Student Connectedness

Online student connectedness was assessed using the Online Student Connectedness Survey (OSCS; Bolliger & Inan, 2012). The OSCS consisted of 25 items measuring online student connectedness across four subscales: community, comfort, facilitation, and interaction. Participants rated how much they agreed with each statement (e.g., "I feel comfortable expressing my opinions and feelings in my online classes.") on a 5-point Likert-type scale from 1 (*Strongly disagree*) to 5 (*Strongly agree*). The full scale can be found in Appendix C. A total online student connectedness score was computed by taking the mean of all 25 items (see Table 4 for reliability estimates), with higher scores reflecting higher levels of online student connectedness. Table 6 displays the correlations between the OSC subscales and stressors, while Table D1 shows the OSC subscale correlations with all outcome variables. Because much of the research surrounding the relationships between school connectedness, loneliness, and health outcomes treats school connectedness as a singular construct (e.g., Arslan, 2021; Di Malta et al., 2022; Renshaw & Bolognino, 2016), I used only the total OSC score in the analyses for the current study.

Daily Hassles

Daily hassles were assessed using the Brief College Student Hassles Scale (BCSHS; Blankstein et al., 1991). The scale contained a list of 20 hassles/items common to college students (e.g., organization of time, preparing meals). For each item, participants rated the persistence (i.e., combination of frequency and duration) of the hassle during the past month on a 7-point Likert-type scale from 1 (*No hassle/not at all persistent*) to 7 (*Extremely persistent hassle/high frequency and/or duration*). See Appendix E for the full scale. A total daily hassles score was calculated using the mean of all 20 items, which showed high reliability (see Table 4). Higher total scores indicated experiencing more daily hassles.

COVID-19 Stress

Emerging adults' COVID-related stress was measured with seven items. The first three items finished the sentence, "In the past six months, COVID-19 has affected my ability to...," and included endings such as seeing friends, seeing family, and doing things (e.g., going to restaurants). Participants answered each of the first three items on a 5-point Likert-type scale ranging from 1 (*Strongly disagree*) to 5 (*Strongly agree*).

The next four items (e.g., "COVID-19 presents a lot of uncertainty about the future. In the past six months, including today, how stressful have you found this uncertainty to be?") were adapted from the COVID-19 Adolescent Symptom and Psychological Experience Questionnaire (CASPE; Ladouceur, 2020) and assessed participants' stress and worry surrounding the pandemic. Emerging adults answered these four questions on a 5-point Likert-type scale from 1 (*Very Slightly or Not at all*) to 5 (*Extremely*). The full scale can be found in Appendix F. A total COVID-19 stress score was computed by taking the mean of all seven items, with higher scores indicating higher levels of COVID-19 stress. The overall score had high reliability (see Table 4).

Loneliness

Emerging adults' loneliness was measured using the 4-item version of the UCLA Loneliness Scale (ULS-4; Russell et al., 1980; Cooper et al., 2021). The ULS-4 (see Appendix G) measured feelings of loneliness and feelings of social isolation. Participants read each question (e.g., "How often do you feel left out?") and indicated how often they felt that way. The questionnaire contained four items on a 3-point Likert-type scale from 1 (*Hardly ever*) to 3

(*Often*). Summing the scores for all four items resulted in a total loneliness score with high reliability (see Table 4), with higher scores reflecting higher levels of loneliness.

Perceived Stress

Participants' stress levels were assessed using the 4-item version of the Perceived Stress Scale (PSS; Cohen et al., 1983). Emerging adults responded to four items (e.g., "In the last month, how often have you felt upset because of something that happened unexpectedly?") on a 4-point Likert-type scale from 0 (*Never*) to 3 (*Very often*). The full scale can be found in Appendix H. A total perceived stress score was computed by recoding the reverse-scored items and adding the scores of all four items. This total score showed adequate reliability (see Table 4), with higher scores indicating higher levels of perceived stress.

Sleep Quality

The Pittsburgh Sleep Quality Index (PSQI; Buysse et al., 1989) measured participants' sleep quality and can be found in Appendix I. The PSQI contained four items for which participants entered a specific time or amount of time (e.g., "During the past month, what time have you usually gone to bed at night?"). There were then five questions, some of which contained multiple parts. For example, one question started with, "During the past month, how often have you had trouble sleeping because you..." and listed ten items (e.g., had bad dreams) on a scale from 0 (*Not during the past month*) to 3 (*Three or more times a week*). The final question of the original scale is other-reported (e.g., by a partner or roommate). The PSQI has shown adequate or high reliability without the other-reported question ($\alpha = .83$; Buysse et al., 1989), so that question was not included in this study.

With all other questions/parts of questions included, there would be 18 items across seven component scores (e.g., subjective sleep quality, sleep duration). However, two errors were made when entering the questions into QuestionPro for the current study. First, one of the ten items/reasons in the multi-part question (i.e., the item that lists "Other" as an option for a reason behind having trouble sleeping) was omitted from the survey. This was one of the items that constituted the "sleep disturbances" component score. The "sleep disturbances" score was calculated without the tenth item in this case. Second, a question that was to factor into the "daytime dysfunction" component score (i.e., "During the past month, how much of a problem has it been for you to keep up enough enthusiasm to get things done?") was omitted. The "daytime dysfunction" component score was calculated without that question in this case.

The PSQI Scoring Database for Microsoft Access (Buysse, n.d.) was utilized to calculate component scores. A total PSQI score was computed by adding all component scores and then reverse-coding the total so that higher total PSQI scores indicated better sleep quality. While I had intended to use the overall PSQI score to represent sleep quality in the current study, the total score was not very reliable ($\alpha = .30$), which could have been partly due to the errors associated with survey construction on QuestionPro. Given the low reliability, I focused on overall sleep quality using the subjective sleep quality question alone. The responses to this question ("How would you rate your sleep quality overall?") correlated with overall sleep quality scores ($r = .31$, $p < .001$) in the current study. Furthermore, researchers (Snyder et al., 2018) recently developed a single-item sleep quality scale worded almost exactly the same as the PSQI item (but focused on the past seven days instead of the past month) and found that the item was significantly correlated with global PSQI scores.

Physical Health

The Patient Health Questionnaire-15 (PHQ-15; Kroenke et al., 2002) was used to assess emerging adults' somatic symptoms. The questionnaire contained 15 items to measure health complaints such as stomach pain and headaches. Emerging adults indicated how often they had been bothered by each symptom in the last four weeks on a 3-point Likert-type scale from 0 (*Not bothered at all*) to 2 (*Bothered a lot*).

Additionally, one item from the Health-Related Quality of Life scale (HRQOL-14; CDC, 2000) measured participants' overall health rating. The question asked, "Would you say that in general your health is," and then listed five options on a Likert-type scale from 1 (*Excellent*) to 5 (*Poor*). Appendix J shows the full PHQ-15 scale and the CDC health question. A total physical health score was computed by first calculating the mean of the PHQ-15 and CDC items together before reverse-coding the score so that higher scores would indicate better physical health. The total score for physical health showed high reliability (see Table 4).

Anxiety

Participants' anxiety symptoms were measured using the Patient Reported Outcomes Measurement Information System (PROMIS) Anxiety Short Form v2.0 – 8a (Pilkonis et al., 2011). Participants read each of the eight items in the questionnaire (e.g., "I felt tense.") and indicated how often they felt that way during the previous seven days on a 5-point Likert-type scale from 1 (*Never*) to 5 (*Always*). See Appendix K for the full scale. Creating a sum of all eight items yielded a total anxiety score in which higher scores indicated higher anxiety levels (see Table 4 for reliability).

Depressive Symptoms

The Center for Epidemiological Studies 10-item Depression Scale (CESD-10; Andresen et al., 1994) assessed participants' depressive symptoms. Participants read each of the ten items

in the questionnaire (e.g., “I felt that everything I did was an effort.”) and indicated how often they felt that way during the previous week on a 4-point Likert-type scale from 0 (*Rarely or none of the time/less than one day*) to 3 (*All of the time/5-7 days*). Appendix L shows the full scale. A total depressive symptoms score was computed by adding the scores of all ten items, with higher scores reflecting higher levels of depressive symptoms. The total score had high reliability (see Table 4).

Life Satisfaction

Emerging adults’ life satisfaction was measured using the Satisfaction with Life Scale (SWLS; Diener et al., 1985). Participants read each of the five items (e.g., “So far I have gotten the important things I want in life.”) and indicated their agreement with each item on a 7-point Likert-type scale from 1 (*Strongly disagree*) to 7 (*Strongly agree*). See Appendix M for the full scale. Adding the scores of all five items yielded a total life satisfaction score in which higher scores indicated higher levels of life satisfaction (see Table 4 for reliability).

Procedure

Participants were recruited via several methods. First, Prolific (i.e., an online data collection platform) was used to recruit participants. Using this system, I chose prescreening questions Prolific already had set up; specifically, the only participants who could see the study had to be 18-25 years old and a current student. Prolific did not have a prescreening question for the format (i.e., online vs. in-person vs. hybrid) of classes, so I had to ask the participants about class format within the actual survey. As part of the study information on Prolific, I stated that the study was specifically for participants ages 18 to 25 who were currently enrolled in fully online programs and/or only online college classes (see Appendix N). Those who did not meet the online format criterion were excluded from the study and thanked for their time (N = 69).

I also recruited participants via UTA's online NURS 4325 course, in which students must participate in a human subjects study. These students are part of UTA's fully-online RN to BSN program. The instructor of the course permitted me to recruit directly from his class; I sent a cover letter with the link to the main survey to the instructor, which he then forwarded to the students (see Appendix O).

A third method of recruitment used was UTA's Sona participant pool. Students in the Sona system who were 18 to 25 years old could view the study. In the recruitment language displayed on Sona, I listed being a fully online student as a criterion for participation (see Appendix P). Again, I used questions within the survey to determine eligibility based on the coursework format. Finally, I created a social media flyer and posted it on Facebook and LinkedIn to recruit participants (see Appendix Q). In the final sample, 84.1% (N = 180) were recruited from Prolific, 7.5% (N = 16) from UTA's online nursing course, 6.5% (N = 14) from UTA's Sona participant pool, and 1.9% (N = 4) via social media.

The first part of the online QuestionPro survey contained the informed consent. After reading the consent, participants chose "I am 18 to 25 years of age, am enrolled in only online college classes, and agree to participate," or "I do not agree to participate." Those who agreed to participate, passed all screening and attention check questions, and did not skip entire scales were included in the final dataset. Emerging adults who agreed to participate filled out the survey containing items from the scales outlined in the previous section. The survey was designed to take participants approximately 15 minutes to complete. The time it took participants to finish the survey ranged from 4.52 minutes to 234.32 minutes (M = 15.96 minutes).

After participants finished the survey, they read a thank you/debriefing page reminding them of the purpose of the study and providing phone numbers/websites of resources in case they

experienced any discomfort or distress from taking the survey. Compensation for taking the survey varied by recruitment type. Those taking the survey on Prolific received $4.00 as compensation. The study counted toward a participation requirement for students in UTA's Nursing Research class. Participants recruited via UTA's Sona participant pool received 0.5 Sona credits. Finally, emerging adults recruited via social media flyers did not receive compensation for their participation.

It is important to note that data collection took place in November 2022, after the rates of new COVID-19 cases had decreased significantly in the United States throughout the year (CDC, 2023). At that time, most social distancing, quarantine, and mask mandates/policies had also been lifted for the general public (CDC, 2022). My intent was to complete data collection during the surge in early 2022 to highlight the relevance of COVID-19 stressors specifically. However, logistical issues prevented data collection during that time. Thus, though COVID-19 stress was still an important factor to study in the current project, there may have been less of a unique impact of such stress on the variables examined, as the COVID-19 questions related to the past and future six months.

CHAPTER 3

RESULTS

Data Screening

Prior to analysis, data for all variables involved in the analyses were screened for missing values, outliers, and distribution normality. Descriptive statistics were computed for all variables used in the analyses. These statistics are displayed in Table 1 (general demographics such as gender), Table 2 (racial and ethnic demographics), Table 3 (college major/program), and Table 4 (all other variables used in the main analyses). Correlations between study variables can be found in Table 5 (stressors and self-compassion), Table 6 (stressors and online student connectedness), Table 7 (outcomes), and Table 8 (predictors with outcomes). Regressions were conducted using the weighted effects codes for gender to examine whether gender was related to the mediator or outcome variables. Gender was related to perceived stress, anxiety, physical health, and depression, such that non-binary individuals experienced worse outcomes compared to males. Gender was also related to life satisfaction, such that females reported the highest life satisfaction.

Missing Data

Originally, the sample of the current study consisted of 313 participants. However, participants were excluded if they did not consent (N = 8), failed screening/eligibility questions (N = 69), failed more than one attention check question (N = 21), or gave nonsensical answers to open-ended questions (N = 1) were excluded from the study. This resulted in a new total of 214 participants. A missing value analysis (MVA) was performed on the remaining data in SPSS. Results of the analysis indicated that no variable had more than 5% of values missing and that any missing data were missing completely at random (MCAR). Upon further investigation, there

were three participants who skipped entire scales toward the end of the survey, so they were excluded from the analyses for those specific outcome variables (i.e., PSQI, SWLS, PROMIS Anxiety, and CESD-10). Other than that, missing values for all variables were imputed using expectation maximization (EM) procedures in the MVA feature of SPSS. Data for the three individuals who skipped entire scales at the end of the survey were included in the imputations for scales they did not completely skip. The individuals were then not included in the imputation process for the skipped scales.

Normality and Transformations

All study variables were examined for normality prior to data analysis. None of the variables were significantly skewed. Thus, no transformations were performed, and the original values of the variables were used in the analyses for this study.

Preliminary Data Analyses

Exploratory Factor Analysis for COVID-19 Stress

To determine if COVID-19 stress was unidimensional, an exploratory factor analysis (EFA) was conducted on the seven continuous COVID-19 items. The overall Kaiser-Meyer-Olkin (KMO) value was .883, which is considered "meritorious" (Kaiser, 1974; p. 35), and Bartlett's test of sphericity was significant, $\chi^2(21) = 822.564$, $p < .001$.

Principal axis factoring was chosen for this analysis because COVID-19 stress is a latent construct. Though subfactors were not anticipated, promax rotation was used, as any subfactors that emerged were expected to be related to each other. Results revealed one factor that accounted for 55.5% of the variance (see Table 9). The Tucker-Lewis Index (TLI) value for the overall model was .832, and at .173, 90% CI [.143, .205], the root mean square error of approximation (RMSEA) was poor. However, the removal of scale items did not improve the

model fit, so this seven-item solution for COVID-19 stress was retained. Factor loadings for this solution are in Table 9, and the path diagram in Figure 2 visually represents the relationships between individual items and the single factor.

Computing a Composite Stressors Score

After retaining the one-factor structure of the COVID-19 stress items, the correlation between the total COVID-19 stress score and the total daily hassles score was calculated. The two types of stressors were significantly positively correlated, $r(212) = .43$, $p < .001$, $r^2 = .18$. Based on this analysis as well as the fact that both stressor scores were mostly correlated with the same variables (see Table 8), the total COVID-19 stress score and the total daily hassles score were standardized and averaged to create a composite "stressors" score. Using a composite score for analyses allowed for the reduction of family-wise error across models, as half as many models were run.

Confirmatory Factor Analysis for Self-Compassion Scale Short Form (SCS-SF)

Based on the discourse surrounding the factor structure of self-compassion as a construct, two confirmatory factor analyses (CFAs) were conducted using the six subscales (rather than individual items) of the SCS-SF (i.e., self-kindness, self-judgment, mindfulness, over-identification, common humanity, isolation). The first CFA was based on Neff's (2003) argument that the subscales would make up one overall self-compassion factor; thus, all six subscales were entered into the same factor. The overall KMO value was .766, and the Bartlett's test of sphericity was significant, $\chi^2(15) = 554.991$, $p < .001$. The overall fit of this model was very poor, as the TLI value was low and the RMSEA was quite high (see Table 11).

The second CFA was based on the findings of Muris et al. (2018; 2021) and Kumlander et al. (2018), in which a bi-factor model (i.e., a positive factor and a negative factor) of self-

compassion was confirmed. In the current study, the subscales of self-kindness, mindfulness, and common humanity were entered into one factor, and the subscales of self-judgment, over-identification, and isolation were entered into the second factor. Again, the assumptions were met, as the KMO and Bartlett's results remained the same as in the previous model. The TLI for this model was very high, with a RMSEA value below the .05 threshold considered to be "good" (see Table 11). The one-factor and two-factor models were significantly different from each other, $\chi^2(2) = 169.62$, $p < .001$. According to these results, the two-factor model was the only of the two tested models for which the model fit the data. See Table 10 for factor loadings of the subscales and Table 11 for fit indices. Overall, this two-factor model better fits the data in the current study; thus, the positive factor and negative factor were used as separate variables in the main analyses of the study (see Figure 3) for a visual representation of the two-factor structure). Throughout the rest of this paper, the factors will be referred to by the names Muris and colleagues (2021) proposed: compassionate self-responding (CSR), which consists of the positive factor, and uncompassionate self-responding (USR), which consists of the negative factor.

Main Analyses (Hypotheses 1-4)

A series of moderated mediation analyses were conducted to test all hypotheses in the proposed study. Using the PROCESS macro in SPSS, I ran twelve models in which stressors acted as the predictor/independent variable; loneliness acted as the mediating variable; and health outcomes acted as dependent/outcome variables (one outcome per model). The particular PROCESS model differed based on which moderator(s) on which I was analyzing.

To test hypotheses 1-3, I used Model 76 in PROCESS (see Figure 4); in this model, compassionate self-responding (CSR; the positive factor of self-compassion) and

uncompassionate self-responding (USR; the negative factor of self-compassion) were moderators of all paths in the mediation. Age, gender, and online student connectedness were entered as covariates for these models.[2] To test hypothesis 4, I used Model 59 in PROCESS (see Figure 5); in this model, online student connectedness was a moderator of all paths in the mediation. Age, gender, CSR, and USR were entered as covariates for these models. All continuous predictors/moderators (i.e., stressors, loneliness, online student connectedness, CSR, and USR) were centered around the mean before analyses. Bootstrapping (with 5,000 bootstrap samples) was used to calculate confidence intervals for the full models and the indirect effects. Relationships were determined to be significant if the confidence intervals did not include zero. Dependent variables for the analyses were the following: depressive symptoms, anxiety, perceived stress, life satisfaction, physical health, and sleep quality.

Direct Effects of Stressors, Self-Compassion, and Online Student Connectedness on Loneliness (a path)

Results are organized around the six outcome variables. All models controlled for age and gender as covariates. All models' direct effects of stressors and self-compassion on loneliness were identical (i.e., a paths). Results indicated that stressors did predict higher levels of loneliness, $b = 0.63$, boot $SE = 0.21$, 95% bootstrap CI [0.21, 1.04]; thus, this part of Hypothesis 2 was supported for all outcome variables. USR also predicted loneliness, $b = 1.13$, boot $SE = 0.22$, 95% bootstrap CI [0.69, 1.57], such that higher levels of USR were associated with more loneliness. Uncompassionate self-responding did not moderate the influence of stressors on loneliness, $b = 0.18$, boot $SE = 0.20$, 95% bootstrap CI [-0.20, 0.57]. Compassionate

[2] To reiterate, extracurricular involvement was not included as a covariate in any of the models as it was not related to any of the study variables.

self-responding was not related to loneliness, b = -0.17, boot SE = 0.21, 95% bootstrap CI [-0.57, 0.24]. CSR did not moderate the influence of stressors on loneliness, b = 0.18, boot SE = 0.21, 95% bootstrap CI [-0.22, 0.59]. The combined interactions were also not significant, ΔR^2 = .005, $\Delta F(2, 204) = 0.69$, p = .50.[3] Therefore, Hypothesis 3a (i.e., that self-compassion would moderate the a path) was not supported for any of the outcome variables.

Model 1: Predicting Perceived Stress

Both the full model for hypotheses 1-3, R^2 = .48, $F(12, 201) = 15.53$, $p < .001$, and the model for hypothesis 4, R^2 = .46, $F(10, 203) = 17.52$, $p < .001$, accounted for significant proportions of variance in perceived stress.

Hypothesis 1a: Stressors Predicting Perceived Stress (c' path)

As part of Hypothesis 1a, I expected a direct relationship between stressors and perceived stress, such that emerging adults who reported more stressors would also report higher perceived stress. This hypothesis was supported, as stressors positively predicted perceived stress, b = 0.69, boot SE = 0.07, 95% bootstrap CI [0.38, 1.04]. CSR also predicted perceived stress, b = -0.67, boot SE = 0.23, 95% bootstrap CI [-1.10, -0.20]. Finally, USR predicted perceived stress, b = 1.13, boot SE = 0.25, 95% bootstrap CI [0.63, 1.59].

Hypothesis 2a: Indirect Effect of Stressors on Perceived Stress via Loneliness (a path, b path, a*b path)

Hypothesis 2a stated that stressful events would indirectly affect perceived stress via loneliness as a mediator (a*b path). Specifically, I hypothesized that higher reported stressors would predict higher loneliness (a path), which would in turn predict higher levels of perceived

[3] It should be noted that all a and c' paths for all models are conditional effects, given that there are interactions in the model. As such, they should be interpreted as averaged effects rather than unconditional predictors.

stress (b path). As seen above, results indicated that stressors did predict higher levels of loneliness. As expected, loneliness also predicted higher levels of perceived stress, *b* = 0.20, boot *SE* = 0.07, 95% bootstrap CI [0.06, 0.34]. The positive indirect effect of stressors on perceived stress via loneliness was also significant, *b* = 0.12, boot *SE* = 0.06, 95% bootstrap CI [0.03, 0.27]. Thus, Hypothesis 2a was supported.

Hypothesis 3: Self-Compassion as a Moderator of All Paths

Hypothesis 3 focused on self-compassion as a moderator of all relationships in the conceptual model. First, I expected the relationship between stressors and loneliness (a path) to be stronger for emerging adults with low self-compassion (3a). As mentioned previously, this part of the hypothesis was not supported. I also predicted that the relationship between stressors and perceived stress (c' path) would be stronger for emerging adults with low self-compassion (3b). This was also not supported. Neither USR, *b* = 0.01, boot *SE* = 0.24, 95% bootstrap CI [-0.53, 0.41], nor CSR, *b* = 0.17, boot *SE* = 0.22, 95% bootstrap CI [-0.28, 0.57], interacted with stressors to predict perceived stress.

Finally, I expected the relationship between loneliness and perceived stress (b path) and the indirect effect of stressors on perceived stress via loneliness to be stronger for emerging adults with low self-compassion (3c). While there was no interaction between CSR and loneliness in predicting perceived stress, *b* = 0.04, boot *SE* = 0.10, 95% bootstrap CI [-0.15, 0.24], there was a significant interaction between USR and loneliness in predicting perceived stress, *b* = 0.17, boot *SE* = 0.09, 95% bootstrap CI [0.03, 0.36]. Loneliness predicted higher levels of perceived stress for individuals with high or mean USR, but not for those with low USR (see Figure 6). Furthermore, self-compassion did moderate the indirect effect between stressors and perceived stress via loneliness, such that the indirect effect was significant at high and mean

levels of both USR and CSR, but not significant at low levels of either of the two factors (see Table 12).

Overall, Hypothesis 3 was partially supported by the perceived stress model. While self-compassion did not moderate the relationship between stressors and loneliness or between stressors and perceived stress, it did act as a moderator in the relationship between loneliness and perceived stress as well as the indirect relationship between stressors and perceived stress via loneliness. Both the positive and negative factors of self-compassion moderated the indirect path; however, the moderation of the relationship between loneliness and perceived stress was driven by the negative factor (USR). Additionally, both CSR and USR were directly related to perceived stress (c' path).

Hypothesis 4: Online Student Connectedness as a Moderator of All Paths

Hypothesis 4 was concerned with online student connectedness (OSC) as a moderator of all relationships in the conceptual model. Hypothesis 4a stated that the relationship between stressors and loneliness would be stronger for emerging adults with low OSC compared to those with high OSC. This was not supported, as there was not a significant interaction between stressors and OSC, b = -0.02, boot SE = 0.17, 95% bootstrap CI [-0.36, 0.32].

Hypothesis 4b stated that the relationship between stressors and perceived stress would be stronger for emerging adults with low OSC. This part of the hypothesis was also not supported; OSC did not interact with stressors to predict perceived stress, b = -0.13, boot SE = 0.21, 95% bootstrap CI [-0.51, 0.31].

Finally, I expected the relationship between loneliness and perceived stress (b path) and the indirect effect of stressors on perceived stress via loneliness to be stronger for emerging adults with low OSC (4c). These parts of the hypotheses were partially supported. The

relationship between loneliness and perceived stress was not moderated by OSC, b = 0.-0.03, boot SE = 0.09, 95% bootstrap CI [-0.20, 0.14]. However, OSC did moderate the indirect effect of stressors on perceived stress via loneliness, such that the positive indirect effect was significant at low and mean levels of OSC, but not at high levels of OSC (see Table 12). Thus, Hypothesis 4 as a whole was partially supported for the perceived stress model, as the indirect effect was the only part of the model moderated by OSC.

Model 2: Predicting Anxiety

Both the full model for hypotheses 1-3, R^2 = .59, F(12, 198) = 23.44, p < .001, and the model for hypothesis 4, R^2 = .59, F(10, 200) = 28.39, p < .001, accounted for significant proportions of variance in anxiety.

Hypothesis 1a: Stressors Predicting Anxiety (c' path)

As part of Hypothesis 1a, I expected a direct relationship between stressors and anxiety, such that emerging adults who reported more stressors would also report higher anxiety. This hypothesis was supported, as stressors positively predicted anxiety, b = 2.96, boot SE = 0.55, 95% bootstrap CI [1.88, 4.01]. Similarly, USR predicted higher levels of anxiety, b = 3.15, boot SE = 0.68, 95% bootstrap CI [1.68, 4.40]. CSR negatively predicted anxiety, b = -1.23, boot SE = 0.60, 95% bootstrap CI [-2.46, -0.13].

Hypothesis 2a: Indirect Effect of Stressors on Anxiety via Loneliness (a path, b path, a*b path)

Hypothesis 2a stated that stressful events would indirectly affect anxiety via loneliness as a mediator (a*b path). As seen above, results indicated that stressors did predict higher levels of loneliness. Loneliness then predicted higher levels of anxiety, b = 1.10, boot SE = 0.21, 95% bootstrap CI [0.67, 1.52]. The positive indirect effect of stressors on anxiety via loneliness was

also significant, *b* = 0.70, boot *SE* = 0.28, 95% bootstrap CI [0.23, 1.31]. Therefore, Hypothesis 2a was supported.

Hypothesis 3: Self-Compassion as a Moderator of All Paths

First, I expected the relationship between stressors and loneliness (a path) to be stronger for emerging adults with low self-compassion (3a). As stated previously, this part of the hypothesis was not supported. I also predicted that the relationship between stressors and anxiety (c' path) would be stronger for emerging adults with low self-compassion (3b). This was also not supported. Neither USR, *b* = 0.54, boot *SE* = 0.54, 95% bootstrap CI [-0.59, 1.53], nor CSR, *b* = 0.65, boot *SE* = 0.64, 95% bootstrap CI [-0.59, 1.92], interacted with stressors to predict anxiety.

Finally, I expected the relationship between loneliness and anxiety (b path) and the indirect effect of stressors on anxiety via loneliness to be stronger for emerging adults with low self-compassion (3c). While loneliness did not interact with either CSR, *b* = -0.04, boot *SE* = 0.25, 95% bootstrap CI [-0.52, 0.44], or USR, *b* = 0.04, boot *SE* = 0.22, 95% bootstrap CI [-0.40, 0.46], in predicting anxiety, both factors moderated the indirect effect of stressors on anxiety via loneliness. Specifically, the indirect effect was not significant at low levels of CSR, regardless of level of USR. At mean and high levels of CSR, the indirect was significant at all levels of USR (see Table 13).

Overall, Hypothesis 3 was partially supported for the anxiety model. Self-compassion did not moderate the relationships between: (1) stressors and loneliness, (2) stressors and anxiety, or (3) loneliness and anxiety. However, both the positive and negative factors of self-compassion acted as moderators in the indirect relationship between stressors and anxiety via loneliness.

Hypothesis 4: Online Student Connectedness as a Moderator of All Paths

Hypothesis 4a stated that the relationship between stressors and loneliness would be stronger for emerging adults with low OSC compared to those with high OSC. This was not supported, as there was not a significant interaction between stressors and OSC, b = -0.05, boot SE = 0.17, 95% bootstrap CI [-0.39, 0.28].

Hypothesis 4b stated that the relationship between stressors and anxiety would be stronger for emerging adults with low OSC. This part of the hypothesis was also not supported; OSC did not interact with stressors to predict anxiety, b = 0.64, boot SE = 0.64, 95% bootstrap CI [-0.52, 2.01].

Finally, I expected the relationship between loneliness and anxiety (b path) and the indirect effect of stressors on anxiety via loneliness to be stronger for emerging adults with low OSC (4c). The relationship between loneliness and anxiety was not moderated by OSC, b = 0.09, boot SE = 0.24, 95% bootstrap CI [-0.38, 0.56]. OSC also did not moderate the indirect effect of stressors on anxiety via loneliness (see Table 13). Thus, Hypothesis 4 as a whole was not supported for the anxiety model, as none of the paths were moderated by OSC.

Model 3: Predicting Depression

Both the full model for hypotheses 1-3, R^2 = .59, F(12, 198) = 23.62, p < .001, and the model for hypothesis 4, R^2 = .57, F(10, 200) = 27.02, p < .001, accounted for significant proportions of variance in depressive symptoms.

Hypothesis 1a: Stressors Predicting Depression (c' path)

As part of Hypothesis 1a, I expected a direct relationship between stressors and depression, such that emerging adults who reported more stressors would also report more depressive symptoms. This hypothesis was supported, as stressors positively predicted depression, b = 2.11, boot SE = 0.44, 95% bootstrap CI [1.28, 2.99]. Additionally, both USR, b =

1.85, boot *SE* = 0.46, 95% bootstrap CI [0.91, 2.74], and CSR, *b* = -1.45, boot *SE* = 0.45, 95% bootstrap CI [-2.36, -0.60], predicted depression.

Hypothesis 2a: Indirect Effect of Stressors on Depression via Loneliness (a path, b path, a*b path)

Hypothesis 2a stated that stressful events would indirectly affect depression via loneliness as a mediator (a*b path). As mentioned early, results indicated that stressors did predict higher levels of loneliness. Loneliness also predicted higher levels of depression, *b* = 1.07, boot *SE* = 0.17, 95% bootstrap CI [0.72, 1.39]. The positive indirect effect of stressors on depression via loneliness was also significant, *b* = 0.68, boot *SE* = 0.25, 95% bootstrap CI [0.23, 1.20]. Therefore, Hypothesis 2a was supported.

Hypothesis 3: Self-Compassion as a Moderator of All Paths

I expected the relationship between stressors and loneliness (a path) to be stronger for emerging adults with low self-compassion (3a). According to the section above regarding a paths, this part of the hypothesis was not supported. I also predicted that the relationship between stressors and depression (c' path) would be stronger for emerging adults with low self-compassion (3b). This was also not supported. Neither USR, *b* = -0.01, boot *SE* = 0.43, 95% bootstrap CI [-0.97, 0.78], nor CSR, *b* = 0.66, boot *SE* = 0.46, 95% bootstrap CI [-0.30, 1.54], interacted with stressors to predict anxiety.

Finally, I expected the relationship between loneliness and depression (b path) and the indirect effect of stressors on depression via loneliness to be stronger for emerging adults with low self-compassion (3c). While there was not an interaction between CSR and loneliness in predicting depression, *b* = 0.27, boot *SE* = 0.20, 95% bootstrap CI [-0.10, 0.69], there was a significant interaction between USR and loneliness in predicting depression, *b* = 0.36, boot *SE* =

0.17, 95% bootstrap CI [0.07, 0.73]. Loneliness predicted higher levels of depression for individuals with all levels of USR and CSR except for individuals low in both USR and CSR (see Figure 7). Furthermore, self-compassion did moderate the indirect effect between stressors and depressive symptoms via loneliness, such that the indirect effect was not significant at low levels of CSR, regardless of level of USR. At mean and high levels of CSR, the indirect effect was significant for all levels of USR (see Table 14).

Overall, Hypothesis 3 was partially supported for the depression model. While self-compassion did not moderate the relationship between stressors and loneliness or between stressors and depression, it did act as a moderator in the relationship between loneliness and depression as well as the indirect relationship between stressors and depression via loneliness. Both the positive and negative factors of self-compassion moderated the indirect path; however, the moderation of the relationship between loneliness and depression was driven by the negative factor (USR).

Hypothesis 4: Online Student Connectedness as a Moderator of All Paths

Hypothesis 4 was concerned with OSC as a moderator of all relationships in the conceptual model. Hypothesis 4a stated that the relationship between stressors and loneliness would be stronger for emerging adults with low OSC compared to those with high OSC. This was not supported, as there was not a significant interaction between stressors and OSC, b = -0.05, boot SE = 0.17, 95% bootstrap CI [-0.39, 0.26], in predicting loneliness.

Hypothesis 4b stated that the relationship between stressors and depression would be stronger for emerging adults with low OSC. This part of the hypothesis was also not supported; OSC did not interact with stressors to predict depression, b = 0.77, boot SE = 0.47, 95% bootstrap CI [-0.13, 1.75].

Finally, I expected the relationship between loneliness and depression (b path) and the indirect effect of stressors on depression via loneliness to be stronger for emerging adults with low OSC (4c). The relationship between loneliness and depression was not moderated by OSC, *b* = -0.31, boot *SE* = 0.18, 95% bootstrap CI [-0.67, 0.04]. OSC also did not moderate the indirect effect of stressors on depression via loneliness (see Table 14). Thus, Hypothesis 4 as a whole was not supported for the depression model, as none of the paths were moderated by OSC.

Model 4: Predicting Life Satisfaction

Both the full model for hypotheses 1-3, $R^2 = .42$, $F(12, 198) = 11.90$, $p < .001$, and the model for hypothesis 4, $R^2 = .41$, $F(10, 200) = 13.73$, $p < .001$, accounted for significant proportions of variance in life satisfaction.

Hypothesis 1b: Stressors Predicting Life Satisfaction (c' path)

As part of Hypothesis 1a, I expected a direct relationship between stressors and life satisfaction, such that emerging adults who reported more stressors would report lower life satisfaction. This hypothesis was not supported, as stressors did not significantly predict life satisfaction, *b* = 0.43, boot *SE* = 0.57, 95% bootstrap CI [-0.64, 1.56]. However, both USR, *b* = -2.41, boot *SE* = 0.68, 95% bootstrap CI [-3.76, -1.11], and CSR, *b* = 1.41, boot *SE* = 0.69, 95% bootstrap CI [0.03, 2.70], predicted life satisfaction.

Hypothesis 2b: Indirect Effect of Stressors on Life Satisfaction via Loneliness (a path, b path, a*b path)

Hypothesis 2b stated that stressful events would indirectly affect life satisfaction via loneliness as a mediator (a*b path). Specifically, I hypothesized that higher reported stressors would predict higher loneliness (a path), which would in turn predict lower levels of life satisfaction (b path). As seen above, results indicated that stressors did predict higher levels of

loneliness. Loneliness then predicted lower levels of life satisfaction, *b* = -1.34, boot *SE* = 0.21, 95% bootstrap CI [-1.76, -0.93]. The negative indirect effect of stressors on life satisfaction via loneliness was also significant, *b* = -0.85, boot *SE* = 0.31, 95% bootstrap CI [-1.50, -0.30]. Therefore, Hypothesis 2a was supported.

Hypothesis 3: Self-Compassion as a Moderator of All Paths

I expected the relationship between stressors and loneliness (a path) to be stronger for emerging adults with low self-compassion (3a). As stated previously, this part of the hypothesis was not supported. I also predicted that the relationship between stressors and life satisfaction (c' path) would be stronger for emerging adults with low self-compassion (3b). This was also not supported. Neither USR, *b* = 0.65, boot *SE* = 0.60, 95% bootstrap CI [-0.62, 1.80], nor CSR, *b* = 0.54, boot *SE* = 0.71, 95% bootstrap CI [-0.86, 1.96], interacted with stressors to predict life satisfaction.

Finally, I expected the relationship between loneliness and life satisfaction (b path) and the indirect effect of stressors on life satisfaction via loneliness to be stronger for emerging adults with low self-compassion (3c). While there was not an interaction between CSR and loneliness in predicting life satisfaction, *b* = -0.50, boot *SE* = 0.25, 95% bootstrap CI [-1.00, 0.02], there was a significant interaction between USR and loneliness in predicting life satisfaction, *b* = -0.60, boot *SE* = 0.22, 95% bootstrap CI [-1.02, -0.16]. Loneliness predicted lower life satisfaction for individuals with all levels of USR and CSR except for individuals low in both USR and CSR (see Figure 8). Furthermore, self-compassion did moderate the indirect effect between stressors and life satisfaction via loneliness, such that the indirect effect was not significant at low levels of CSR, regardless of level of USR. At mean and high levels of CSR, the indirect effect was significant for all levels of USR (see Table 15).

Overall, Hypothesis 3 was partially supported for the life satisfaction model. While self-compassion did not moderate the relationship between stressors and loneliness or between stressors and life satisfaction, it did act as a moderator in the relationship between loneliness and life satisfaction as well as the indirect relationship between stressors and life satisfaction via loneliness. Both the positive and negative factors of self-compassion moderated the indirect path; however, the moderation of the relationship between loneliness and life satisfaction was driven by the negative factor (USR).

Hypothesis 4: Online Student Connectedness as a Moderator of All Paths

Hypothesis 4a stated that the relationship between stressors and loneliness would be stronger for emerging adults with low OSC compared to those with high OSC. This was not supported, as there was not a significant interaction between stressors and OSC, b = -0.05, boot SE = 0.17, 95% bootstrap CI [-0.39, 0.27], in predicting loneliness.

Hypothesis 4b stated that the relationship between stressors and life satisfaction would be stronger for emerging adults with low OSC. This part of the hypothesis was also not supported; OSC did not interact with stressors to predict life satisfaction, b = 0.28, boot SE = 0.60, 95% bootstrap CI [-0.92, 1.47].

Finally, I expected the relationship between loneliness and life satisfaction (b path) and the indirect effect of stressors on life satisfaction via loneliness to be stronger for emerging adults with low OSC (4c). The relationship between loneliness and life satisfaction was not moderated by OSC, b = 0.09, boot SE = 0.24, 95% bootstrap CI [-0.38, 0.56]. OSC also did not moderate the indirect effect of stressors on life satisfaction via loneliness (see Table 15). Thus, Hypothesis 4 as a whole was not supported for the life satisfaction model, as none of the paths were moderated by OSC.

Model 5: Predicting Sleep Quality

Both the full model for hypotheses 1-3, $R^2 = .23$, $F(12, 192) = 4.71$, $p < .001$, and the model for hypothesis 4, $R^2 = .22$, $F(10, 194) = 5.44$, $p < .001$, accounted for significant proportions of variance in sleep quality.

Hypothesis 1b: Stressors Predicting Sleep Quality (c' path)

As part of Hypothesis 1a, I expected a direct relationship between stressors and sleep quality, such that emerging adults who reported more stressors would report poorer sleep quality. This hypothesis was supported, as stressors negatively predicted sleep quality, *b* = -0.21, boot *SE* = 0.07, 95% bootstrap CI [-0.33, -0.07]. However, neither USR, *b* = -0.36, boot *SE* = 0.08, 95% bootstrap CI [-0.18, 0.12], nor CSR, *b* = 0.14, boot *SE* = 0.07, 95% bootstrap CI [-0.01, 0.28], predicted sleep quality.

Hypothesis 2b: Indirect Effect of Stressors on Sleep Quality via Loneliness (a path, b path, a*b path)

Hypothesis 2b stated that stressful events would indirectly affect sleep quality via loneliness as a mediator (a*b path). Specifically, I hypothesized that higher reported stressors would predict higher loneliness (a path), predicting poorer sleep quality (b path). Stressors did predict higher levels of loneliness, but loneliness did not significantly predict sleep quality, *b* = -0.04, boot *SE* = 0.03, 95% bootstrap CI [-0.10, 0.01]. Additionally, the indirect effect of stressors on sleep quality via loneliness was not significant, *b* = -0.03, boot *SE* = 0.02, 95% bootstrap CI [-0.08, 0.01]. Therefore, Hypothesis 2a was only partially supported.

Hypothesis 3: Self-Compassion as a Moderator of All Paths

I expected the relationship between stressors and loneliness (a path) to be stronger for emerging adults with low self-compassion (3a). As seen above, this part of the hypothesis was not supported. I also predicted that the relationship between stressors and sleep quality (c' path) would be stronger for emerging adults with low self-compassion (3b). This was also not supported. Neither USR, b = -0.01, boot SE = 0.07, 95% bootstrap CI [-0.14, 0.12], nor CSR, b = -0.03, boot SE = 0.07, 95% bootstrap CI [-0.16, 0.10], interacted with stressors to predict sleep quality.

Finally, I expected the relationship between loneliness and sleep quality (b path) and the indirect effect of stressors on sleep quality via loneliness to be stronger for emerging adults with low self-compassion (3c). These parts of the hypotheses were partially supported. While loneliness did not interact with either CSR, b = -0.04, boot SE = 0.03, 95% bootstrap CI [-0.10, 0.02], or USR, b = -0.03, boot SE = 0.02, 95% bootstrap CI [-0.08, 0.02], in predicting sleep quality, the positive factor moderated the indirect effect of stressors on sleep quality via loneliness. Specifically, the negative indirect effect was significant only at one point: high CSR and mean USR (see Table 16).

Overall, Hypothesis 3 was partially supported for the sleep quality model. Self-compassion did not moderate the relationships between: (1) stressors and loneliness, (2) stressors and sleep quality, or (3) loneliness and sleep quality. However, the positive factor of self-compassion (CSR) moderates the indirect relationship between stressors and sleep quality via loneliness.

Hypothesis 4: Online Student Connectedness as a Moderator of All Paths

Hypothesis 4a stated that the relationship between stressors and loneliness would be stronger for emerging adults with low OSC compared to those with high OSC. This was not

supported, as there was not a significant interaction between stressors and OSC, *b* = -0.07, boot *SE* = 0.17, 95% bootstrap CI [-0.42, 0.25], in predicting loneliness.

Hypothesis 4b stated that the relationship between stressors and sleep quality would be stronger for emerging adults with low OSC. This part of the hypothesis was also not supported; OSC did not interact with stressors to predict sleep quality, *b* = -0.04, boot *SE* = 0.07, 95% bootstrap CI [-0.18, 0.08].

Finally, I expected the relationship between loneliness and sleep quality (b path) and the indirect effect of stressors on sleep quality via loneliness to be stronger for emerging adults with low OSC (4c). The relationship between loneliness and sleep quality was not moderated by OSC, *b* = -0.02, boot *SE* = 0.03, 95% bootstrap CI [-0.09, 0.04]. OSC also did not moderate the indirect effect of stressors on sleep quality via loneliness (see Table 16). Thus, Hypothesis 4 as a whole was not supported for the sleep quality model, as none of the paths were moderated by OSC.

Model 6: Predicting Physical Health

Both models controlled for age and gender as covariates. Both the full model for hypotheses 1-3, R^2 = .44, $F(12, 199) = 13.05$, $p < .001$, and the model for hypothesis 4, R^2 = .44, $F(10, 201) = 15.55$, $p < .001$, accounted for significant proportions of variance in physical health.

Hypothesis 1b: Stressors Predicting Physical Health (c' path)

As part of Hypothesis 1a, I expected a direct relationship between stressors and physical health, such that emerging adults who reported more stressors would report poorer physical health. This hypothesis was supported, as stressors negatively predicted physical health, *b* = -0.32, boot *SE* = 0.05, 95% bootstrap CI [-0.42, -0.23]. CSR predicted better physical health, *b* =

0.11, boot *SE* = 0.05, 95% bootstrap CI [0.01, 0.21], but USR did not predict physical health, *b* = -0.11, boot *SE* = 0.06, 95% bootstrap CI [-0.23, 0.02].

Hypothesis 2b: Indirect Effect of Stressors on Physical Health via Loneliness (a path, b path, a*b path)

Hypothesis 2b stated that there would be an indirect effect of stressful events on physical health via loneliness as a mediator (a*b path). Specifically, I hypothesized that higher reported stressors would predict higher loneliness (a path), which would in turn predict poorer physical health (b path). Stressors did predict higher levels of loneliness, *b* = 0.64, boot *SE* = 0.21, 95% bootstrap CI [0.23, 1.05], and loneliness predicted poorer physical health, *b* = -0.04, boot *SE* = 0.02, 95% bootstrap CI [-0.08, -0.01]. The negative indirect effect of stressors on physical health via loneliness was also significant, *b* = -0.03, boot *SE* = 0.01, 95% bootstrap CI [-0.06, -0.004]. Therefore, Hypothesis 2a was supported.

Hypothesis 3: Self-Compassion as a Moderator of All Paths

I expected the relationship between stressors and loneliness (a path) to be stronger for emerging adults with low self-compassion (3a). As previously mentioned, this part of the hypothesis was not supported. I also predicted that the relationship between stressors and physical health (c' path) would be stronger for emerging adults with low self-compassion (3b). This was also not supported. Neither USR, *b* = -0.01, boot *SE* = 0.06, 95% bootstrap CI [-0.11, 0.12], nor CSR, *b* = 0.04, boot *SE* = 0.05, 95% bootstrap CI [-0.06, 0.16], interacted with stressors to predict physical health.

Finally, I expected the relationship between loneliness and physical health (b path) and the indirect effect of stressors on physical health via loneliness to be stronger for emerging adults with low self-compassion (3c). While loneliness did not interact with either CSR, *b* = -0.03, boot

SE = 0.02, 95% bootstrap CI [-0.07, 0.01], or USR, *b* = -0.03, boot *SE* = 0.02, 95% bootstrap CI [-0.07, 0.01], in predicting physical health, both factors moderated the indirect effect of stressors on physical health via loneliness. Specifically, the negative indirect effect was significant at mean and high levels of both CSR and USR, but not at low levels of either factor (see Table 17).

Overall, Hypothesis 3 was partially supported for the physical health model. Self-compassion did not moderate the relationships between: (1) stressors and loneliness, (2) stressors and physical health, or (3) loneliness and physical health. However, both the positive and negative factors of self-compassion acted as moderators in the indirect relationship between stressors and physical health via loneliness.

Hypothesis 4: Online Student Connectedness as a Moderator of All Paths

Hypothesis 4a stated that the relationship between stressors and loneliness would be stronger for emerging adults with low OSC compared to those with high OSC. This was not supported, as there was not a significant interaction between stressors and OSC, *b* = 0.64, boot *SE* = 0.20, 95% bootstrap CI [0.24, 1.01], in predicting loneliness.

Hypothesis 4b stated that the relationship between stressors and physical health would be stronger for emerging adults with low OSC. This part of the hypothesis was also not supported; OSC did not interact with stressors to predict physical health, *b* = 0.0, boot *SE* = 0.05, 95% bootstrap CI [-0.04, 0.17].

Finally, I expected the relationship between loneliness and physical health (b path) and the indirect effect of stressors on physical health via loneliness to be stronger for emerging adults with low OSC (4c). These parts of the hypotheses were partially supported. The relationship between loneliness and physical health was not moderated by OSC, *b* = -0.02, boot *SE* = 0.02, 95% bootstrap CI [-0.06, 0.01]. However, OSC did moderate the indirect effect of stressors on

physical health via loneliness, such that the negative indirect effect was significant at mean and high levels of OSC, but not at low levels of OSC (see Table 17). Thus, Hypothesis 4 as a whole was partially supported for the physical health model, as the indirect effect was the only part of the model moderated by OSC.

Summary of Results

Hypothesis 1: Stressors Predicting Health Outcomes

Hypothesis 1 focused on the direct relationship between stressors and health outcomes in emerging adults. Specifically, Hypothesis 1a stated that emerging adults who reported more stressors would also report more perceived stress, anxiety, and depressive symptoms. This part of the hypothesis was supported, as stressors positively predicted all three adverse outcome measures. For Hypothesis 1b, I expected emerging adults who reported more stressors to report lower life satisfaction and poorer sleep quality and physical health. This part of the hypothesis was partially supported. While stressors did negatively predict sleep quality and physical health, there was no significant relationship between stressors and life satisfaction. Therefore, with the exception of life satisfaction, stressors significantly predicted health outcomes in emerging adults.

Hypothesis 2: Indirect Effect of Stressors on Health Outcomes via Loneliness

Hypothesis 2 centered around the indirect effect of stressors on health outcomes via loneliness. For Hypothesis 2a, I expected stressors to positively predict loneliness and loneliness to then positively predict perceived stress, anxiety, and depression. This part of the hypothesis was supported; stressors predicted higher loneliness, loneliness predicted higher perceived stress, anxiety, and depression, and there were significant positive indirect effects of stressors on the three adverse outcomes via loneliness. Hypothesis 2b stated that stressors would positively

predict loneliness and that loneliness would then predict lower life satisfaction and poorer sleep quality and physical health. This was partially supported. While stressors positively predicted loneliness for all three outcome variables, loneliness only predicted lower life satisfaction and poorer physical health. Furthermore, the indirect effects of stressors on the positive outcomes via loneliness were only significant for life satisfaction and physical health. Overall, hypothesis 2 was partially supported; all hypothesized relationships were significant except for the relationship between loneliness and sleep quality and the indirect effect of stressors on sleep quality via loneliness.

Hypothesis 3: Self-Compassion as a Moderator

Hypothesis 3 stated that self-compassion would moderate all paths/relationships in the model. Hypothesis 3a (i.e., that self-compassion would moderate the relationship between stressors and loneliness for all outcome variables) and Hypothesis 3b (i.e., that self-compassion would interact with stressors to predict all outcome variables) were not supported, as self-compassion did not moderate any of these relationships.

For Hypothesis 3c, I expected self-compassion to moderate the relationship between loneliness and health outcomes and the indirect effects of stressors on health outcomes via loneliness. This part of the hypothesis was partially supported. The negative factor of self-compassion (USR) moderated the relationships between: (1) loneliness and perceived stress, (2) loneliness and depressive symptoms, and (3) loneliness and life satisfaction. However, the positive factor of self-compassion (CSR) did not moderate any of the relationships between loneliness and health outcomes. Both the USR and CSR factors of self-compassion moderated all indirect effects between stressors and health outcomes via loneliness.

Based on the results surrounding Hypothesis 3 as a whole, self-compassion acts as a moderator specifically for relationships involving loneliness as either a mediator or predictor. Additionally, the negative factor of self-compassion seems to be the factor most likely to influence the relationship between loneliness and health outcomes.

Hypothesis 4: Online Student Connectedness as a Moderator

Finally, Hypothesis 4 stated that online student connectedness (OSC) would moderate all paths/relationships in the overall model. Hypothesis 4a (i.e., that OSC would moderate the relationship between stressors and loneliness for all outcome measures) was not supported; OSC did not interact with stressors to predict loneliness for any of the outcome measures. Similarly, Hypothesis 4b (i.e., that OSC would moderate the relationship between stressors and all outcome measures) was not supported; OSC did not interact with stressors to predict any of the outcome measures.

For Hypothesis 4c, I expected OSC to moderate the relationships between loneliness and health outcomes and the indirect effects of stressors on health outcomes via loneliness. OSC did not moderate any of the relationships between loneliness and health outcomes. For indirect effects, OSC did moderate the indirect effect of stressors on physical health via loneliness, such that there was a significant negative indirect effect at the mean and high levels of OSC, but not at low levels of OSC. OSC did not moderate the indirect effects for any of the other health outcome models. Overall, OSC was not an effective moderator in the current study.

Supplementary Analyses: Structural Equation Modeling

Given that USR, CSR, and OSC did not consistently moderate my outcomes, interactions were dropped for the supplementary analyses. Two models were conducted to examine the direct and indirect effects of USR, CSR, and OSC with stressors on the six outcomes. This model

tested six dependent variables simultaneously to avoid family-wise error. Structural equation modeling (SEM) in JASP was used to conduct these two models. SEM used R/lavaan to conduct the analyses. The outcomes were again perceived stress, anxiety, depression, life satisfaction, sleep quality, and physical health. In the first model, USR, CSR, and stressors were the predictors, loneliness was the mediator, and the six dependent variables were treated as outcomes. Age was treated as a background confounder. In the second model, OSC and stressors were the predictors, loneliness was the mediator, and the six dependent variables were treated as outcomes; age was again treated as a background confounder. Gender was dropped from the models because it did not consistently predict any outcomes and thus was limiting the statistical power of the analyses.

Results of the first model indicated that most of the direct effects between self-compassion and the outcome variables were significant. In fact, the only relationship in this model that was not significant was that of USR predicting sleep quality (see Table 18). In terms of indirect effects, CSR did not predict any of the outcome variables via loneliness, but USR predicted all outcome variables via loneliness (see Table 19).

In the second model, again, direct effects between OSC and the outcome variables were significant, with only nonsignificant direct effects for OSC predicting anxiety and depression (see Table 20). All indirect effects of OSC on outcome variables via loneliness were significant except for sleep quality (see Table 21). Overall, these results suggested that even though self-compassion and OSC did not consistently moderate the influence of stressors and loneliness on health outcomes, these variables may be important targets for intervention regardless of the presence of stressors or loneliness. That is, they act as protective factors against loneliness and negative health outcomes, regardless of the levels of perceived stress.

CHAPTER 4

DISCUSSION

Discussion

The current study aimed to examine loneliness as a mediator of the relationship between stressors and physical and psychological health outcomes in emerging adults. I also aimed to explore the roles of self-compassion and online student connectedness as moderators of the relationship between stressors and emerging adult health outcomes via loneliness. According to the Substance Abuse and Mental Health Services Administration (SAMHSA, 2022), the rate of any mental illness was 33.7% in 18-25-year-olds in the US in 2021. Thus, it is necessary to determine predictors of health outcomes in this population as well as factors such as self-compassion and student connectedness that may mitigate the effects of stressors and loneliness on health outcomes.

Direct Effects of Stressors on Health Outcomes in Emerging Adulthood

As part of the theoretical model for this study, I expected higher levels of reported stressors in emerging adults to predict more negative health outcomes such as higher depression, anxiety, and perceived stress (1a), as well as lower life satisfaction and poorer sleep quality and physical health (1b). Except for life satisfaction, this hypothesis was supported, with stressors predicting health outcomes in the expected directions. This is in line with previous research suggesting that both daily hassles and COVID-19-related stressors predict depression (e.g., Asselmann et al., 2017; Tamarit et al., 2023), anxiety (e.g., Wang, 2021), perceived stress (McIntyre et al., 2008; N. T. Tran et al., 2021; Tamarit et al., 2023), and poorer sleep quality and physical health (Gusman et al., 2021; Kaubrys et al., 2021; Williams & Moroz, 2009; S. T. Tran et al., 2021). The findings of the current study, in conjunction with those of previous studies

again underscore the importance of stressors in predicting psychological and physical health in emerging adults, particularly those attending college.

In the current study, stressors did not significantly predict life satisfaction. This was contrary to expectations based on previous findings suggesting that daily hassles and COVID-19 stressors predict lower life satisfaction in emerging adults and college students both concurrently (Gallegos et al., 2021; Tamarit et al., 2023) and over time (Day et al., 2005). One possible reason for the lack of this direct relationship in the current study could have been the time frames about which the different scales asked. Both the COVID-19 stress and the daily hassles questions asked about specific, relatively recent time frames (i.e., the past/next six months and the past month, respectively). However, life satisfaction is measured in a more global fashion; for example, one item states, "So far I have gotten the important things I want in life." It is possible that, even when experiencing more stressors during the past six months, the degree of those stressors did not undermine the sense of satisfaction participants felt about their life *as a whole*, as six months is a relatively short amount of time when compared to their life "so far." In future research examining the relationship between recent stressors and life satisfaction, measuring life satisfaction over the same time during which the stressors occurred or at a "current" point in time would be beneficial.

Indirect Effects of Stressors on Health Outcomes via Loneliness

In hypothesis 2, I predicted that loneliness would mediate the relationship between stressors and emerging adult health outcomes. The first part of this relationship would be a positive association between stressors and loneliness. Overall, this was supported, as higher reported stressors predicted higher loneliness. This overlaps with results from other researchers in which daily hassles (Lai et al., 2019) and COVID-19-related stress/worry (Bell et al., 2021;

Haikalis et al., 2022; Lampraki et al., 2022) predicted loneliness, pointing to the importance of finding ways to help individuals, particularly emerging adults, cope with chronic and time-specific stressors.

As part of this hypothesis, I also expected loneliness to predict higher anxiety, depression, and perceived stress (2a), lower life satisfaction, and poorer sleep quality and physical health (2b). Based on these relationships, I further expected loneliness to significantly mediate the relationships between stressors and health outcomes in emerging adults. These parts of the hypothesis were partially supported, as loneliness predicted all health outcomes except sleep quality and mediated relationships involving stressors and all health outcomes except sleep quality. Therefore, other than for sleep quality, results correspond to those of previous studies in which loneliness predicted health outcomes such as depression and anxiety (e.g., C. H. Liu et al., 2020; Varma et al., 2021), low life satisfaction (Gan et al., 2020; Padmananabhanunni & Pretorius, 2021), and poor physical health (Mahon et al., 1997; Perez et al., 2022). Findings from the current study also align with those from other research in which loneliness mediated the relationship between early life stressors and perceived stress (Crespo-Sanmiguel et al., 2021) as well as that between fear of COVID-19 and lower well-being (Kayis et al., 2021). This points to loneliness as a factor to try to prevent further negative psychological and physical health outcomes when facing stressors. For example, in a meta-analysis of interventions to reduce loneliness, Masi et al. (2017) found that the most efficacious interventions were those that focused on maladaptive social cognition, which is also one type of intervention used to alleviate depression (Schnell & Herpertz, 2018; Zhu et al., 2018). Furthermore, after conducting a recent systematic review of interventions specifically for adolescents and young adults, Osborn et al. (2021) asserted that loneliness interventions were most successful when targeting at-risk groups,

but that interventions should be adapted so the general population can use them, as loneliness is such a large problem for these age groups specifically. Results of the current study provide further evidence underscoring the importance of focusing on loneliness to prevent other adverse health outcomes.

As stated above, loneliness did not predict sleep quality in the current study, nor did it mediate the relationship between stressors and sleep quality. This was contrary to expectations based on previous findings that loneliness predicts poor sleep quality both concurrently (Matthews et al., 2017; Perez et al., 2022) and over time (Jaremka et al., 2014). One possible reason for a lack of relationship between loneliness and sleep quality is the current study's flawed measurement of sleep quality. Due to the omission of two items and the resultant low reliability of the overall sleep quality score, only the subjective sleep quality responses were used in analyses. This could explain why the present study's results did not align with previous research, as such studies used the full PSQI sleep quality score. In the future, the full PSQI score should be used in similar studies to see if the findings replicate those from the current study.

The Role of Self-Compassion

Factor Structure of Self-Compassion

As part of the present study, I used confirmatory factor analysis to examine whether self-compassion would be best measured as one overall factor or two factors (i.e., a positive factor and a negative factor). When the Self-Compassion Scale (SCS; Neff, 2003) and the Short Form of the Self-Compassion Scale (SCS-SF; Raes et al., 2011) were first developed, researchers found an overall self-compassion score with six lower-order factors (i.e., the six subscales). Several studies have confirmed this factor structure of self-compassion (Cunha et al., 2016; Neff et al., 2020). However, since then, many researchers (e.g., Kumlander et al., 2018; Muris et al.,

2018; Muris et al., 2021; Rose & Kocovski, 2021; Stolow et al., 2016) have found that a two-factor model in which self-compassion consists of a positive factor (i.e., the three positive subscales) and a negative factor (i.e., the three negative subscales) is a more appropriate conceptualization of the construct. Results of the current study provide evidence to support the two-factor structure rather than the one-factor structure when researching relationships and interventions involving self-compassion.

Further confirmation of a two-factor structure of self-compassion can be found in the research stating that the negative factor is the part of self-compassion that accounts for more variance in psychological health outcomes. Indeed, Muris et al. (2018, 2021) found that the negative factor of self-compassion has more of an influence on negative psychological consequences such as depression and anxiety than the positive factor. This was also found in the current study, as uncompassionate self-responding (USR) was the only factor that moderated the relationship between loneliness and health outcomes and was the only factor that predicted health outcomes indirectly via loneliness; compassionate self-responding (CSR) did not.

Self-Compassion as a Moderator

Hypothesis 3 stated that self-compassion would moderate all paths/relationships in the mediation models. Neither the relationship between stressors and loneliness (3a) nor the direct relationships between stressors and health outcomes (3b) were moderated by either factor of self-compassion (i.e., USR or CSR). This was surprising considering the role of self-compassion as a moderator of the relationship between stigma stress and loneliness (Chan et al., 2020) as well as relationships between daily stressors (e.g., Hu et al., 2018; Mey et al., 2023), COVID-19 stress (e.g., Keng & Hwang, 2022; H. Zhang et al., 2022), and health outcomes in previous literature. A possible reason for self-compassion not moderating the relationship between stressors and

loneliness is that loneliness is more related to perceptions of social relationships rather than perceptions of the self in a global sense. Instead, Rose and Kocovski (2021) propose using a domain-specific Social Self-Compassion Scale (SSCS). Social self-compassion is more concerned with how one feels about their behaviors and interactions during adverse interpersonal experiences. In their initial validation studies, social self-compassion was not only negatively related to loneliness, but it was also positively related to behaviors and attitudes that may decrease loneliness, such as adaptive disengagement or social self-efficacy. As for the direct relationships between stressors and health outcomes, it is unclear why self-compassion did not moderate such relationships in the current study. Future research should continue to examine this relationship to determine if the results of the present study can be replicated.

Based on previous research showing that self-compassion moderates the relationship between loneliness and outcomes such as depression (Ashoori & Kachooei, 2021), I also expected self-compassion to moderate the relationships between loneliness and health outcomes. Results of the current study only partially supported this. While the negative factor of self-compassion (USR) moderated the relationships between: (1) loneliness and perceived stress, (2) loneliness and anxiety, and (3) loneliness and depression, the positive factor (CSR) did not. Furthermore, USR did not moderate the relationships between loneliness and positive health outcomes (i.e., life satisfaction, sleep quality, and physical health). The lack of moderation from CSR and the lack of moderation from USR specifically for positive outcomes are not surprising based on the two-factor model of self-compassion endorsed by Muris et al. (2018; 2021). In their research, USR was the factor most related to negative psychological health outcomes such as those in the current study. USR was the factor more responsible for the effects of a total self-

compassion score. These results suggest that USR may be a more successful outcome on which to focus when developing self-compassion interventions.

The last part of hypothesis 3 focused on self-compassion as a moderator of indirect effects between stressors and health outcomes via loneliness. This part was partially supported; both USR and CSR moderated all indirect effects between stressors and health outcomes, which corresponds to previous research finding that self-compassion plays a moderating role in relationships between stressors and health outcomes via loneliness (Andel et al., 2021; Gao et al., 2023). However, the moderations in the current study did not always follow the expected patterns. For instance, the indirect effect of stressors on perceived stress via loneliness was significant at the mean and high levels of *both* CSR and USR, when one might expect that it would be significant at high levels of USR and *low* levels of CSR. While the reasons for this pattern are unclear, researchers should continue to examine these relationships to see if a possible suppression effect exists when including both factors in the same regression model.

Self-Compassion as a Predictor

Although self-compassion did not act as a moderator in many of the direct relationships proposed in the current study, it did directly predict health outcomes . Specifically, both CSR and USR predicted all health outcomes directly except sleep quality. Interestingly, USR predicted all health outcomes via loneliness as a mediator, while CSR predicted no health outcomes via loneliness as a mediator. This again points to USR as the part of self-compassion that accounts for more of the relationship between overall self-compassion and health. Thus, though self-compassion did not moderate any of the direct effects of stressors on health outcomes, there is an additive effect, such that those with worse health report more stressors and higher USR. This suggests that self-compassion, particularly USR, is still a possible avenue to explore in terms of

intervention to prevent loneliness and adverse health outcomes, regardless of an individual's exposure to stressors.

Implications for Self-Compassion Interventions

As stated above, self-compassion is a worthy target of intervention when aiming to reduce loneliness and negative health outcomes. In a review of eight studies focused on the impact of self-compassion interventions on anxiety and depression in adolescents and emerging adults, Egan et al. (2022) found that, in general, the interventions decreased anxiety and depression symptoms. For example, Arch et al. (2014) implemented a two-session intervention with emerging adult college students that decreased anxiety symptoms, and Arimitsu (2016) investigated a seven-session intervention with college students low in self-compassion, finding reduced depression and anxiety even three months later. Egan and colleagues (2022) also interviewed students to find out how they viewed self-compassion interventions and discovered that students wanted interventions to be available in a variety of formats, including online. Fortunately, programs are already being developed with some of these features. In a recent study examining the feasibility and effectiveness of a 16-day online mindfulness and compassion intervention for college students during the pandemic, students' self-compassion increased, and stress and anxiety decreased from pre- to post-intervention, and students rated the intervention as feasible and practical (González-García et al., 2021).

Based on the findings of the current study and past studies (e.g., Muris et al., 2018) pointing to a positive factor and a negative factor of self-compassion, it is important to consider whether targeting one factor over the other would be more beneficial. In their review and interview study, Egan et al. (2022) asked self-compassion researchers and university students what kind of self-compassion interventions would be best to develop and implement. Both the

researchers *and* the students stressed the value of interventions designed specifically to decrease self-criticism rather than increase self-compassion overall. Students also said they would be more likely to engage in such interventions. Such thoughts were mirrored in a separate systematic review and meta-analysis of 20 randomized controlled trials of self-compassion-related interventions in which Wakelin et al. (2022) found that the interventions led to a significant decrease in self-criticism (i.e., the negative factor of self-compassion). Given that self-criticism is related to negative outcomes such as depression and anxiety (Werner et al., 2019), self-compassion interventions should be developed and implemented to specifically decrease self-criticism.

The Role of Online Student Connectedness

Online Student Connectedness as a Moderator

Hypothesis 4 stated that online student connectedness (OSC) would moderate all paths/relationships in the mediation models. OSC did not moderate the relationship between stressors and loneliness in any of the models (4a), nor did it moderate the relationship between stressors and individual health outcomes (4b). It also did not act as a moderator for any direct relationships between loneliness and health outcomes (4c). These results did not align with previous research in which the relationships between loneliness and psychological adjustment (Arslan, 2021), particularly life satisfaction and symptoms of anxiety and depression (Di Malta et al., 2022), were more robust for students with lower online student connectedness.

OSC did moderate the indirect relationship of stressors on physical health via loneliness, but no other indirect relationships. Specifically, there was a negative indirect effect on physical health at mean and high levels of OSC but not at low levels. This was the opposite of the expected relationship in the current study, as I predicted that higher OSC would act as a

protective factor against this indirect relationship. What may be behind the nonsignificant moderations or the unexpected direction of significant moderations in the current model is unclear. In the future, researchers should continue to include online student connectedness in similar models to examine whether the present study's findings can be replicated.

Online Student Connectedness as a Predictor

Though OSC did not moderate most of the relationships in the conceptual model, it did predict most health outcomes directly and indirectly via loneliness. Specifically, participants who reported higher OSC also reported lower perceived stress, higher life satisfaction, and better sleep quality and physical health. Higher OSC also predicted more positive health outcomes via decreased loneliness. These findings suggest an additive effect, such that those with worse health report more stressors and lower OSC. This indicates that connectedness, particularly in the online school environment, is still an important factor to explore regarding policies to prevent loneliness and adverse health outcomes, regardless of an individual's exposure to stressors.

Implications for Online Student Connectedness Policy

The predictive power of OSC in directly and indirectly (via loneliness) influencing health outcomes suggests that, regardless of an individual's exposure to stressors, schools and instructors would benefit from implementing policies explicitly aimed at increasing students' connectedness in the online environment. For example, Stone and Springer (2019) highlight the need for "teacher-presence" in fostering student connectedness in online college courses, which can be executed in several ways, including creating an online presence, regularly participating in discussions, and providing prompt feedback. They also state that this is not just the responsibility of instructors, but that schools need to provide ample professional development opportunities and ensure that teachers have the resources they need to design content specifically for an online

environment. In the future, researchers should identify other ways in which instructors and institutions can increase online student connectedness to prevent loneliness and adverse health effects and increase student engagement.

Limitations and Future Directions

While the current study provides insights into how factors such as COVID-19 stress, daily hassles, loneliness, self-compassion, and online student connectedness predict health outcomes in emerging adults taking online classes, some limitations exist. First, the sample size may have been too small to allow enough power to detect effects in the full moderated mediation models. The sample in the current study exceeded the number of necessary participants estimated in the power analysis; however, parts of power analyses, particularly those concerning the squared multiple correlations of a full moderated mediation model, are estimated from "best guesses" (Hayes, 2022) based on what has been done in prior research, even if the specific model has not been studied previously. Thus, a larger sample size may be needed to detect effects related to the full models in this study.

As stated previously, longitudinal data are not necessarily required to conduct and interpret mediation analyses (Hayes, 2022). However, the temporal relationships in the current study's model are partially limited by the cross-sectional nature of the data. A natural next step in this research is to conduct a longitudinal study of the relationships in the present study. This would allow for a better understanding of the development of loneliness and health outcomes in the face of stressors over time and any bidirectional effects in the model.

A further limitation of the present project relates to the timing of data collection. Because data collection took place in November 2022, after the rates of new COVID-19 cases had decreased significantly in the United States throughout the year (CDC, 2023), COVID-19-related

stress may not have been as pertinent for emerging adults as it had been previously. Therefore, an important consideration in future research concerning the long-term impact of COVID-19 would be to validate questions that can be applied outside of a specified time range.

Another area for improvement in the current study pertains to survey construction, leading to psychometric and data analysis issues. Two questions were omitted from the Pittsburgh Sleep Quality Index (PSQI; Buysse et al., 1989). While one of the omissions may not have made much of a difference in overall sleep quality scores (i.e., the "other" option for sleep disturbances), the other item (i.e., problems keeping up enthusiasm to get things done) was crucial for the calculation of the daytime dysfunction component score. The overall PSQI score also had a low reliability score ($\alpha = .295$); thus, only the subjective sleep quality question was used as a dependent variable for sleep quality in the current study. Additionally, some participants entered unusable data for the open-ended questions in the PSQI (e.g., entering "it depends" for the question asking what time they usually went to bed), which led to fewer data points for any analyses pertaining to sleep quality. In addition to making certain to include all items in the survey, future research could benefit from exploring alternate ways to collect responses to the open-ended questions to avoid confusion or incomplete/unusable data.

Beyond the avenues for future research stated previously, there are several considerations for sampling specifically. First, efforts should be made to obtain a more racially/ethnically diverse sample, as the sample in the current study was 64% White, thus limiting the generalizability of findings. It would also be interesting to compare the current results in online students to those of in-person students. Finally, the models in the present study should be explored in adolescents. Because peer relationships become increasingly important during adolescence (Steinberg, 2019), being connected to their peers/school could have more of a

moderating role during this developmental stage. Thus, examining the importance of online student connectedness in adolescents could lead to identifying issues on which schools can focus to improve adolescent health outcomes.

Future researchers would benefit from studying other moderators in the relationships between stressors and health outcomes via loneliness. For example, socioeconomic status (SES) is an important factor to consider when looking at stressors. Those from low-SES families or areas may be exposed to more stressors than those from higher-SES families or areas. Indeed, Businelle et al. (2014) found that life stressors mediate the relationship between socioeconomic status and poor mental health, suggesting that SES should be considered in future studies focused on stressors and health. Another variable to include would be social support, as the stress-buffering hypothesis of social support states that higher perceived social support lessens the negative health effects associated with stress (Cohen & Wills, 1985; DeLongis & Holtzman, 2005; Raffaelli et al., 2013; Wasserman et al., 2021). For example, perceived social support moderated the relationship between COVID-19 worry and psychological health in a sample of college students (Szkody et al., 2021). Lastly, individual differences in personality, particularly in neuroticism, may moderate the influence of stressors on loneliness and health outcomes in emerging adults. Neuroticism involves a pattern of negative emotionality and reactivity (John & Srivastava, 1999) associated with negative consequences such as loneliness, anxiety, and depression (e.g., DeShong & Kelley, 2022; Gubler et al., 2021; Vanhalst et al., 2012). Thus, it is likely that those higher in neuroticism would also experience more negative outcomes of stressors such as daily hassles and COVID-19 stress.

Finally, research surrounding self-compassion compared to other self-related constructs may be warranted. For instance, self-efficacy (i.e., one's belief in their ability to meet a goal;

Bandura, 1977) is moderately correlated with self-compassion (Lowe & Heller, 2023; Muris et al., 2016; Souza & Hutz, 2016) but is considered a separate construct (Leary & Tangney, 2012; Liao et al., 2021). Furthermore, self-esteem (i.e., an individual's assessment of their self-worth via positive or negative self-directed evaluations; Rosenberg et al., 1995) is also related to self-compassion (Donald et al., 2017; Muris et al., 2016; Souza & Hutz, 2016) but is not necessarily as adaptive as self-compassion because it fluctuates as a function of one's performance in different life domains (Crocker et al., 2003). However, when including self-efficacy, self-esteem, and self-compassion in the same regression model predicting depressive symptoms in adolescents, Muris et al. (2016) found that self-compassion actually did not uniquely predict depressive symptoms over and above the effects of self-efficacy and self-esteem. Based on evidence suggesting a two-factor structure of self-compassion rather than an overall score, some of these null effects may be due to using a total self-compassion score instead of a positive and a negative factor. It is important that, in the future, research distinguishes between the effects of self-compassion, self-efficacy, and self-esteem, and that different factor structures be used for self-compassion.

Concluding Remarks

This project contributes to the growing body of literature surrounding the negative impacts of daily hassles, COVID-19-related stress, and loneliness in emerging adults, particularly those taking online courses. Furthermore, this is one of only a few studies in which a two-factor model of self-compassion is used to look at moderating effects of both a positive factor and a negative factor in the direct and indirect relationships between stressors, loneliness, and health. In doing so, results revealed that the negative factor of self-compassion (USR) is more strongly related to health outcomes and should be the primary focus of self-compassion

interventions. Additionally, this study showed that, though online student connectedness did not play a moderating role in the direct and indirect relationships proposed, it did predict health outcomes in its own right. The present study's findings provide the basis for further research into ways in which students, teachers, and institutions can mitigate the negative outcomes associated with stressors by targeting loneliness, uncompassionate self-responding, and online student connectedness.

REFERENCES

Akin, A. (2010). Self-compassion and loneliness. *International Online Journal of Educational Sciences, 2*(3), 702-718.

Andel, S. A., Shen, W., & Arvan, M. L. (2021). Depending on your own kindness: The moderating role of self-compassion on the within-person consequences of work loneliness during the COVID-19 pandemic. *Journal of Occupational Health Psychology, 26*(4), 276-290. https://doi.org/10.1037/ocp0000271

Anderson, K. N., Radhakrishnan, L., Lane, R. I., Sheppard, M., DeVies, J., Azondekon, R., Smith, A. R., Bitsko, R. H., Hartnett, K. P., Lopes-Cardozo, B., Leeb, R. T., van Santen, K. L., Carey, K., Crossen, S., Dias, T. P., Wotiz, S., Adjemian, J., Rodgers, L., Njai, R., & Thomas, C. (2022). Changes and inequities in adult mental health-related emergency department visits during the COVID-19 pandemic in the US. *JAMA Psychiatry*, *79*(5), 475-485. https://doi.org/10.1001/jamapsychiatry.2022.0164

Andresen, E. M., Malmgren, J. A., Carter, W. B., & Patrick, D. L. (1994). Screening for depression in well older adults: Evaluation of a short form of the CES-D. *American Journal of Preventive Medicine, 10*(2), 77-84. https://doi.org/10.1016/S0749-3797(18)30622-6

Arch, J. J., Warren Brown, K., Dean, D. J., Landy, L. N., Brown, K., & Laudenslager, M. L. (2014). Self-compassion training modulates alpha-amylase, heart rate variability and subjective responses to social evaluative threat in women. *Psychoneuroendocrinology, 42*, 49-58. https://doi.org/10.1016/j.psyneuren.2013.12.018

Arimitsu, K. (2016). The effects of a program to enhance self-compassion in Japanese individuals: A randomised controlled trial. *The Journal of Positive Psychology, 11,* 559-571. https://doi.org/10.1080/17439760.2016.1152593

Arslan, G. (2021). Loneliness, college belongingness, subjective vitality, and psychological adjustment during Coronavirus pandemic: Development of the College Belongingness Questionnaire. *Journal of Positive School Psychology, 5*(1), 17-31. https://doi.org/10.47602/jpsp.v5il.240

Ashoori, M., & Kachooei, M. (2021). The relationship between social loneliness and psychological well-being in patients with multiple sclerosis: The moderating role of self-compassion. *International Journal of Behavioral Sciences, 15*(2), 133-137. https://doi.org/10.30491/IJBS.2021.260900.1431

Asselmann, E., Wittchen, H.-U., Lieb, R., & Beesdo-Baum, K. (2017). A 10-year prospective-longitudinal study of daily hassles and incident psychopathology among adolescents and young adults: Interactions with gender, perceived coping efficacy, and negative life events. *Social Psychiatry and Psychiatric Epidemiology: The International Journal for Research in Social and Genetic Epidemiology and Mental Health Services, 52*(11), 1353-1362. https://doi.org/10.1007/s00127-017-1436-3

Barreto, M., Victor, C., Hammond, C., Eccles, A., Richins, M. T., & Qualter, P. (2021). Loneliness around the world: Age, gender, and cultural differences in loneliness. *Personality and Individual Differences, 169,* 110066. https://doi.org/10.1016/j.paid.2020.110066

Bell, L. M., Smith, R., van de Venter, E. C., Shuttleworth, C., Wilson, K., & Lycett, D. (2021). COVID-19 stressors, wellbeing and health behaviours: A cross-sectional study. *Journal of Public Health, 43*(3), e453-e461. https://doi.org/10.1093/pubmed/fdab241

Beshai, S., Salimuddin, S., Refaie, N., & Maierhoffer, J. (2022). Dispositional mindfulness and self-compassion buffer the effects of COVID-19 stress on depression and anxiety symptoms. *Mindfulness, 13,* 3028-3042. https://doi.org/10.1007/s12671-022-02008-0

Blankstein, K. R., & Flett, G. L. (1992). Specificity in the assessment of daily hassles: Hassles, locus of control, and adjustment in college students. *Canadian Journal of Behavioural Science, 24*(3), 382-398. https://doi.org/10.1037/h0078738

Blankstein, K. R., Flett, G. L., & Koledin, S. (1991). The Brief College Student Hassles Scale: Development, validation, and relation with pessimism. *Journal of College Student Development, 32*(3), 258-264.

Bluth, K., Gaylord, S. A., Campo, R. A., Mullarkey, M. C., & Hobbs, L. (2016). Making Friends with Yourself: A mixed methods pilot study of a Mindful Self-Compassion program for adolescents. *Mindfulness, 7*(2), 479-492. https://doi.org/10.1007/s12671-015-0476-6

Bobo, J. K., Gilchrist, L. D., Elmer, J. F., Snow, W. H., & Schinke, S. P. (1986). Hassles, role strain, and peer relations in young adolescents. *Journal of Early Adolescence, 6*(4), 339-352. https://doi.org/10.1177/0272431686064005

Bogusch, L. M., Fekete, E. M., & Skinta, M. D. (2016). Anxiety and depressive symptoms as mediators of trait mindfulness and sleep quality in emerging adults. *Mindfulness, 7*, 962-970. https://doi.org/10.1007/s12671-016-0535-7

Bolliger, D. U., & Inan, F. A. (2012). Development and validation of the Online Student Connectedness Survey (OSCS). *International Review of Research in Open and Distributed Learning, 13*(3), 41-65. https://doi.org/10.19173/irrodl.v13i3.1171

Bouteyre, E., Maurel, M., & Bernaud, J. (2007). Daily hassles and depressive symptoms among first year psychology students in France: The role of coping and social support. *Stress and Health: Journal of the International Society for the Investigation of Stress, 23*(2), 93-99. https://doi.org/10.1002/smi.1125

Brown, L., Houston, E. E., Amonoo, H. L., & Bryant, C. (2021). Is self-compassion associated with sleep quality? A meta-analysis. *Mindfulness, 12*, 82-91. https://doi.org/10.1007/s12671-020-01498-0

Bu, F., Steptoe, A., & Fancourt, D. (2020). Who is lonely in lockdown? Cross-cohort analyses of predictors of loneliness before and during the COVID-19 pandemic. *Public Health, 186*, 31-34. https://doi.org/10.1016/j.puhe.2020.06.036

Buecker, S., Mund, M., Chwastek, S., Sostmann, M., & Luhmann, M. (2021). Is loneliness in emerging adults increasing over time? A preregistered cross-temporal meta-analysis and systematic review. *Psychological Bulletin, 147*(8), 787-805. https://doi.org/10.1037/bul0000332

Businelle, M. S., Mills, B. A., Chartier, K. G., Kendzor, D. E., Reingle, J. M., & Shuval, K. (2014). Do stressful events account for the link between socioeconomic status and mental health? *Journal of Public Health, 36*(2), 205-212. https://doi.org/10.1093/pubmed/fdt060

Buysse, D. J. (n.d.). *PSQI scoring database* [Computer software]. https://www.sleep.pitt.edu/instruments/

Buysse, D. J., Reynolds, C. F., Monk, T. H., Berman, S. R., & Kupfer, D. J. (1989). The Pittsburgh Sleep Quality Index: A new instrument for psychiatric practice and research. *Psychiatry Research, 28*(2), 193-213. https://doi.org/10.1016/0165-1781(89)90047-4

Cao, W., Fang, Z., Hou, G., Han, M., Xu, X., Dong, J., & Zheng, J. (2020). The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry Research, 287,* Article 112934. https://doi.org/10.1016/j.psychres.2020.112934

Carney, J. V., Kim, I., Bright, D., & Hazler, R. J. (2020). Peer victimization and loneliness: The moderating role of school connectedness by gender. *Journal of School Counseling, 18*(8). https://files.eric.ed.gov/fulltext/EJ1247300.pdf

Centers for Disease Control and Prevention. (n.d.). *School connectedness*. https://www.cdc.gov/healthyyouth/protective/school_connectedness.htm

Centers for Disease Control and Prevention. (2000). *Measuring healthy days*. Atlanta, GA: CDC.

Centers for Disease Control and Prevention (2022, August 11). *CDC streamlines COVID-19 guidance to help the public better protect themselves and understand their risk* [Press release]. https://www.cdc.gov/media/releases/2022/p0811-covid-guidance.html

Centers for Disease Control and Prevention. (2023). *COVID data tracker.* https://covid.cdc.gov/covid-data-tracker

Chan, K. K. S., Yung, C. S. W., & Nie, G. M. (2020). Self-compassion buffers the negative psychological impact of stigma stress on sexual minorities. *Mindfulness, 11*(10), 2338-2348. https://doi.org/10.1007/s12671-020-01451-1

Chen, C. Y., & Hong, R. Y. (2010). Intolerance of uncertainty moderates the relation between negative life events and anxiety. *Personality and Individual Differences, 49*(1), 49-53. https://doi.org/10.1016/j.paid.2010.03.006

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*(4), 385-396. https://www.jstor.org/stable/2136404

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

Cooper, K., Hards, E., Moltrecht, B., Reynolds, S., Shum, A., McElroy, E., & Loades, M. (2021). Loneliness, social relationships, and mental health in adolescents during the COVID-19 pandemic. *Journal of Affective Disorders, 289*, 98-104. https://doi.org/10.1016/j.jad.2021.04.016

Crespo-Sanmiguel, I., Zapater-Fajarí, M., Pulopulos, M. M., Hidalgo, V., & Salvador, A. (2021). Loneliness mediates the relationship between early life stress and perceived stress but not hypothalamic-pituitary-adrenal axis functioning. *Frontiers in Psychology, 12,* Article 647265. https://doi.org/10.3389/fpsyg.2021.647265

Crocker, J., Luhtanen, R. K., Cooper, M. L., & Bouvrette, A. (2003). Contingencies of self-worth in college students: Theory and measurement. *Journal of Personality and Social Psychology, 85*(5), 894-908. https://doi.org/10.1037/0022-3514.85.5.894

Cunha, M., Xavier, A., & Castilho, P. (2016). Understanding self-compassion in adolescents: Validation study of the Self-Compassion Scale. *Personality and Individual Differences, 93*, 56-62. https://doi.org/10.1016/j.paid.2015.09.023

Day, A. L., Therrien, D. L., & Carroll, S. A. (2005). Predicting psychological health: Assessing the incremental validity of emotional intelligence beyond personality, Type A behaviour, and daily hassles. *European Journal of Personality, 19*(6), 519-536. https://doi.org/10.1002/per.552

de Jong-Gierveld, J., van Tilburg, T. G., & Dykstra, P. A. (2006). Loneliness and social isolation. In A. L. Vangelisti & D. Perlman (Eds.), *The Cambridge handbook of personal relationships* (pp. 485-500). Cambridge University Press.

Delgado, M. Y., Nair, R. L., Updegraff, K. A., & Umaña-Taylor, A. J. (2019). Discrimination, parent-adolescent conflict, and peer intimacy: Examining risk and resilience in Mexican-origin youths' adjustment trajectories. *Child Development, 90*(3), 894-910. https://doi.org/10.1111/cdev.12969

DeLongis, A., & Holtzman, S. (2005). Coping in context: The role of stress, social support, and personality in coping. *Journal of Personality, 73*(6), 1633-1656. https://doi.org/10.1111/j.1467-6494.2005.00361.x

DeShong, H. L., & Kelley, K. (2022). Investigating the incremental validity of negative thinking styles and facets of neuroticism within depression, anxiety, and borderline personality disorder. *Journal of Psychopathology and Behavioral Assessment, 44*(4), 962-971. https://doi.org/10.1007/s10862-022-09986-4

Di Malta, G., Bond, J., Conroy, D., Smith, K., & Moller, N. (2022). Distance education students' mental health, connectedness and academic performance during COVID-19: A mixed-methods study. *Distance Education*. https://doi.org/10.1080/01587919.2022.2029352

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment, 49*(1), 71-75. https://doi.org/10.1207/s15327752jpa4901_13

Dingle, G. A., Han, R., & Carlyle, M. (2022). Loneliness, belonging, and mental health in Australian university students pre- and post-COVID-19. *Behaviour Change, 39*(3), 146-156. https://doi.org/10.1017/bec.2022.6

Dinu, L. M., Byrom, N. C., Mehta, K. J., Everett, S., Foster, J. L. H., & Dommett, E. J. (2022). Predicting student wellbeing and loneliness and the importance of digital skills. *Journal of Further and Higher Education, 46*(8), 1040-1053. https://doi.org/10.1080/0309877X.2022.2038780

DiRamio, D., & Wolverton, M. (2006). Integrating learning communities and distance education: Possibility or pipedream? *Innovative Higher Education, 31*(2), 99-113. https://doi.org/10.1007/s10755-006-9011-y

Egan, S. J., Rees, C. S., Delalande, J., Greene, D., Fitzallen, G., Brown, S., Webb, M., & Finlay-Jones, A. (2022). A review of self-compassion as an active ingredient in the prevention and treatment of anxiety and depression in young people. *Administration and Policy in Mental Health and Mental Health Services Research, 49,* 385-403. https://doi.org/10.1007/s10488-021-01170-2

Escalante, E., Golden, R. L., & Mason, D. J. (2021). Social isolation and loneliness: Imperatives for health care in a post-COVID world. *JAMA, 325*(6), 520-521. https://doi.org/10.1001/jama.2021.0100

Fernandez-Rio, J., Cecchini, J. A., Méndez-Gimenez, A., Mendez-Alonso, D., & Prieto, J. A. (2017). Self-regulation, cooperative learning, and academic self-efficacy: Interactions to prevent school failure. *Frontiers in Psychology, 8*(22). https://doi.org/10.3389/fpsyg.2017.00022

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

Gallegos, M. I., Zaring-Hinkle, B., & Bray, J. H. (2021). COVID-19 pandemic stresses and relationships in college students. *Family Relations: An Interdisciplinary Journal of Applied Family Studies, 71*(1), 29-45. https://doi.org/10.1111/fare.12602

Gan, S.-W., Ong, L. S., Lee, C. H., & Lin, Y. S. (2020). Perceived social support and life satisfaction of Malaysian Chinese young adults: The mediating effect of loneliness. *The Journal of Genetic Psychology: Research and Theory on Human Development, 181*(6), 458-469. https://doi.org/10.1080/00221325.2020.1803196

Gao, P., Mosazadeh, H., & Nazari, N. (2023). The buffering role of self-compassion in the association between loneliness with depressive symptoms: A cross-sectional survey study among older adults living in residential care homes during COVID-19. *International Journal of Mental Health and Addiction*. https://doi.org/10.1007/s11469-023-01014-0

Golovey, L. A., Petrash, M. D., Strizhitskaya, O. Y., Savenysheva, S. S., & Murtazina, I. R. (2018). The role of psychological well-being and life satisfaction in perception of daily stress. *Konsul'tativnaia psikhologiia i psikhoterapiia, 26*(4), 8-26. https://doi.org/10.17759/cpp.2018260402

González-García, M., Álvarez, J. C., Pérez. E. Z., Fernandez-Carriba, S., & López, J. G. (2021). Feasibility of a brief online mindfulness and compassion-based intervention to promote mental health among university students during the COVID-19 pandemic. *Mindfulness, 12*, 1685-1695. https://doi.org/10.1007/s12671-021-01632-6

Goosby, B. J., Bellatorre, A., Walsemann, K. M., & Cheadle, J. E. (2013). Adolescent loneliness and health in early adulthood. *Sociological Inquiry, 83*(4), 505-536. https://doi.org/10.1111/soin.12018

Graf, A. S., & Bolling, C. N. (2022). Increased belongingness among college students during COVID-19: A potential cohort effect? *Journal of American College Health*. https://doi.org/10.1080/07448481.2022.2057194

Graf, A. S., Long, D. M., & Patrick, J. H. (2017). Successful aging across adulthood: Hassles, uplifts, and self-assessed health in daily context. *Journal of Adult Development, 24*(3), 216-225. https://doi.org/10.1007/s10804-017-9260-2

Gubler, D. A., Makowski, L. M., Troche, S. J., & Schlegel, K. (2021). Loneliness and well-being during the COVID-19 pandemic: Associations with personality and emotion regulation. *Journal of Happiness Studies: An Interdisciplinary Forum on Subjective Well-Being, 22*(5), 2323-2342. https://doi.org/10.1007/s10902-020-00326-5

Gusman, M. S., Grimm, K. J., Cohen, A. B., & Doane, L. D. (2021). Stress and sleep across the onset of the novel coronavirus disease 19 pandemic: Impact of distance learning on US college students' health trajectories. *Sleep: Journal of Sleep and Sleep Disorders Research, 44*(12), 1-13, Article zsab193. https://doi.org/10.1093/sleep/zsab193

Gyasi, R. M., Abass, K., Segbefia, A. Y., Afriyie, K., Asamoah, E., Boampong, M. S., Adam, A. M., & Owusu-Dabo, E. (2022). A two-mediator serial mediation chain of the association between social isolation and impaired sleep in old age. *Scientific Reports, 12*, Article 22458. https://doi.org/10.1038/s41598-022-26840-5

Haikalis, M., Doucette, H., Meisel, M. K., Birch, K., & Barnett, N. P. (2022). Changes in college student anxiety and depression from pre- to during-COVID-19: Perceived stress, academic challenges, loneliness, and positive perceptions. *Emerging Adulthood, 10*(2), 534-545. https://doi.org/10.1177/21676968211058516

Halliburton, A. E., Hill, M. B., Dawson, B. L., Hightower, J. M., & Rueden, H. (2021). Increased stress, declining mental health: Emerging adults' experiences in college during COVID-19. *Emerging Adulthood, 9*(5). https://doi.org/10.1177/21676968211025348

Harriger, J. A., Joseph, N. T., & Trammell, J. (2021). Detrimental associations of cumulative trauma, COVID-19 infection indicators, avoidance, and loneliness with sleep and negative emotionality in emerging adulthood during the pandemic. *Emerging Adulthood, 9*(5), 479-491. https://doi.org/10.1177/21676968211022594

Hawkley, L. C., & Cacioppo, J. T. (2010). Loneliness matters: A theoretical and empirical review of consequences and mechanisms. *Annals of Behavioral Medicine*, *40*(2), 218-227. https://doi.org/10.1007/s12160-010-9210-8

Hawkley, L. C., & Cacioppo, J. T. (2013). Social connectedness and health. In C. Hazan & M. I. Campa (Eds.), *Human bonding: The science of affectional ties* (pp. 343-364). The Guilford Press.

Hayes, A. F. (2022). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (3rd ed.). The Guilford Press.

Her Majesty's Government Department for Digital, Culture, Media and Sport. (2018). *A connected society: A strategy for tackling loneliness*. https://www.gov.uk/government/publications/a-connected-society-a-strategy-for-tackling-loneliness

Hertz, M. F., Kilmer, G., Verlenden, J., Liddon, N., Rasberry, C. N., Barrios, L. C., & Ethier, K. A. (2022). Adolescent mental health, connectedness, and mode of school instruction during COVID-19. *Journal of Adolescent Health, 70*(1), 57-63. https://doi.org/10.1016/j.jadohealth.2021.10.021

Holt-Lunstad, J., Smith, T. B., Baker, M., Harris, T., & Stephenson, D. (2015). Loneliness and social isolation as risk factors for mortality: A meta-analytic review. *Perspectives on Psychological Science, 10*(2), 227-237. https://doi.org/10.1177/1745691614568352

Hosler, K. A., & Arend, B. D. (2012). The importance of course design, feedback, and facilitation: student perceptions of the relationship between teaching presence and cognitive presence. *Educational Media International, 49*(3), 217–229. https://doi.org/10.1080/09523987.2012.738014

Hu, Y., Wang, Y., Sun, Y., Arteta-Garcia, J., & Purol, S. (2018). Diary study: The protective role of self-compassion on stress-related poor sleep quality. *Mindfulness, 9*(6), 1931-1940. https://doi.org/10.1007/s12671-018-0939-7

Humana. (2022, April 20). *Loneliness & social isolation screening guide for physicians*. https://populationhealth.humana.com/resources/social-isolation-loneliness-one-page-physician-quick-guide/

Hyun, S., Chen, S.-E., Levy-Carrick, N. C., Hahm, H. C., & Liu, C. H. (2022). Posttraumatic growth as a moderator between pandemic-related distress and mental health symptoms in U.S. young adults. *Psychological Trauma: Theory, Research, Practice, and Policy*. https://doi.org/10.1037/tra0001306

Hyun, S., Hahm, H. C., Wong, G. T. F., Zhang, E., & Liu, C. H. (2021). Psychological correlates of poor sleep quality among U.S. young adults during the COVID-19 pandemic. *Sleep Medicine, 78,* 51-56. https://doi.org/10.1016/j.sleep.2020.12.009

John, O. P., & Srivastava, S. (1999). The big five trait taxonomy: History, measurement, and theoretical perspectives. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (pp. 102-138). Guilford Press.

Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika, 39,* 31-36. https://doi.org/10.1007/BF02291575

Kalb, L. G., Stapp, E. K., Ballard, E. D., Holingue, C., Keefer, A., & Riley, A. (2018). Trends in psychiatric emergence department visits among youth and young adults in the US. *Pediatrics, 143*(4), e20182192. https://doi.org/10.1542/peds.2018-2192

Kanner, A. D., Coyne, J. C., Schaefer, C., & Lazarus, R. S. (1981). Comparison of two modes of stress management: Daily hassles and uplifts versus major life events. *Journal of Behavioral Medicine, 4*(1), 1-39. https://doi.org/10.1007/BF00844845

Kaubrys, M., Baker, M. R., Frazier, P. A., & Nguyen-Feng, V. N. (2021). Relations among daily stressors, childhood maltreatment, and sleep in college students. *Journal of Counseling Psychology, 68*(4), 489-500. https://doi.org/10.1037/cou0000549

Kayis, A. R., Satici, B., Deniz, M. E., Satici, S. A., & Griffiths, M. D. (2022). Fear of COVID-19, loneliness, smartphone addiction, and mental wellbeing among the Turkish general population: A serial mediation model. *Behaviour & Information Technology, 41*(11), 2484-2496. https://doi.org/10.1080/0144929X.2021.1933181

Keng, S.-L., & Hwang, E. Z. N. (2022). Self-compassion as a moderator of the association between COVID-19 stressors and psychological symptoms: A longitudinal study. *Behaviour Change, 39*(4), 263-274. https://doi.org/10.1017/bec.2022.2

Kreiger, T., Hermann, H., Zimmermann, J., & Holtforth, M. g. (2015). Associations of self-compassion and global self-esteem with positive and negative affect and stress reactivity in daily life: Findings from a smart phone study. *Personality and Individual Differences, 87*, 288-292. https://doi.org/10.1016/j.paid.2015.08.009

Kroenke, K., Spitzer, R. L., & Williams, J. B. W. (2002). The PHQ-15: Validity of a new measure for evaluating the severity of somatic symptoms. *Psychosomatic Medicine, 64,* 258-266. https://doi.org/10.1097/00006842-200203000-00008

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 & Anxiety, 37*(12), 1280-1288. https://doi.org/10.1002/da.23109

Kumlander, S., Lahtinen, O., Turunen, T., & Salmivalli, C. (2018). Two is more valid than one, but is six even better? The factor structure of the Self-Compassion Scale. *PLoS ONE, 13*(12), e0207706. https://doi.org/10.1371/journal.pone.0207706

Kyeong, L. W. (2013). Self-compassion as a moderator of the relationship between academic burn-out and psychological health in Korean cyber university students. *Personality and Individual Differences, 54*(8), 899-902. https://doi.org/10.1016/j.paid.2013.01.001

Ladouceur, C. D. (2020). *COVID-19 Adolescent Symptom & Psychological Experience Questionnaire (CASPE).* https://www.nlm.nih.gov/dr2/CASPE_AdolSelfReport_Qualtrics.pdf

Lai, J. C. L., Lee, D. Y. H., Leung, M. O. Y., & Lam, Y. W. (2019). Daily hassles, loneliness, and diurnal salivary cortisol in emerging adults. *Hormones and Behavior, 115*, 104558. https://doi.org/10.1016/j.yhbeh.2019.07.006

Lampraki, C., Hoffman, A., Roquet, A., & Jopp, D. S. (2022). Loneliness during COVID-19: Development and influencing factors. *PLoS ONE, 17*(3), Article e0265900. https://doi.org/10.1371/journal.pone.0265900

Lau, B. H.-P., Chan, C. L.-W., & Ng, S.-M. (2020). Self-compassion buffers the adverse mental health impacts of COVID-19-related threats: Results from a cross-sectional survey at the first peak of Hong Kong's outbreak. *Frontiers in Psychiatry, 11,* Article 585270. https://doi.org/10.3389/fpsyt.2020.585270

Leary, M. R., & Tangney, J. P. (Eds.). (2012). *Handbook of self and identity* (2nd ed.). Guilford.

Lee, C. M., Cadigan, J. M., & Rhew, I. C. (2020). Increases in loneliness among young adults during the COVID-19 pandemic and association with increases in mental health problems. *Journal of Adolescent Health, 67*(5), 714-717. https://doi.org/10.1016/j.jadohealth.2020.08.009

Lee, C.-Y. S., & Dik, B. J. (2017). Associations among stress, gender, sources of social support, and health in emerging adults. *Stress and Health, 33*(4), 378-388. https://doi.org/10.1002/smi.2722

Lee, E. E., Govind, T., Ramsey, M., Wu, T. C., Daly, R., Liu, J., Tu, X. M., Paulus, M. P., Thomas, M. L., & Jeste, D. V. (2021). Compassion towards others and self-compassion predict mental and physical well-being: A 5-year longitudinal study of 1090 community-dwelling adults across the lifespan. *Translational Psychiatry, 11*. https://doi.org/10.1038/s41398-021-01491-8

Lee, K. J., & Lee, S. M. (2020). The role of self-compassion in the academic stress model. *Current Psychology*. https://doi.org/10.1007/s12144-020-00843-9

Liang, K., Huang, L., Qu, D., Bu, H., & Chi, X. (2022). Self-compassion predicted joint trajectories of depression and anxiety symptoms during the COVID-19 pandemic: A five-wave longitudinal study on Chinese college students. *Journal of Affective Disorders, 319,* 589-597. https://doi.org/10.1016/j.jad.2022.09.078

Liao, K. Y-H., Stead, G. B., & Liao, C-Y. (2021). A meta-analysis of the relation between self-compassion and self-efficacy. *Mindfulness, 12*(8), 1878-1891. https://doi.org/10.1007/s12671-021-01626-4

Ling, Y., He, Y., Wei, Y., Cen, W., Zhou, Q., & Zhong, M. (2016). Intrinsic and extrinsic goals as moderators of stress and depressive symptoms in Chinese undergraduate students: A multi-wave longitudinal study. *BMC Psychiatry, 16,* Article 138. https://doi.org/10.1186/s12888-016-0842-5

Liu, C. H., Zhang, E., Wong, G. T. F., Hyun, S., & Hahm, H. C. (2020). Factors associated with depression, anxiety, and PTSD symptomatology during the COVID-19 pandemic: Clinical implications for U.S. young adult mental health. *Psychiatry Research, 290,* Article 113172. https://doi.org/10.1016/j.psychres.2020.113172

Liu, X., Zhang, S., Zheng, R., Yang, L., Cheng, C., & You, J. (2022). Maladaptive perfectionism, daily hassles, and depressive symptoms among first-year college students in China. *Journal of American College Health*. https://doi.org/10.1080/07448481.2022.2068014

Lorenz, L., Perkonigg, A., & Maercker, A. (2018). A socio-interpersonal approach to adjustment disorder: The example of involuntary job loss. *European Journal of Psychotraumatology, 9*, 1425576. https://doi.org/10.1080/20008198.2018.1425576

Lowe, C., & Heller, A. C. (2023, April 19). *Self-compassion and self-efficacy protect emerging adults from the negative influence of daily hassles on life satisfaction* [Poster session]. Belmont Undergraduate Research Symposium (BURS) Spring 2023, Nashville, TN, United States.

Mahon, N. E., Yarcheski, T. J., & Yarcheski, A. (1997). Loneliness and health-related variables in young adults. *Perceptual and Motor Skills, 85*(3, Pt 1), 800-802. https://doi.org/10.2466/pms.1997.85.3.800

Martin, F., Wang, C., & Sadaf, A. (2018). Student perception of helpfulness of facilitation strategies that enhance instructor presence, connectedness, engagement and learning in online courses. *The Internet and Higher Education, 37*, 52–65. https://doi.org/10.1016/j.iheduc.2018.01.003

Martinez, A., Coker, C., McMahon, S. D., Cohen, J., & Thapa, A. (2016). Involvement in extracurricular activities: Identifying differences in perceptions of school climate. *The Educational and Developmental Psychologist, 33*(1), 70-84. https://doi.org/10.1017/edp.2016.7

Masi, C. M., Chen, H.-Y., Hawkley, L. C., & Cacioppo, J. T. (2011). A meta-analysis of interventions to reduce loneliness. *Personality and Social Psychology Review, 15*(3), 219-266. https://doi.org/10.1177/1088868310377394

Matos, M., McEwan, K., Kanovský, M., Halamová, J., Steindl, S. R., Ferreira, N., Linharelhos, M., Rijo, D., Asano, K., Márquez, M. G., Gregório, S., Vilas, S. P., Brito-Pons, G., Lucena-Santos, P., da Silva Oliveira, M., de Souza, E. L., Llobenes, L., Gumiy, N., Costa, M. I., ... Gilbert, P. (2022). Compassion protects mental health and social safeness during the COVID-19 pandemic across 21 countries. *Mindfulness, 13*, 863-880. https://doi.org/10.1007/s12671-021-01822-2

Matthews, T., Danese, A., Gregory, A. M., Caspi, A., Moffitt, T. E., & Arseneault, L. (2017). Sleeping with one eye open: Loneliness and sleep quality in young adults. *Psychological Medicine, 47*(12), 2177-2186. https://doi.org/10.1017/s0033291717000629

Matthews, T., Danese, A., Wertz, J., Odgers, C. L., Ambler, A., Moffitt, T. E., & Arseneault, L. (2016). Social isolation, loneliness and depression in young adulthood: A behavioural genetic analysis. *Social Psychiatry and Psychiatric Epidemiology, 51,* 339-348. https://doi.org/10.1007/s00127-016-1178-7

Maxwell, S. E., Cole, D. A., & Mitchell, M. A. (2011). Bias in cross-sectional analyses of longitudinal mediation: Partial and complete mediation under an autoregressive model. *Multivariate Behavioral Research, 46,* 916-841. https://doi.org/10.1080/00273171.2011.606716

McIntyre, K. P., Korn, J. H., & Matsuo, H. (2008). Sweating the small stuff: How different types of hassles result in the experience of stress. *Stress and Health, 24*(5), 383-392. https://doi.org/10.1002/smi.1190

Mey, L. K., Wenzel, M., Morello, K., Rowland, Z., Kubiak, T., & Tüscher, O. (2023). Be kind to yourself: The implications of momentary self-compassion for affective dynamics and well-being in daily life. *Mindfulness*. https://doi.org/10.1007/s12671-022-02050-y

Mülazım, Ö. Ç., & Eldeleklioğlu, J. (2016). What is the role of self-compassion on subjective happiness and life satisfaction? *Journal of Human Sciences, 13*(3), 3895-3904. https://doi.org/10.14687/jhs.v13i3.4001

Muris, P., Meesters, C., Pierik, A., & de Kock, B. (2016). Good for the self: Self-compassion and other self-related constructs in relation to symptoms of anxiety and depression in non-clinical youths. *Journal of Child and Family Studies, 25*(2), 607-617. https://doi.org/10.1007/s10826-015-0235-2

Muris, P., Otgaar, H., López, A., Kurtic, I., & van de Laar, I. (2021). The (non)protective role of self-compassion in internalizing symptoms: Two empirical studies in adolescents demonstrating unwanted effects of using the Self-Compassion Scale total score. *Mindfulness, 12*(1), 240-252. https://doi.org/10.1007/s12671-020-01514-3

Muris, P., van den Broek, M., Otgaar, H., Oudenhoven, I., & Lennartz, J. (2018). Good and bad sides of self-compassion: A face validity check of the Self-Compassion Scale and an investigation of its relations to coping and emotional symptoms in non-clinical adolescents. *Journal of Child and Family Studies, 27*(8), 2411-2421. https://doi.org/10.1007/s10826-018-1099-z

Murn, L. T., & Steele, M. R. (2019). What matters most? Age and gender differences in self-compassion and body attitudes among college students. *Counselling Psychology Quarterly*. https://doi.org/10.1080/09515070.2019.1605334

Murthy, V. (2020, March 26). Loneliness was a public health crisis long before social distancing. Here's how we can solve it. *TIME Magazine*. https://time.com/collection/apart-not-alone/5809171/loneliness-epidemic-united-states/

Nathani, A. (2022). Self-compassion and life satisfaction among young adults. *International Journal of Science and Research, 11*(5), 6-11. https://doi.org/10.21275/SR22428231812

National Student Clearinghouse Research Center. (2022, October 20). *COVID-19: Stay Informed with the latest enrollment information* [Trend report]. https://nscresearchcenter.org/stay-informed/

Needham, B., & Hill, T. D. (2010). Do gender differences in mental health contribute to gender differences in physical health? *Social Science & Medicine, 71*(8), 1472-1479. https://doi.org/10.1016/j.socscimed.2010.07.016

Neff, K. D. (2003). Self-compassion: An alternative conceptualization of a healthy attitude toward oneself. *Self and Identity, 2*(2), 85-101. https://doi.org/10.1080/15298860309032

Neff, K. D., Bluth, K., Tóth-Király, I., Davidson, O., Knox, M. C., Williamson, Z., & Costigan, A. (2021). Development and validation of the Self-Compassion Scale for Youth. *Journal of Personality Assessment, 103*(1), 92-105. https://doi.org/10.1080/00223891.2020.1729774

Neff, K. D., & Germer, C. (2013). A pilot study and randomized controlled trial of the mindful self-compassion program. *Journal of Social and Clinical Psychology, 69*(1), 28-44. https://doi.org/10.1002/jclp.213923

Nikolaidis, A., DeRosa, J., Kass, M., Droney, I., Alexander, L., Di Martino, A., Bromet, E., Merikangas, K., Milham, M. P., & Paksarian, D. (2022). Heterogeneity in COVID-19 pandemic-induced lifestyle stressors predicts future mental health in adults and children in the US and UK. *Journal of Psychiatric Research, 147,* 291-300. https://doi.org/10.1016/j.jpsychires.2021.12.058

Nikolaidis, A., Paksarian, D., Alexander, L., DeRosa, J., Dunn, J., Nielson, D. M., Droney, I., Kang, M., Douka, I., Bromet, E., Milham, M. P., Stringaris, A., & Merikangas, K. R. (2020). The Coronavirus Health and Impact Survey (CRISI) reveals reproducible correlates of pandemic-related mood states across the Atlantic. *Scientific Reports, 11,* Article 8139. https://doi.org/10.1038/s41598-021-87270-3

Northrup, P. T. (2002). *Online learners' preferences for interaction* (EJ654234). ERIC. https://eric.ed.gov/?id=EJ654234

Oh, J., & Neal, Z. P. (2021). Two's company, but four's a crowd: The relationship among COVID-19 stress, household size, and life satisfaction. *Collabra: Psychology, 7*(1). https://doi.org/10.1525/collabra.24923

Osborn, T., Weatherburn, P., & French, R. S. (2021). Interventions to address loneliness and social isolation in young people: A systematic review of the evidence on acceptability and effectiveness. *Journal of Adolescence, 93,* 53-79. https://doi.org/10.1016/j.adolescence.2021.09.007

Padmanabhanunni, A., & Pretorius, T. (2021). The loneliness-life satisfaction relationship: The parallel and serial mediating role of hopelessness, depression and ego-resilience among young adults in South Africa during COVID-19. *International Journal of Environmental Research and Public Health, 18,* Article 3613. https://doi.org/10.3390/ijerph18073613

Peplau, L. A., & Perlman, D. (1982). Perspectives on loneliness. In L. A. Peplau & D. Perlman (Eds.), *Loneliness: A sourcebook of current theory, research, and therapy* (pp. 1-20). Wiley.

Perez, L. G., Siconolfi, D., Troxel, W. M., Tucker, J. S., Seelam, R., Rodriguez, A., Shih, R. A., & D'Amico, E. J. (2022). Loneliness and multiple health domains: Associations among emerging adults. *Journal of Behavioral Medicine, 45,* 260-271. https://doi.org/10.1007/s10865-021-00267-1

Perkonigg, A., & Wittchen, H. U. (1995). *The daily hassles scale: Research version.* Muenchen: Max-Planck-Institut für Psychiatrie.

Phillips, W. J., & Hine, D. W. (2021). Self-compassion, physical health, and health behaviour: A meta-analysis. *Health Psychology Review, 15*(1), 113-139. https://doi.org/10.1080/17437199.2019.1705872

Pilkonis, P. A., Choi, S. W., Reise, S. P., Stover, A. M., Riley, W. T., & Cella, D. (2011). Item banks for measuring emotional distress from the Patient-Reported Outcomes Measurement Information System (PROMIS): Depression, anxiety, and anger. *Assessment, 18*, 263-283. https://doi.org/10.1177/1073191111411667

Raes, F., Pommier, E., Neff, K. D., & Van Gucht, D. (2011). Construction and factorial validation of a short form of the Self-Compassion Scale. *Clinical Psychology & Psychotherapy, 18*(3), 250-255. https://doi.org/10.1037/t10178-000

Raffaelli, M., Andrade, F C. D., Wiley, A. R., Sanchez-Armass, O., Edwards, L. L., & Aradillas-Garcia, C. (2013). Stress, social support, and depression: A test of the stress-buffering hypothesis in a Mexican sample. *Journal of Research on Adolescence, 23*(2), 283-289. https://doi.org/10.1111/jora.12006

Raymond, K. P. (2018). Mindfulness, self-compassion and threat related attentional bias: Implications for social anxiety and loneliness in late adolescent college students. *Dissertation Abstracts International: Section B: The Sciences and Engineering, 79*(11-B). http://gateway.proquest.com.ezproxy.uta.edu/openurl?url_ver=Z39.88-2004&rft_val_fmt=info:ofi/fmt:kev:mtx:dissertation&res_dat=xri:pqm&rft_dat=xri:pqdiss:10746325

Reed, K., Duncan, J. M., Lucier-Greer, M., Fixelle, C., & Ferraro, A. J. (2016). Helicopter parenting and emerging adult self-efficacy: Implications for mental and physical health. *Journal of Child and Family Studies, 25*(10), 3136-3149. https://doi.org/10.1007/s10826-016-0466-x

Renshaw, T. L., & Bolognino, S. J. (2016). The College Student Subjective Wellbeing Questionnaire: A brief, multidimensional measure of undergraduate's covitality. *Journal of Happiness Studies: An Interdisciplinary Forum on Subjective Well-Being, 17*(2), 463-484. https://doi.org/10.1007/s10902-014-9606-4

Repo, J., Herkama, S., Yanagida, T., & Salmivalli, C. (2022). Transition to emerging adulthood during the COVID-19 pandemic: Changes in anxiety and the role of inclusion/exclusion experiences. *European Journal of Developmental Psychology*. https://doi.org/10.1080/17405629.2022.2122434

Rose, A. L., & Kocovski, N. L. (2021). The Social Self-Compassion Scale (SSCS): Development, validity, and associations with indices of well-being, distress, and social anxiety. *International Journal of Mental Health and Addiction, 19*(6), 2091-2109. https://doi.org/10.1007/s11469-020-00302-3

Russell, D., Peplau, L. A., & Cutrona, C. E. (1980). The Revised UCLA Loneliness Scale: Concurrent and discriminant validity evidence. *Journal of Personality and Social Psychology, 39*(3), 472-480. https://doi.org/10.1037/0022-3514.39.3.472

Sampogna, G., Giallonardo, V., Del Vecchio, V., Luciano, M., Albert, U., Carmassi, C., Carrà, G., Cirulli, F., Dell'Osso, B., Menculini, G., Murri, M. B., Pompili, M., Sani, G., Volpe, U., Bianchini, V., & Fiorillo, A. (2021). Loneliness in young adults during the first wave of COVID-19 lockdown: Results from the multicentric COMET study. *Frontiers in Psychiatry, 12,* Article 788139. https://doi.org/10.3389/fpsyt.2021.788139

Satici, B., Gocet-Tekin, E., Deniz, M. E., & Satici, S. A. (2021). Adaptation of the Fear of COVID-19 Scale: Its association with psychological distress and life satisfaction in Turkey.

Schiltz, H. K., McVey, A. J., Wozniak, B. D., Haendel, A. D., Stanley, R., Arias, A., Gordon, N., & Van Hecke, A. V. (2021). The role of loneliness as a mediator between autism features and mental health among autistic young adults. *Autism, 25*(2), 545-555. https://doi.org/10.1177/1362361320967789

Schnell, K., & Herpertz, S. C. (2018). Emotion regulation and social cognition as functional targets of mechanism-based psychotherapy in Major Depression with comorbid personality pathology. *Journal of Personality Disorders, 32*(Supp.). https://doi.org/10.1521/pedi.2018.32.supp.12

Segal, S. P., & VanderVoort, D. J. (1993). Daily hassles of persons with severe mental illness. *Hospital & Community Psychiatry, 44*(3), 276-278.

Shea, P., Li, C. S., & Pickett, A. (2006). A study of teaching presence and student sense of learning community in fully online and web-enhanced college courses. *The Internet and Higher Education, 9*(3), 175–190. https://doi.org/10.1016/j.iheduc.2006.06.005

Shin, N. (2003). Transactional presence as a critical predictor of success in distance learning. *Distance Education, 24*(1), 69-86. https://doi.org/10.1080/01587910303048

Snyder, E., Cai, B., DeMuro, C., Morrison, M. F., & Ball, W. (2018). A new single-item sleep quality scale: Results of psychometric evaluation in patients with chronic primary insomnia and depression. *Journal of Clinical Sleep Medicine, 14*(11), 1849-1857. https://doi.org/10.5664/jcsm.7478

Souza, L. K. D., & Hutz, C. S. (2016). Self-compassion in relation to self-esteem, self-efficacy and demographical aspects. *Paidéia, 26*(64), 181-188. https://doi.org/10.1590/1982-43272664201604

Steinberg, L. (2019). *Adolescence* (12th ed.). McGraw-Hill Education.

Stolow, D., Zuroff, D. C., Young, J. F., Karlin, R. A., & Abela, J. R. Z. (2016). A prospective examination of self-compassion as a predictor of depressive symptoms in children and adolescents. *Journal of Social and Clinical Psychology, 35*(1), 1-20. https://doi.org/10.1521/jscp.2016.35.1.1

Stone, C., & Springer, M. (2019). Interactivity, connectedness and 'teacher-presence': Engaging and retaining students online. *Australian Journal of Adult Learning, 59*(2), 146-169.

Substance Abuse and Mental Health Services Administration. (2022). *Key substance use and mental health indicators in the United States: Results from the 2021 National Survey on Drug Use and Health* (HHS Publication No. PEP22-07-01-005, NSDUH Series H-57). Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. https://www.samhsa.gov/data/report/2021-nsduh-annual-national-report

Sugianto, D., Sutanto, S. H., & Suwartono, C. (2020). Self-compassion as a way to embrace loneliness in university students. *Psikodimensia, 19*(1), 122-131. https://doi.org/10.24167/psidim.v19i1.2643

Szkody, E., Stearns, M., Stanhope, L., & McKinney, C. (2021). Stress-buffering role of social support during COVID-19. *Family Process, 60*(3), 1002-1015. https://doi.org/10.1111/famp.12618

Tamarit, A., De la Barrera, U., Schoeps, K., Castro-Calvo, J., & Montoya-Castilla, I. (2023). Analyzing the role of resilience and life satisfaction as mediators of the impact of COVID-19 worries on mental health. *Journal of Community Psychology, 51*, 234-250. https://doi.org/10.1002/jcop.22900

Tayebinik, M., & Puteh, M. (2012). *Sense of community: How important is this quality in blended courses*. Proceeding of the International Conference on Education and Management Innovation, Singapore.

Tran, N. T., Franzen, J., Jermann, F., Rudaz, S., Bondolfi, G., & Ghisletta, P. (2022). Psychological distress and well-being among students of health disciplines in Geneva, Switzerland: The importance of academic satisfaction in the context of academic year-end and COVID-19 stress on their learning experience. *PLoS ONE, 17*(4), Article e0266612. https://doi.org/10.1371/journal.pone.0266612

Tran, S. T., Grotkowski, K., Miller, S. A., Reed, B. W., Koven, M. L., Buscemi, J., & Greenley, R. N. (2021). Hassles predict physical health complaints in undergraduate students: A dynamic structural equation model analysis of daily diary data. *Psychology & Health, 36*(7), 828-846. https://doi.org/10.1080/08870446.2020.1800010

Twenge, J. M., Cooper, A. B., Joiner, T. E., Duffy, M. E., & Binau, S. G. (2019). Age, period, and cohort trends in mood disorder indicators and suicide-related outcomes in a nationally representative dataset, 2005-2017. *Journal of Abnormal Psychology, 128*(3), 185-199. https://doi.org/10.1037/abn0000410

Udayar, S., Urbanaviciute, I., Morselli, D., Bollmann, G., Rossier, J., & Spini, D. (2021). The LIVES Daily Hassles Scale and its relation to life satisfaction. *Assessment*. https://doi.org/10.1177/10731911211047894

United States Office of the Surgeon General. (2021). *Protecting youth mental health: The U.S. Surgeon General's Advisory* [Public Advisory]. https://www.hhs.gov/sites/default/files/surgeon-general-youth-mental-health-advisory.pdf

U.S. Department of Education Institute of Education Sciences National Center for Education Statistics. (2022). *Number and percentage of students enrolled in degree-granting postsecondary institutions, by distance education participation, location of student, level of enrollment, and control and level of institution: Fall 2019 and fall 2020.* https://nces.ed.gov/programs/digest/d21/tables/dt21_311.15.asp

Vanhalst, J., Klimstra, T. A., Luyckx, K., Scholte, R. H. J., Engels, R. C. M. E., & Goossens, L. (2012). The interplay of loneliness and depressive symptoms across adolescence: Exploring the role of personality traits. *Journal of Youth and Adolescence, 41*(6), 776-787. https://doi.org/10.1007/s10964-011-9726-7

Varma, P., Junge, M., Meaklim, H., & Jackson, M. L. (2021). Young people are more vulnerable to stress, anxiety and depression during COVID-19 pandemic: A global cross-sectional survey. *Progress in Neuro-Psychopharmacology & Biological Psychiatry, 109,* ArtID 110236. https://doi.org/10.1016/j.pnpbp.2020.110236

von Soest, T., Luhmann, M., & Gerstorf, D. (2020). The development of loneliness through adolescence and young adulthood: Its nature, correlates, and midlife outcomes. *Developmental Psychology, 56*(10), 1919-1934. https://doi.org/10.1037/dev0001102

Wakelin, K. E., Perman, G., & Simonds, L. M. (2022). Effectiveness of self-compassion-related interventions for reducing self-criticism: A systematic review and meta-analysis. *Clinical Psychology & Psychotherapy, 29*(1), 1-25. https://doi.org/10.1002/cpp.2586

Wang, J. (2021). The role of the dominant attribution style and daily hassles in the symptoms of depression and anxiety. *Psychology, Health & Medicine*, 1637-1648. https://doi.org/10.1080/13548506.2021.2017471

Wasserman, A. M., Crockett, L. J., Temmen, C. D., & Carlo, G. (2021). Bicultural stress and internalizing symptoms among U.S. Latinx youth: The moderating role of peer and parent support. *Cultural Diversity and Ethnic Minority Psychology, 27*(4), 769-780. https://doi.org/10.1037/cdp0000474

Weissbourd, R., Batanova, M., Lovison, V., & Torres, E. (2021). *Loneliness in America: How the pandemic has deepened an epidemic of loneliness and what we can do about it*. Making Caring Common. https://static1.squarespace.com/static/5b7c56e255b02c683659fe43/t/6021776bdd04957c4557c212/1612805995893/Loneliness+in+America+2021_02_08_FINAL.pdf

Werner, A. M., Tibubos, A. N., Rohrmann, S., & Reiss, N. (2019). The clinical trait self-criticism and its relation to psychopathology: A systematic review – Update. *Journal of Affective Disorders, 246*, 530-547. https://doi.org/10.1016/j.jad.2018.12.069

Wickham, S.-R., Amarasekara, N. A., Bartonicek, A., & Conner, T. S. (2020). The big three health behaviors and mental health and well-being among young adults: A cross-sectional investigation of sleep, exercise, and diet. *Frontiers in Psychology, 11*, Article 579205. https://doi.org/10.3389/fpsyg.2020.579205

Wicks, D., Craft, B. B., Lee, D., Lumpe, A., Henrikson, R., Baliram, N., Bian, X., Mehlberg, S., & Wicks, K. (2015). *An evaluation of low versus high collaboration in online learning* (EJ1079582). ERIC. https://eric.ed.gov/?id=EJ1079582

Williams, P. G., & Moroz, T. L. (2009). Personal vulnerability to stress-related sleep disruption: Pathways to adverse mental and physical health outcomes. *Personality and Individual Differences, 46*(5-6), 598-603. https://doi.org/10.1016/j.paid.2008.12.017

Wiseman, H., Guttfreund, D. G., & Lurie, I. (1995). Gender differences in loneliness and depression of university students seeking counselling. *British Journal of Guidance & Counselling, 23*(2), 231-243. https://doi.org/10.1080/03069889508253008

Wright, M., Creed, P., & Zimmer-Gembeck, M. J. (2010). The development and initial validation of a Brief Daily Hassles Scale suitable for use with adolescents. *European Journal of Psychological Assessment, 26*(3), 220-226. https://doi.org/10.1027/1015-5759/a000029

Yarnell, L. M., Stafford, R. E., Neff, K. D., Reilly, E. D., Knox, M. C., & Mullarkey, M. (2015). Meta-analysis of gender differences in self-compassion. *Self and Identity, 14*(5), 499-520. https://doi.org/10.1080/15298868.2015.1029966

Yu, E. A., & Chang, E. C. (2020). Depressive symptoms and life satisfaction in Asian American college students: Examining the roles of self-compassion and personal and relational meaning in life. *Asian American Journal of Psychology, 11*(4), 259-268. https://doi.org/10.1037/aap0000214

Zhang, H., Jasim, S. A., Suksatan, W., Alghazali, T. A. H., Doewes, R. I., Jalil, A. T., Patra, I., Singer, N., Failoc-Rojas, V. E., Marhoon, H. A., Mustafa, Y. F., Ramírez-Coronel, A. A., & Abdollahi, A. (2022). Moderating role of compassion in the link between fear of Coronavirus disease and mental health among undergraduate students. *Frontiers in Psychiatry, 13,* Article 990678. https://doi.org/10.3389/fpsyt.2022.990678

Zhang, W., Walkover, M., & Wu, Y. Y. (2021). The challenge of COVID-19 for adult men and women in the United States: Disparities of psychological distress by gender and age. *Public Health, 198,* 218-222. https://doi.org/10.1016/j.puhe.2021.07.017

Zhao, Y., & Zhao, G. (2015). Emotion regulation and depressive symptoms: Examining the mediation effects of school connectedness in Chinese late adolescents. *Journal of Adolescence*, *40*, 14-23. https://doi.org/10.1016/j.adolescence.2014.12.009

Zhu, S., Zhu, K., Jiang, D., & Shi, J. (2018). Social cognition and interaction training for major depression: A preliminary study. *Psychiatry Research*, *270*, 890-894. https://doi.org/10.1016/j.psychres.2018.11.008

Zimmerman, B. J. (2008). Investigating self-regulation and motivation: Historical background, methodological developments, and future prospects. *American Educational Research Journal*, *45*(1), 166-183. https://doi.org/10.3102/0002831207312909

TABLES AND FIGURES

Table 1

Participant Demographics

Variable	Frequency	Percent		
Gender				
Male	97	45.3		
Female	106	49.5		
Nonbinary	11	5.1		
Other	0	0.0		
Prefer not to answer	0	0.0		
Sex Assigned at Birth				
Male	97	45.3		
Female	113	52.8		
Other	1	0.5		
Prefer not to answer	3	1.4		
Classification				
Freshman	23	10.7		
Sophomore	58	27.1		
Junior	53	24.8		
Senior	60	28.0		
Graduate	20	9.3		
Had COVID-19				
Yes	128	59.8		
No	86	40.2		
	N	*M*	*SD*	Range
Age	214	21.63	2.07	18-25
Number of Extracurricular	214	0.57	0.99	0-6

Note. $N = 214$.

Table 2

Participant Racial and Ethnicity Characteristics

Variable	Frequency	Percent
Racial Background		
American Indian or Alaska Native	2	0.9
Asian	28	13.1
Black or African American	29	13.6
Multiracial	11	5.1
Native Hawaiian or Pacific Islander	2	0.9
Other	5	2.3
White	137	64.0
Ethnicity		
Hispanic	51	23.8
Non-Hispanic	162	75.7
Missing	1	0.5

Note. $N = 214$.

Table 3

Participant Programs/Majors

Program/Major Category	Frequency	Percent
Health Sciences/Services	38	17.8
Engineering/Math/Science	19	8.9
Technology/Computer Science	39	18.2
Business/Finance	41	19.2
Criminal Justice	8	3.7
Education	10	4.7
Social Sciences/Services	22	10.3
Fine Arts	11	5.1
Liberal Arts (e.g., English)	15	7.0
General/Undecided/Other	11	5.1

Note. $N = 214$.

Table 4

Descriptive and Reliability Statistics for Individual Predictor and Outcome Variables

Variable	*N*	*M*	*SD*	Range	Cronbach's α	McDonald's ω
COVID-19 Stressors	214	2.45	0.95	1-4.86	.89	.89
Daily Hassles	214	3.93	1.06	1.35-6.25	.89	.88
Self-Compassion (Total)	214	2.80	0.69	1-4.67	.86	.85
CSR	214	3.24	0.83	1-5	.85	.85
USR	214	2.37	0.84	1-5	.84	.85
Loneliness	214	8.40	2.54	4-12	.89	.89
OSC (Total)	214	2.92	0.74	1.24-4.96	.93	.93
OSC (Comfort)	214	3.31	0.90	1.13-5	.89	.89
OSC (Community)	214	2.01	0.99	1-5	.92	.92
OSC (Facilitation)	214	3.40	0.84	1-5	.82	.81
OSC (Interaction)	214	2.80	1.06	1-5	.90	.90
Perceived Stress	214	8.29	2.76	2-14	.72	.70
Sleep Quality	205	1.67	0.74	0-3	N/A	N/A
Physical Health	212	3.90	0.68	1.81-5	.87	.88
Anxiety	211	22.36	8.78	8-40	.95	.95
Depression	211	14.40	6.86	2-30.78	.88	.88
Life Satisfaction	211	18.03	7.94	5-35	.92	.92

Note. N = 214. CSR = Compassionate Self-Responding (i.e., the positive factor of self-compassion); USR = Uncompassionate Self-Responding (i.e., the negative factor of self-compassion); OSC = Online Student Connectedness.

Table 5

Correlations between Stressors and Self-Compassion

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. COVID-19 Stressors	—											
2. Daily Hassles	.43***	—										
3. Stressors (Composite)	.85***	.85***	—									
4. Self-Compassion (Total)	-.10	-.25***	-.21**	—								
5. Self-Kindness Subscale	.06	.03	.05	.78***	—							
6. Mindfulness Subscale	.05	.01	.03	.72***	.73***	—						
7. Common Humanity Subscale	.11	.01	.07	.68***	.65***	.59***	—					
8. Self-Judgment Subscale	.24***	.35***	.35***	-.77***	-.43***	-.39***	-.34***	—				
9. Over-Identification Subscale	.21**	.42***	.37***	-.69***	-.32***	-.25***	-.18**	.57***	—			
10. Isolation Subscale	.18**	.34***	.31***	-.67***	-.26***	-.17*	-.22**	.56***	.65***	—		
11. Compassionate Self-Responding	.08	.02	.06	.83***	.90***	.88***	.85***	-.44***	-.28***	-.25***	—	
12. Uncompassionate Self-Responding	.25***	.43***	.40***	-.84***	-.40***	-.32***	-.29***	.84***	.86***	.86***	-.38***	—

Note. $N = 214$.

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

Table 6

Correlations between Stressors and Online Student Connectedness

Variable	1	2	3	4	5	6	7	8
1. COVID-19 Stressors	—							
2. Daily Hassles	.43***	—						
3. Stressors (Composite)	.85***	.85***	—					
4. Online Student Connectedness (Total)	.06	.11	.10	—				
5. Comfort Subscale	.002	.05	.03	.77***	—			
6. Community Subscale	.03	.10	.08	.80***	.45***	—		
7. Facilitation Subscale	.15*	.17*	.19**	.75***	.44***	.43***	—	
8. Interaction Subscale	.01	.05	.04	.82***	.41***	.66***	.60***	—

Note. $N = 214$.

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

Table 7

Correlations between Outcome Variables

Variable	1	2	3	4	5	6	7
1. Loneliness	—						
2. Perceived Stress	.48***	—					
3. Anxiety	.61***	.66***	—				
4. Depression	.64***	.72***	.75***	—			
5. Life Satisfaction	-.54***	-.60***	-.42***	-.59***	—		
6. Sleep Quality	-.30***	-.40***	-.37***	-.51***	.37***	—	
7. Physical Health	-.41***	-.43***	-.59***	-.62***	.34***	.54***	—

Note. $N = 214$.

***$p < .001$.

Table 8

Correlations between Predictor and Outcome Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Age	—														
2. COVID-19 Stressors	.09	—													
3. Daily Hassles	.06	.43***	—												
4. Stressors (Composite)	.09	.85***	.85***	—											
5. Self-Compassion (Total)	.13	-.10	-.25***	-.21**	—										
6. Compassionate Self-Responding	.14*	.08	.02	.06	.83***	—									
7. Uncompassionate Self-Responding	-.08	.25***	.43***	.40***	-.84***	-.38***	—								
8. Online Student Connectedness	.13	.06	.11	.10	.34***	.36***	-.21**	—							
9. Loneliness	-.21**	.20**	.37***	.33***	-.44***	-.23***	.50***	-.17*	—						
10. Perceived Stress	-.14*	.23***	.43***	.39***	-.58***	-.37***	.58***	-.18**	.48***	—					
11. Anxiety	-.10	.36***	.51***	.51***	-.55***	-.28***	.63***	-.10	.61***	.66***	—				
12. Depression	-.13	.33***	.47***	.48***	-.55***	-.32***	.58***	-.14*	.64***	.72***	.75***	—			
13. Life Satisfaction	.09	-.08	-.23***	-.18**	.47***	.32***	-.45***	.21**	-.54***	-.60***	-.42***	-.59***	—		
14. Sleep Quality	.02	-.17*	-.30***	-.28***	.32***	.25***	-.29***	.27***	-.30***	-.40***	-.37***	-.51***	.37***	—	
15. Physical Health	.04	-.39***	-.44***	-.49***	.43***	.25***	-.47***	.20**	-.41***	-.43***	-.59***	-.62***	.34***	.54***	—

Note. $N = 214$.

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

Table 9

Results from an Exploratory Factor Analysis of COVID-19 Stress Questions

Item	Loading on Factor 1
Factor 1: COVID-19 Stress	
1. In the past six months, COVID-19 has affected my ability to see my friends.	.78
2. In the past six months, COVID-19 has affected my ability to see some of my family members.	.77
3. In the past six months, COVID-19 has affected my ability to do things (e.g., go to restaurants, see a movie, go on trips).	.76
4. COVID-19 presents a lot of uncertainty about the future. In the past six months, including today, how stressful have you found this uncertainty to be?	.73
5. COVID-19 presents a lot of uncertainty about the future. In the next six months, how stressful do you think COVID will be in your life?	.76
6. COVID-19 is a new virus. In the past six months, including today, how worried were you that someone in your household or extended family (i.e., grandparents, uncle/aunt, cousin) might become sick?	.66
7. The COVID-19 outbreak has changed and disrupted many existing plans. In the past six months, including today, how stressful have you found these disruptions to be?	.76

Note. $N = 214$. The extraction method was principal axis factoring with a promax rotation.

Table 10

Factor Loadings from a Confirmatory Factor Analysis of the SCS-SF

Factor	Subscale	*b*	*SE*	*z*	*p*	95% CI
Factor 1: Compassionate Self-Responding (CSR)						
	Self-Kindness	0.83	0.05	15.37	< .001	[0.73, 0.94]
	Mindfulness	0.77	0.06	13.52	< .001	[0.65, 0.88]
	Common Humanity	0.69	0.06	11.50	< .001	[0.57, 0.81]
Factor 2: Uncompassionate Self-Responding (USR)						
	Self-Judgment	0.99	0.09	10.47	< .001	[0.80, 1.17]
	Over-Identification	0.58	0.08	7.52	< .001	[0.43, 0.73]
	Isolation	0.56	0.07	7.63	< .001	[0.42, 0.70]

Note. N = 214. SCS-SF = Self Compassion Scale-Short Form; Compassionate Self-Responding = the positive factor of self-compassion; Uncompassionate Self-Responding = the negative factor of self-compassion.

Table 11

Fit Indices for Confirmatory Factor Analyses of SCS-SF

Index	One-Factor	Two-Factor
Comparative Fit Index (CFI)	0.693	0.998
Tucker-Lewis Index (TLI)	0.489	0.996
Root mean square error of approximation (RMSEA)	0.296	0.027
RMSEA 90% CI lower bound	0.259	0.000
RMSEA 90% CI upper bound	0.335	0.091
Goodness of Fit Index (GFI)	0.992	0.999
McDonald Fit Index (MFI)	0.674	0.997

Note. $N = 214$. SCS-SF = Self-Compassion Scale-Short Form. The two-factor model was the only of the two test models for which the model fit the data in the current study.

Table 12

Indirect Effects of Stressors on Perceived Stress via Loneliness, Moderated by Self-Compassion and Online Student Connectedness

Moderator(s)	Level of Mod. 1	Level of Mod. 2	*b*	*SE*	95% bootstrap CI
Self-Compassion (CSR and USR)					
	Low CSR	Low USR	0.01	0.07	[-0.17, 0.15]
	Low CSR	Mean USR	0.08	0.08	[-0.05, 0.26]
	Low CSR	High USR	0.19	0.14	[-0.05, 0.50]
	Mean CSR	Low USR	0.02	0.06	[-0.08, 0.15]
	Mean CSR	Mean USR	0.12	0.06	[0.02, 0.27]*
	Mean CSR	High USR	0.27	0.12	[0.06, 0.55]*
	High CSR	Low USR	0.05	0.08	[-0.08, 0.23]
	High CSR	Mean USR	0.18	0.10	[0.01, 0.41]*
	High CSR	High USR	0.35	0.17	[0.07, 0.75]*
Online Student Connectedness					
	Low		0.14	0.09	[0.003, 0.35]*
	Mean		0.12	0.06	[0.02, 0.27]*
	High		0.11	0.07	[-0.01, 0.27]

Note. $N = 214$.

*$p < .05$.

Table 13

Indirect Effects of Stressors on Anxiety via Loneliness, Moderated by Self-Compassion and Online Student Connectedness

Moderator(s)	Level of Mod. 1	Level of Mod. 2	*b*	*SE*	95% bootstrap CI
Self-Compassion (CSR and USR)					
	Low CSR	Low USR	0.42	0.42	[-0.26, 1.39]
	Low CSR	Mean USR	0.55	0.42	[-0.12, 1.54]
	Low CSR	High USR	0.68	0.54	[-0.14, 1.95]
	Mean CSR	Low USR	0.57	0.30	[0.05, 1.24]*
	Mean CSR	Mean USR	0.70	0.28	[0.23, 1.31]*
	Mean CSR	High USR	0.83	0.44	[0.16, 1.85]*
	High CSR	Low USR	0.71	0.34	[0.15, 1.46]*
	High CSR	Mean USR	0.84	0.34	[0.26, 1.55]*
	High CSR	High USR	0.98	0.52	[0.11, 2.16]*
Online Student Connectedness					
	Low		0.72	0.37	[0.12, 1.58]*
	Mean		0.72	0.28	[0.24, 1.33]*
	High		0.73	0.31	[0.18, 1.38]*

Note. $N = 211$.

*$p < .05$.

Table 14

Indirect Effects of Stressors on Depression via Loneliness, Moderated by Self-Compassion and Online Student Connectedness

Moderator(s)	Level of Mod. 1	Level of Mod. 2	*b*	*SE*	95% bootstrap CI
Self-Compassion (CSR and USR)					
	Low CSR	Low USR	0.21	0.22	[-0.16, 0.71]
	Low CSR	Mean USR	0.41	0.28	[-0.10, 1.02]
	Low CSR	High USR	0.67	0.44	[-0.16, 1.60]
	Mean CSR	Low USR	0.41	0.23	[0.03, 0.92]*
	Mean CSR	Mean USR	0.68	0.25	[0.23, 1.20]*
	Mean CSR	High USR	1.01	0.41	[0.27, 1.89]*
	High CSR	Low USR	0.68	0.34	[0.12, 1.44]*
	High CSR	Mean USR	1.01	0.38	[0.37, 1.83]*
	High CSR	High USR	1.41	0.55	[0.47, 2.63]*
Online Student Connectedness					
	Low		0.86	0.33	[0.23, 1.55]*
	Mean		0.67	0.23	[0.23, 1.15]*
	High		0.49	0.24	[0.09, 1.03]*

Note. $N = 211$.

*$p < .05$.

Table 15

Indirect Effects of Stressors on Life Satisfaction via Loneliness, Moderated by Self-Compassion and Online Student Connectedness

Moderator(s)	Level of Mod. 1	Level of Mod. 2	*b*	*SE*	95% bootstrap CI
Self-Compassion (CSR and USR)					
	Low CSR	Low USR	-0.16	0.23	[-0.67, 0.27]
	Low CSR	Mean USR	-0.45	0.30	[-1.09, 0.13]
	Low CSR	High USR	-0.84	0.55	[-1.96, 0.23]
	Mean CSR	Low USR	-0.45	0.27	[-1.10, -0.03]*
	Mean CSR	Mean USR	-0.85	0.31	[-1.50, -0.30]*
	Mean CSR	High USR	-1.35	0.57	[-2.59, -0.32]*
	High CSR	Low USR	-0.86	0.45	[-1.96, -0.17]*
	High CSR	Mean USR	-1.37	0.50	[-2.49, -0.54]*
	High CSR	High USR	-1.99	0.76	[-3.68, -0.69]*
Online Student Connectedness					
	Low		-0.77	0.34	[-1.53, -0.18]*
	Mean		-0.83	0.29	[-1.44, -0.29]*
	High		-0.87	0.38	[-1.66, -0.21]*

Note. $N = 211$.

*$p < .05$.

Table 16

Indirect Effects of Stressors on Sleep Quality via Loneliness, Moderated by Self-Compassion and Online Student Connectedness

Moderator(s)	Level of Mod. 1	Level of Mod. 2	*b*	*SE*	95% bootstrap CI
Self-Compassion (CSR and USR)					
	Low CSR	Low USR	0.01	0.02	[-0.04, 0.06]
	Low CSR	Mean USR	-0.004	0.02	[-0.05, 0.04]
	Low CSR	High USR	-0.03	0.03	[-0.10, 0.03]
	Mean CSR	Low USR	-0.01	0.02	[-0.05, 0.02]
	Mean CSR	Mean USR	-0.03	0.02	[-0.08, 0.01]
	Mean CSR	High USR	-0.06	0.04	[-0.16, 0.01]
	High CSR	Low USR	-0.03	0.03	[-0.11, 0.01]
	High CSR	Mean USR	-0.06	0.04	[-0.16, -0.003]*
	High CSR	High USR	-0.11	0.07	[-0.26, 0.01]
Online Student Connectedness					
	Low		-0.02	0.03	[-0.09, 0.04]
	Mean		-0.03	0.02	[-0.08, 0.01]
	High		-0.04	0.03	[-0.10, 0.01]

Note. $N = 205$.

*$p < .05$.

Table 17

Indirect Effects of Stressors on Physical Health via Loneliness, Moderated by Self-Compassion and Online Student Connectedness

Moderator(s)	Level of Mod. 1	Level of Mod. 2	*b*	*SE*	95% bootstrap CI
Self-Compassion (CSR and USR)					
	Low CSR	Low USR	0.002	0.02	[-0.03, 0.04]
	Low CSR	Mean USR	-0.01	0.01	[-0.04, 0.02]
	Low CSR	High USR	-0.02	0.02	[-0.07, 0.01]
	Mean CSR	Low USR	-0.01	0.01	[-0.04, 0.02]
	Mean CSR	Mean USR	-0.03	0.01	[-0.06, -0.004]*
	Mean CSR	High USR	-0.05	0.03	[-0.11, -0.01]*
	High CSR	Low USR	-0.03	0.02	[-0.08, 0.002]
	High CSR	Mean USR	-0.05	0.03	[-0.12, -0.01]*
	High CSR	High USR	-0.08	0.05	[-0.20, -0.01]*
Online Student Connectedness					
	Low		-0.02	0.02	[-0.05, 0.01]
	Mean		-0.03	0.01	[-0.06, -0.003]*
	High		-0.04	0.02	[-0.08, -0.004]*

Note. $N = 212$.

*$p < .05$.

Table 18

Direct Effects of Stressors and Self-Compassion on Outcome Variables as Part of a Structural Equation Model

Outcome	Predictor	*b*	*SE*	*z*	*p*	95% CI
Perceived Stress						
	Stressors	0.22	0.06	3.68	< .001***	[0.10, 0.33]
	CSR	-0.21	0.06	-3.66	< .001***	[-0.32, -0.10]
	USR	0.32	0.07	4.77	< .001***	[0.19, 0.45]
Anxiety						
	Stressors	0.29	0.05	5.55	< .001***	[0.19, 0.39]
	CSR	-0.10	0.05	-2.00	.046*	[-0.20, -0.002]
	USR	0.32	0.06	5.29	< .001***	[0.20, 0.43]
Depression						
	Stressors	0.27	0.05	5.19	< .001***	[0.17, 0.38]
	CSR	-0.16	0.05	-3.13	.002**	[-0.26, -0.06]
	USR	0.22	0.06	3.59	< .001***	[0.10, 0.33]
Life Satisfaction						
	Stressors	0.03	0.06	0.53	.598	[-0.09, 0.16]
	CSR	0.15	0.06	2.40	.016*	[0.03, 0.27]
	USR	-0.20	0.07	-2.77	.006**	[-0.34, -0.06]
Sleep Quality						
	Stressors	-0.20	0.07	-2.70	.007**	[-0.34, -0.06]
	CSR	0.19	0.07	2.63	.008**	[0.05, 0.33]
	USR	-0.06	0.08	-0.76	.450	[-0.23, 0.10]
Physical Health						
	Stressors	-0.38	0.06	-6.05	< .001***	[-0.51, -0.26]
	CSR	0.17	0.06	2.76	.006**	[0.05, 0.29]
	USR	-0.17	0.07	-2.41	.016*	[-0.31, -0.03]

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

Table 19

Indirect Effects of Stressors and Self-Compassion on Outcome Variables as Part of a Structural Equation Model

Outcome	Predictor → Mediator	*b*	*SE*	*z*	*p*	95% CI
Perceived Stress						
	Stressors → Loneliness	0.04	0.02	2.22	.027*	[0.004, 0.07]
	CSR → Loneliness	-0.01	0.01	-1.01	.313	[-0.04, 0.01]
	USR → Loneliness	0.07	0.03	2.71	.007**	[0.02, 0.13]
Anxiety						
	Stressors → Loneliness	0.07	0.02	2.77	.006**	[0.02, 0.11]
	CSR → Loneliness	-0.02	0.02	-1.05	.294	[-0.06, 0.02]
	USR → Loneliness	0.12	0.03	3.98	< .001***	[0.06, 0.18]
Depression						
	Stressors → Loneliness	0.08	0.03	2.88	.004**	[0.03, 0.13]
	CSR → Loneliness	-0.03	0.03	-1.06	.291	[-0.08, 0.02]
	USR → Loneliness	0.15	0.03	4.31	< .001***	[0.08, 0.21]
Life Satisfaction						
	Stressors → Loneliness	-0.09	0.03	-2.81	.005**	[-0.14, -0.03]
	CSR → Loneliness	0.03	0.03	1.05	.293	[-0.02, 0.08]
	USR → Loneliness	-0.16	0.04	-4.10	< .001***	[-0.23, -0.08]
Sleep Quality						
	Stressors → Loneliness	-0.03	0.02	-1.74	.081	[-0.07, 0.004]
	CSR → Loneliness	0.01	0.01	0.95	.342	[-0.01, 0.03]
	USR → Loneliness	-0.06	0.03	-1.95	.051	[-0.13, - < .001]
Physical Health						
	Stressors → Loneliness	-0.03	0.02	-1.86	.063	[-0.06, 0.002]
	CSR → Loneliness	0.01	0.01	1.00	.333	[-0.01, 0.03]
	USR → Loneliness	-0.06	0.03	-2.12	.034*	[-0.11, -0.004]

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

Table 20

Direct Effects of Stressors and Online Student Connectedness (OSC) on Outcome Variables as Part of a Structural Equation Model

Outcome	Predictor	*b*	*SE*	*z*	*p*	95% CI
Perceived Stress						
	Stressors	0.30	0.06	4.80	< .001***	[0.18, 0.42]
	OSC	-0.14	0.06	-2.42	.016*	[-0.26, -0.03]
Anxiety						
	Stressors	0.37	0.05	6.72	< .001***	[0.26, 0.47]
	OSC	-0.05	0.05	-1.05	.294	[-0.15, 0.05]
Depression						
	Stressors	0.32	0.05	5.99	< .001***	[0.22, 0.43]
	OSC	-0.08	0.05	-1.59	.111	[-0.18, 0.02]
Life Satisfaction						
	Stressors	-0.02	0.06	-0.29	.770	[-0.14, 0.10]
	OSC	0.12	0.06	2.10	.036*	[0.01, 0.24]
Sleep Quality						
	Stressors	-0.24	0.07	-3.40	< .001***	[-0.37, -0.10]
	OSC	0.26	0.06	3.99	< .001***	[0.13, 0.38]
Physical Health						
	Stressors	-0.43	0.06	-7.10	< .001***	[-0.55, -0.31]
	OSC	0.2	0.06	3.44	< .001***	[0.09, 0.31]

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

Table 21

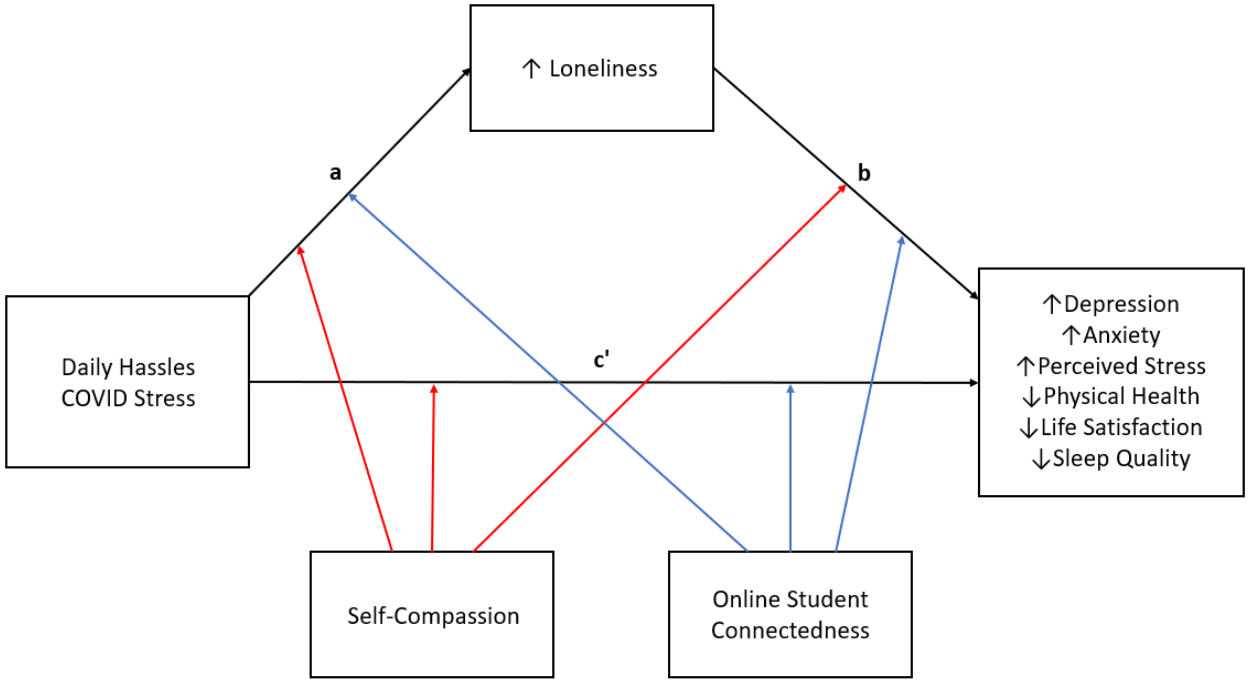
Indirect Effects of Stressors and Online Student Connectedness (OSC) on Outcome Variables as Part of a Structural Equation Model

Outcome	Predictor → Mediator	*b*	*SE*	*z*	*p*	95% CI
Perceived Stress						
	Stressors → Loneliness	0.13	0.03	4.05	< .001***	[0.07, 0.19]
	OSC → Loneliness	-0.06	0.02	-2.52	.012*	[-0.11, -0.01]
Anxiety						
	Stressors → Loneliness	0.17	0.04	4.89	< .001***	[0.10, 0.24]
	OSC → Loneliness	-0.08	0.03	-2.68	.007**	[-0.14, -0.02]
Depression						
	Stressors → Loneliness	0.19	0.04	5.04	< .001***	[0.11, 0.26]
	OSC → Loneliness	-0.09	0.03	-2.71	.007**	[-0.15, -0.02]
Life Satisfaction						
	Stressors → Loneliness	-0.19	0.04	-4.82	< .001***	[-0.27, -0.11]
	OSC → Loneliness	0.09	0.03	2.67	.008**	[0.02, 0.16]
Sleep Quality						
	Stressors → Loneliness	-0.07	0.03	-2.40	.016*	[-0.13, -0.01]
	OSC → Loneliness	0.03	0.02	1.92	.055	[-0.001, 0.07]
Physical Health						
	Stressors → Loneliness	-0.09	0.03	-3.15	.002**	[-0.14, -0.03]
	OSC → Loneliness	0.04	0.02	2.25	.025*	[0.01, 0.08]

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

Figure 1

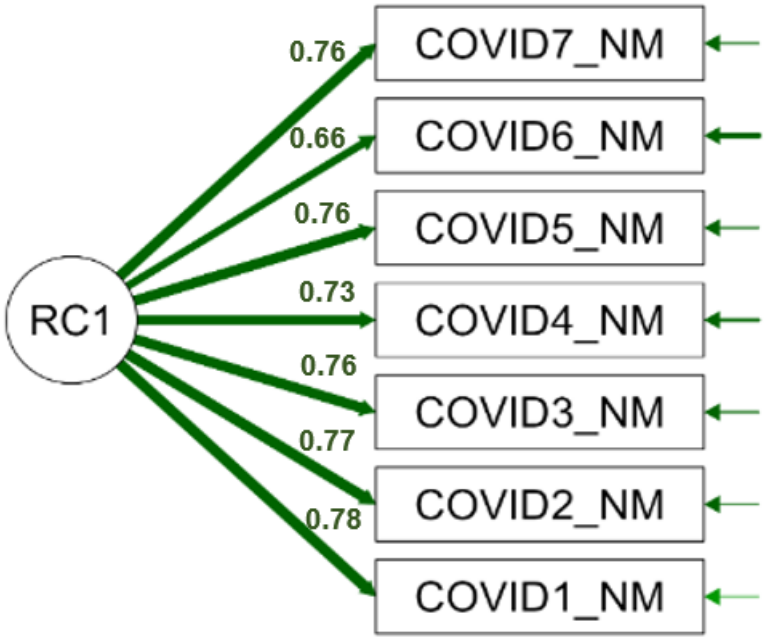
Theoretical Model for the Current Study



Note. In the model above, stressors (i.e., daily hassles and COVID-19-related stressors) predict adverse health outcomes (e.g., higher depression, lower life satisfaction) via loneliness as a mediator. However, self-compassion and online student connectedness moderate all paths in the model, such that the negative (direct and indirect) impacts of stressors on health outcomes should be weaker for emerging adults with higher levels of self-compassion and online student connectedness.

Figure 2

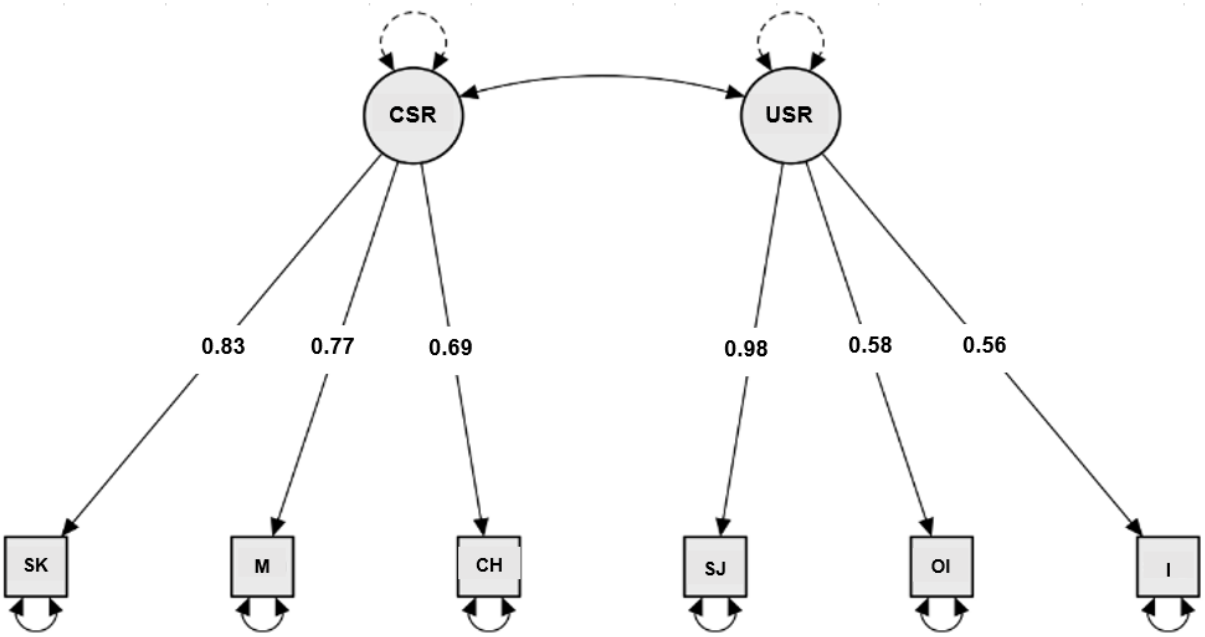
Path Diagram for the Exploratory Factor Analysis of COVID-19 Stressors



Note. *N* = 214. The path diagram above shows the seven COVID-19 stress items as loading onto the same overall factor. Numerical values shown are the factor loadings of each COVID-19 stress item with the overall factor.

Figure 3

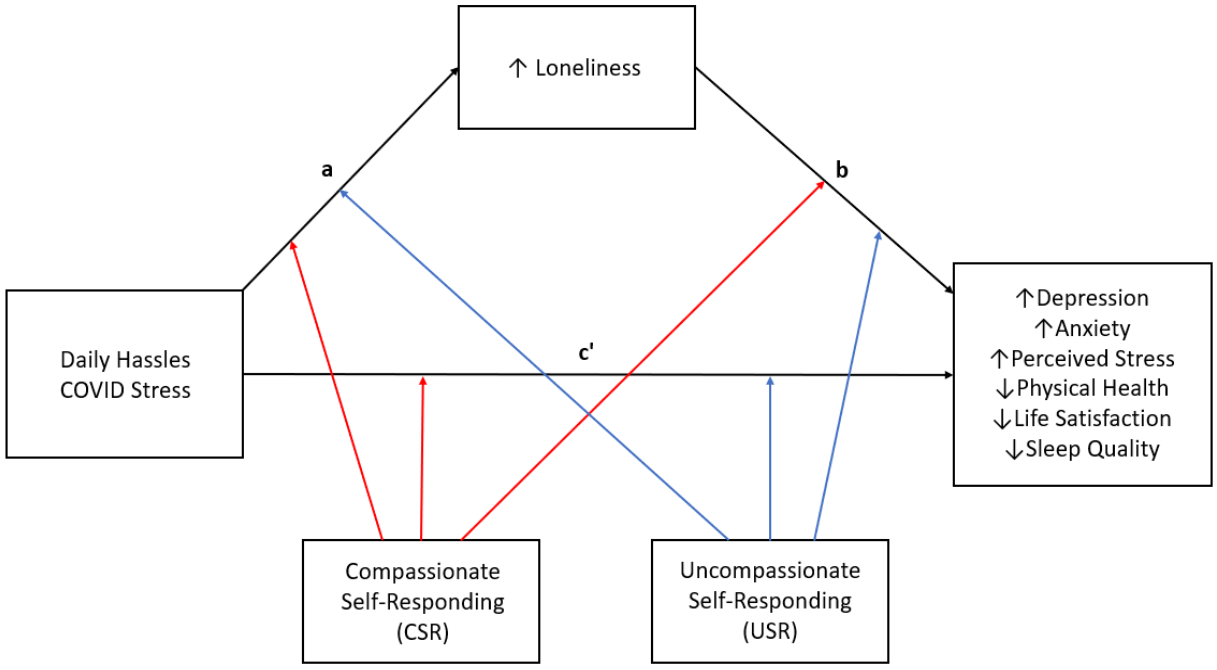
Two-Factor Structure of the SCS-SF Based on a Confirmatory Factor Analysis



Note. N = 214. SCS-SF = Self-Compassion Scale-Short Form; CSR = Compassionate Self-Responding; USR = Uncompassionate Self-Responding; SK = Self-Kindness; M = Mindfulness; CH = Common Humanity; SJ = Self-Judgment; OI = Over-Identification; I = Isolation. This figure shows the three positive subscales loading onto the overall positive self-compassion factor (CSR) and the three negative subscales loading onto the overall negative self-compassion factor (USR). Numerical values shown are the factor loadings of each subscale with its respective factor.

Figure 4

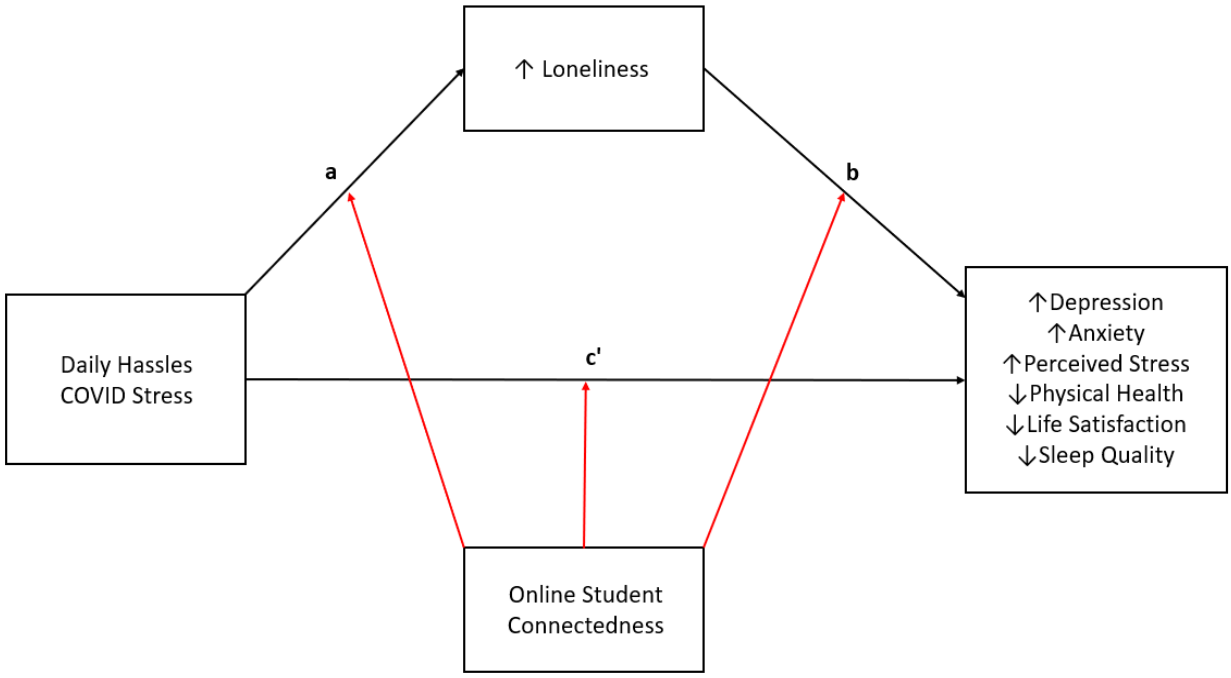
Theoretical Model for Hypotheses 1-3 (Using Model 76 in PROCESS)



Note. In the model above, stressors (i.e., daily hassles and COVID-19-related stressors) predict adverse health outcomes (e.g., higher depression, lower life satisfaction) via loneliness as a mediator. However, the positive (CSR) and negative (USR) factors of self-compassion moderate all paths in the model, such that the negative (direct and indirect) impacts of stressors on health outcomes should be weaker for emerging adults with higher CSR and lower USR.

Figure 5

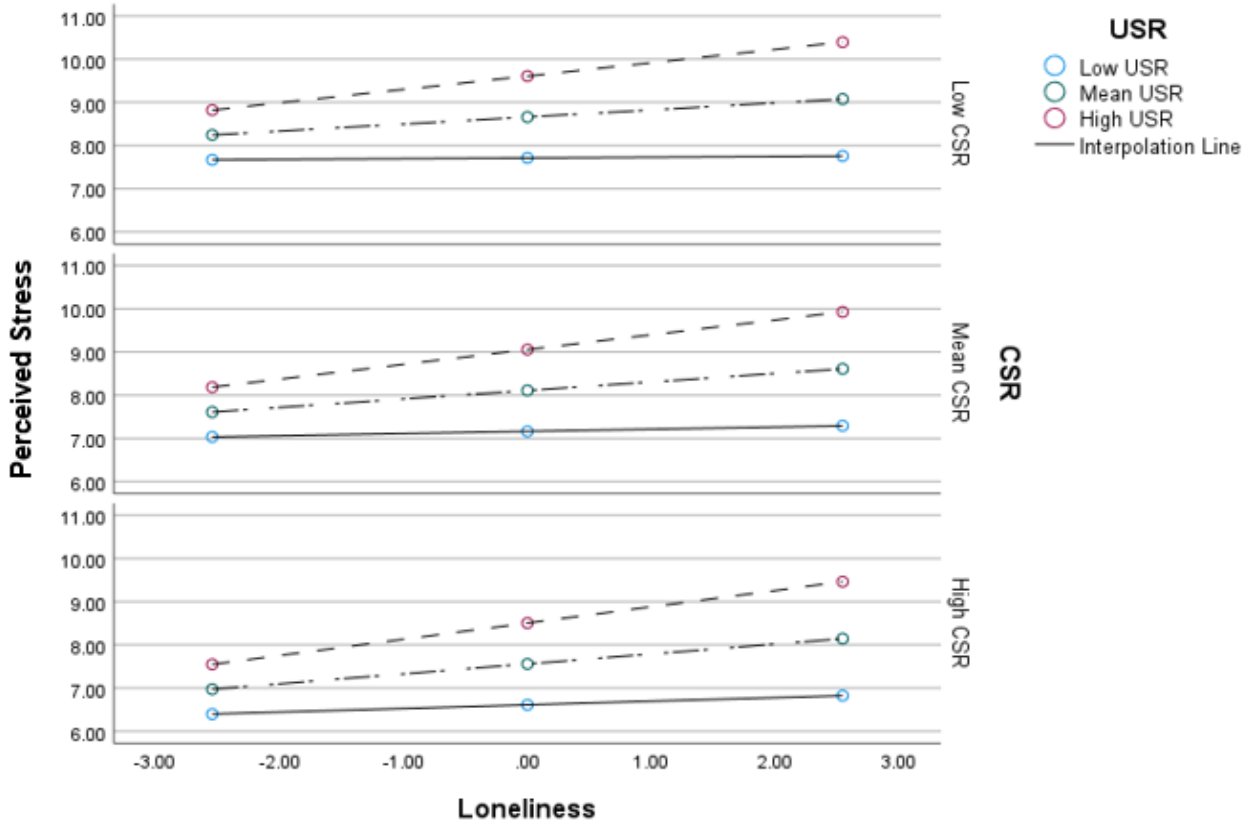
Theoretical Model for Hypothesis 4 (Using Model 59 in PROCESS)



Note. In the model above, stressors (i.e., daily hassles and COVID-19-related stressors) predict adverse health outcomes (e.g., higher depression, lower life satisfaction) via loneliness as a mediator. However, online student connectedness moderates all paths in the model, such that the negative (direct and indirect) impacts of stressors on health outcomes should be weaker for emerging adults with higher online student connectedness.

Figure 6

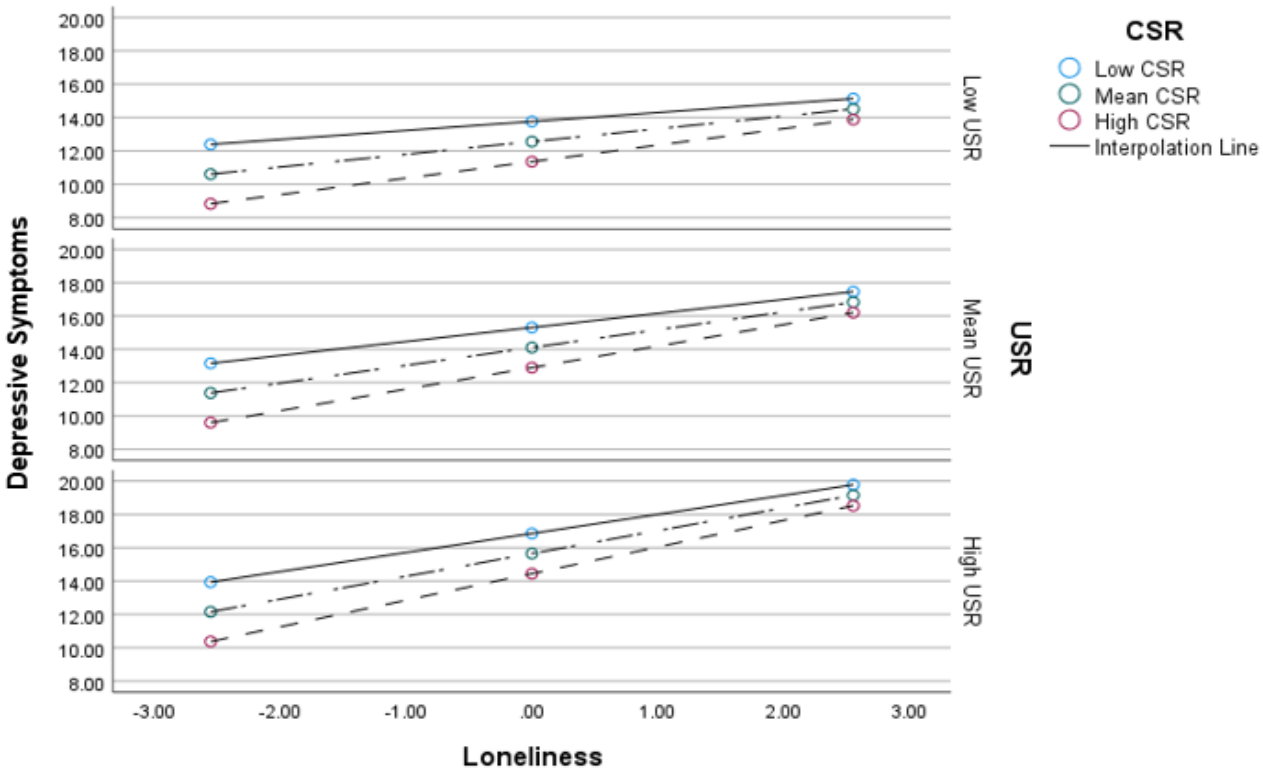
Uncompassionate Self-Responding (USR) x Compassionate Self-Responding (CSR) x Loneliness Interaction Predicting Perceived Stress



Note. N = 211. USR = Uncompassionate Self-Responding; CSR = Compassionate Self-Responding. The above graphs show the interaction between USR, CSR, and loneliness in predicting perceived stress. At all levels of CSR (low, mean, and high; represented by the three different graphs), loneliness predicted higher levels of perceived stress in participants with high or mean USR, but not low USR.

Figure 7

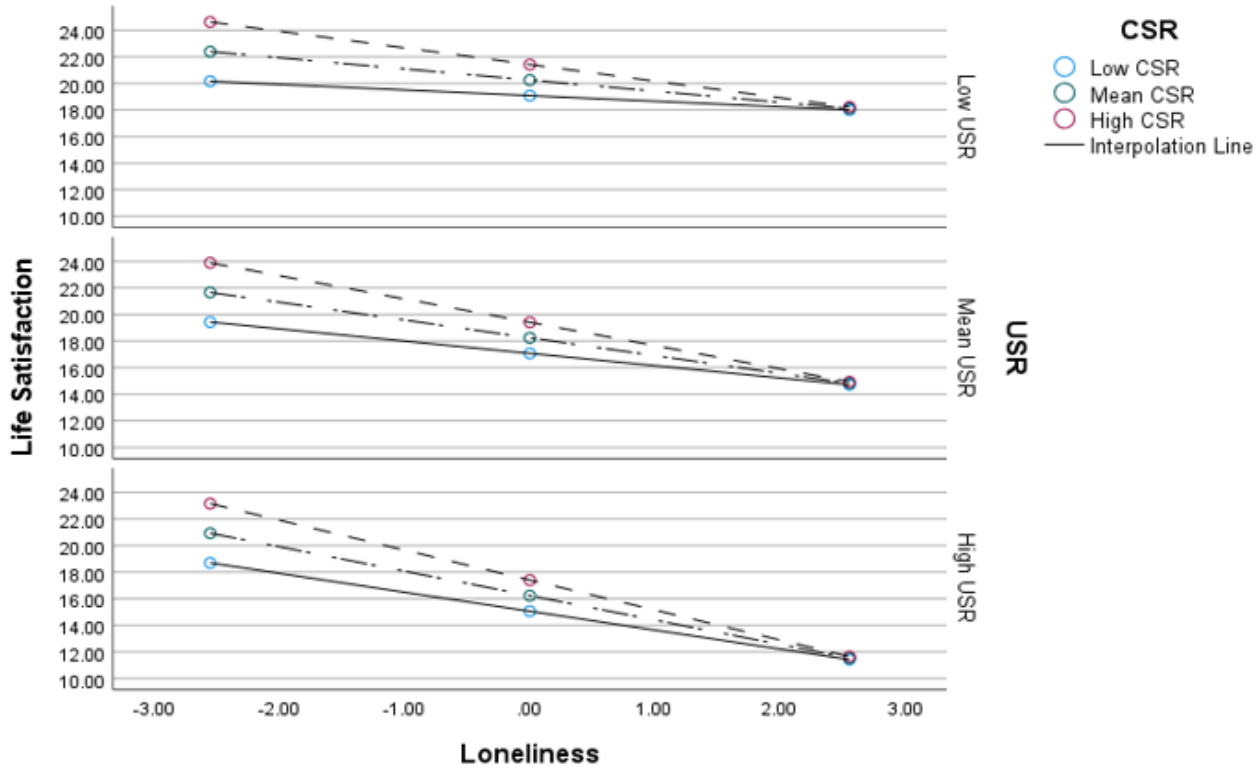
Uncompassionate Self-Responding (USR) x Compassionate Self-Responding (CSR) x Loneliness Interaction Predicting Depressive Symptoms



Note. N = 211. USR = Uncompassionate Self-Responding; CSR = Compassionate Self-Responding. The above graphs show the interaction between USR, CSR, and loneliness in predicting depressive symptoms. For those with mean or high USR (the bottom two graphs above), loneliness predicted higher depression regardless of levels of CSR. For those with low USR (the top graph), loneliness predicted higher depression for mean and high CSR, but not for low CSR.

Figure 8

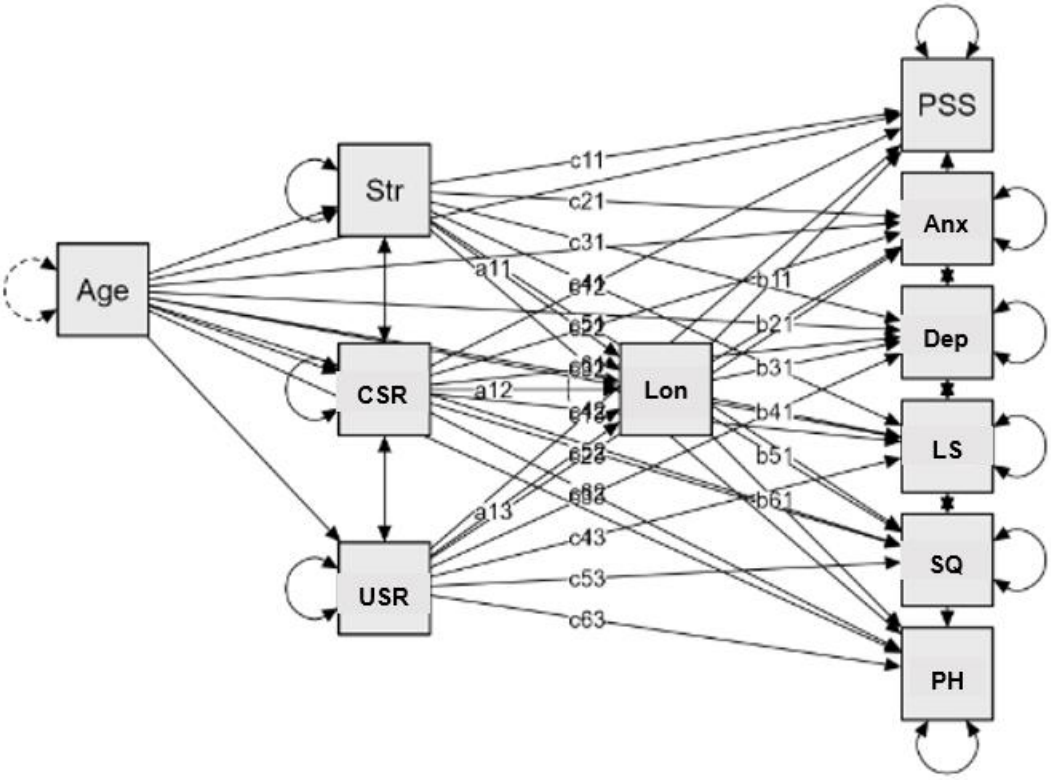
Uncompassionate Self-Responding (USR) x Compassionate Self-Responding (CSR) x Loneliness Interaction Predicting Life Satisfaction



Note. N = 211. USR = Uncompassionate Self-Responding; CSR = Compassionate Self-Responding. The above graphs show the interaction between USR, CSR, and loneliness in predicting life satisfaction. For those with mean or high USR (the bottom two graphs above), loneliness predicted lower life satisfaction regardless of levels of CSR. For those with low USR (the top graph), loneliness predicted lower life satisfaction for mean and high CSR, but not for low CSR.

Figure 9

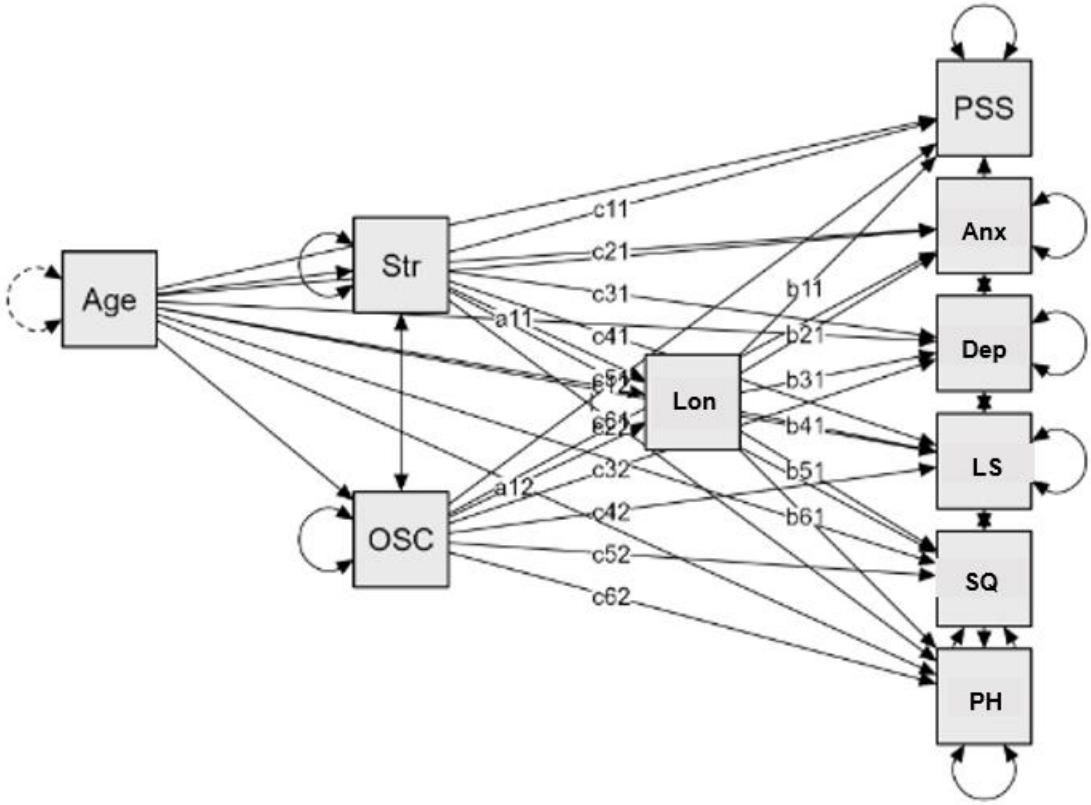
Structural Equation Model for Stressors and Self-Compassion Predicting Outcome Variables after Controlling for Age



Note. Str = stressors; CSR = Compassionate Self-Responding; USR = Uncompassionate Self-Responding; Lon = loneliness; PSS = perceived stress; Anx = anxiety; Dep = depression; LS = life satisfaction; SQ = sleep quality; PH = physical health. In this structural equation model, stressors, CSR, and USR are predicting loneliness, which is then predicting all health outcomes in the same model. Age is included as a covariate.

Figure 10

Structural Equation Model for Stressors and Online Student Connectedness Predicting Outcome Variables after Controlling for Age



Note. Str = stressors; OSC = online student connectedness; Lon = loneliness; PSS = perceived stress; Anx = anxiety; Dep = depression; LS = life satisfaction; SQ = sleep quality; PH = physical health. In this structural equation model, stressors and OSC are predicting loneliness, which is then predicting all health outcomes in the same model. Age is included as a covariate.

APPENDIX A

DEMOGRAPHIC QUESTIONS

1. What is your age?
    - **a.** Options: 18, 19, 20, 21, 22, 23, 24, 25, 26+
2. Do you currently take college/university classes?
    - **a.** Options: Yes, No
3. Are you enrolled in a fully online program and/or are you taking only online classes?
    - **a.** Options: Yes, No
4. Please enter the name of the school at which you take online college classes below. (open-ended)
5. What is the name of your current program/major? (open-ended)
6. What is your current classification (freshman, sophomore, graduate, etc.)?
    - **a.** Options: Freshman, Sophomore, Junior, Senior, Graduate
7. What is your gender?
    - **a.** Options: Male, Female, Nonbinary, Other, Prefer not to answer
8. What is your sex assigned at birth?
    - **a.** Options: Male, Female, Other, Prefer not to answer
9. What is your ethnicity?
    - **a.** Options: Hispanic, Non-Hispanic
10. What is your race?
    - **a.** Options: American Indian or Alaska Native, Asian, Black or African American, Multiracial, Native Hawaiian or Pacific Islander, Other, White

11. How many extracurricular activities/clubs do you participate in at your college?
    a. Options: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, More than 10
12. Please list all activities/clubs you participate in at school: (open-ended)
13. I have had the COVID-19 virus.
    a. Options: Yes, No

APPENDIX B

QUESTIONS FROM THE SCS-SF

Please read each statement carefully before answering. Indicate how often you behave in the stated manner, using the following scale: 1 (Almost never) to 5 (Almost always).

1. When I fail at something important to me I become consumed by feelings of inadequacy. **R**
2. I try to be understanding and patient towards those aspects of my personality I don't like.
3. When something painful happens I try to take a balanced view of the situation.
4. When I'm feeling down, I tend to feel like most other people are probably happier than I am. **R**
5. I try to see my failings as part of the human condition.
6. When I'm going through a hard time, I give myself the caring and tenderness I need.
7. When something upsets me I try to keep my emotions in balance.
8. When I fail at something that's important to me, I tend to feel alone in my failure. **R**
9. When I'm feeling down I tend to obsess and fixate on everything that's wrong. **R**
10. When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.
11. I'm disapproving and judgmental about my own flaws and adequacies. **R**
12. I'm intolerant and impatient towards those aspects of my personality I don't like. **R**

Note. R = reverse-coded items

APPENDIX C

QUESTIONS FROM THE OSCS

Please indicate how much you agree with the following statements on a scale from 1 (Strongly disagree) to 5 (Strongly agree).

1. If I need to, I will ask for help from my classmates.
2. I feel comfortable expressing my opinions and feelings in online courses.
3. I feel comfortable introducing myself in online courses.
4. I can effectively communicate in online courses.
5. I feel comfortable asking other students in online courses for help.
6. I have no difficulties with expressing my thoughts in my online courses.
7. I feel my instructors have created a safe online environment in which I can freely express myself.
8. I feel comfortable in the online learning environment provided by my program.
9. I feel emotionally attached to other students in my online courses.
10. I spend a lot of time with my online course peers.
11. My peers have gotten to know me quite well in my online courses.
12. I feel that students in my online courses depend on me.
13. I can easily make acquaintances in my online courses.
14. I have gotten to know some of the faculty members and classmates well.
15. Instructors integrate collaboration tools (e.g., chat rooms, wikis, and group areas) into online course activities.
16. In my online courses, instructors promote interaction between learners.
17. Instructors promote collaboration between students in my online courses.

18. My online instructors are responsive to my questions.
19. I receive frequent feedback from my online instructors.
20. My instructors participate in online discussions.
21. I relate my work to others' work in my online courses.
22. I discuss my ideas with other students in my online courses.
23. I collaborate with other students in my online courses.
24. I work with others in my online courses.
25. I share information with other students in my online courses.

Note. The OSCS consists of four subscales: community (items 1-8), comfort (items 9-14), facilitation (items 15-20), and interaction/collaboration (items 21-25).

APPENDIX D

CORRELATION TABLE FOR OSCS SUBSCALES AND OUTCOMES

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Online Student Connectedness (OSC) Total	—											
2. OSC Comfort Subscale	.77***	—										
3. OSC Community Subscale	.80***	.45***	—									
4. OSC Facilitation Subscale	.75***	.44***	.43***	—								
5. OSC Interaction Subscale	.82***	.41***	.66***	.60***	—							
6. Loneliness	-.17*	-.23***	-.16*	-.02	-.07	—						
7. Perceived Stress	-.18**	-.28***	-.12	.002	-.12	.48***	—					
8. Anxiety	-.10	-.17*	-.10	.06	-.08	.61***	.66***	—				
9. Depression	-.14*	-.25***	-.06	-.01	-.09	.64***	.72***	.75***	—			
10. Life Satisfaction	.21**	.21**	.19**	.07	.15*	-.54***	-.60***	-.42***	-.59***	—		
11. Sleep Quality	.27***	.22**	.23**	.13	.26***	-.30***	-.40***	-.37***	-.51***	.37***	—	
12. Physical Health	.20**	.16*	.19**	.08	.19**	-.41***	-.43***	-.59***	-.62***	.34***	.54***	—

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

APPENDIX E

QUESTIONS FROM THE BCSHS

Hassles are irritants that can range from minor annoyances to fairly major pressures, problems, or difficulties. They can occur few or many times. The following is a list of hassles – please rate the persistence (i.e., the combination of frequency and/or duration) for each one over the past month on a scale from 1 (No hassle; not at all persistent) to 7 (Extremely persistent hassle; high frequency and/or duration).

1. Academic difficulties
2. Contact with significant other
3. Future job prospects
4. Relationship with people at work
5. Money for necessary expenses
6. Noise
7. Organization of time
8. Weight
9. Household chores
10. Family expectations
11. Relationship with parent(s)
12. Academic bureaucracy
13. Preparing meals
14. Exercise
15. Owing money
16. Job satisfaction

17. Financial security

18. Relationship with significant other

19. Relationship with sibling (e.g., brother/sister)

20. College program requirements

APPENDIX F

COVID-19 STRESS QUESTIONS

Thinking about your thoughts, feelings, and behavior around the COVID-19 (coronavirus) illness, please answer the following questions:

1. In the past six months, COVID-19 has affected my ability to see my friends.
    a. Likert scale from 1 (Strongly disagree) to 5 (Strongly agree)
2. In the past six months, COVID-19 has affected my ability to see some of my family members.
    a. Likert scale from 1 (Strongly disagree) to 5 (Strongly agree)
3. In the past six months, COVID-19 has affected my ability to do things (e.g., go to restaurants, see a movie, go on trips).
    a. Likert scale from 1 (Strongly disagree) to 5 (Strongly agree)
4. COVID-19 presents a lot of uncertainty about the future. In the <u>past six months</u>, including today, how stressful have you found this uncertainty to be?
    a. Likert scale from 1 (Very slightly or not at all) to 5 (Extremely)
5. COVID-19 presents a lot of uncertainty about the future. Looking to the <u>next six months</u>, how stressful do you think COVID will be in your life?
    a. Likert scale from 1 (Very slightly or not at all) to 5 (Extremely)
6. COVID-19 is a new virus. In the <u>past six months</u>, including today, how worried were you that someone in your household or extended family (i.e., grandparents, uncle/aunt, cousin) might become sick?
    a. Likert scale from 1 (Very slightly or not at all) to 5 (Extremely)

7. The COVID-19 outbreak has changed and disrupted many existing plans. In the past six months, including today, how stressful have you found these disruptions to be?
    a. Likert scale from 1 (Very slightly or not at all) to 5 (Extremely)

APPENDIX G

QUESTIONS FROM THE ULS-4

Please indicate how often each of the statements below is descriptive of you, on a scale from 1 (Hardly ever) to 3 (Often).

How often do you feel:

1. That you lack company
2. Left out
3. Isolated from others
4. Lonely

APPENDIX H

QUESTIONS FROM THE PSS-4

The questions in this scale ask you about your feelings and thoughts during the last month. Please indicate your response to each question by selecting how often you felt or thought that way.

In the last month, how often have you felt:

1. That you were unable to control the important things in your life?
2. Confident about your ability to handle your personal problems? **R**
3. That things were going your way? **R**
4. Difficulties were piling up so high that you could not overcome them?

Note. R = reverse-coded. All items measured on a scale of 0 (Never) to 3 (Very often).

APPENDIX I

QUESTIONS FROM THE PSQI

The following questions relate to your usual sleep habits during the past month only. Your answers should indicate the most accurate reply for the majority of days and nights in the past month. Please answer all of the questions.

During the past month,

1. What time have you usually gone to bed? (open-ended)
2. How long (in minutes) has it taken you to fall asleep each night? (sliding scale of 0-100)
3. What time have you usually gotten up in the morning? (open-ended)
4. How many hours of actual sleep did you get at night? (open-ended)
5. How many hours were you in bed? (open-ended)
6. During the past month, how often have you had trouble sleeping because you:

   Likert scale of 0 (Not during the past month) to 3 (Three or more times a week)

   a. Cannot get to sleep within 30 minutes

   b. Wake up in the middle of the night or early morning

   c. Have to get up to use the bathroom

   d. Cannot breathe comfortably

   e. Cough or snore loudly

   f. Feel too cold

   g. Feel too hot

   h. Have bad dreams

   i. Have pain

   j. Have nightmares

7. During the past month, how often have you taken medicine (prescribed or “over the counter” to help you sleep?
    a. Likert scale of 0 (Not during the past month) to 3 (Three or more times a week)
8. During the past month, how often have you had trouble staying awake while driving, eating meals, or engaging in social activities?
    a. Likert scale of 0 (Not during the past month) to 3 (Three or more times a week)
9. During the past month, how would you rate your sleep quality overall?
    a. Likert scale of 0 (Very good) to 3 (Very bad)

APPENDIX J

QUESTIONS FROM THE CDC HEALTH-RELATED QOL SCALE AND THE PHQ-15

CDC Question:

Would you say that in general your health is:

Likert scale of 1 (Excellent) to 5 (Poor)

PHQ-15:

During the ***past 4 weeks***, how much have you been bothered by any of the following problems?

Likert scale of 1 (Not bothered at all) to 5 (Bothered a lot)

1. Stomach pain
2. Back pain
3. Pain in your arms, legs or joints (knees, hips, etc.)
4. Menstrual cramps or other problems with your periods (leave blank if not applicable)
5. Headaches
6. Chest pain
7. Dizziness
8. Fainting spells
9. Feeling your heart pound or race
10. Shortness of breath
11. Pain or problems during sexual intercourse
12. Constipation, loose bowels, or diarrhea
13. Nausea, gas, or indigestion
14. Feeling tired or having low energy
15. Trouble sleeping

APPENDIX K

QUESTIONS FROM THE PROMIS ANXIETY SCALE

Please respond to each question or statement by marking one box per row.

In the past 7 days...

Likert scale from 1 (Never) to 5 (Always)

1. I felt fearful.
2. I found it hard to focus on anything other than my anxiety.
3. My worries overwhelmed me.
4. I felt uneasy.
5. I felt nervous.
6. I felt like I needed help for my anxiety.
7. I felt anxious.
8. I felt tense.

APPENDIX L

QUESTIONS FROM THE CESD-10

Below is a list of some of the ways you may have felt or behaved. Please indicate how often you have felt this way during the past week by checking the appropriate box for each question.

Likert scale from 0 (Rarely or none of the time/less than one day) to 3 (All of the time/5-7 days)

1. I was bothered by things that usually don't bother me.
2. I had trouble keeping my mind on what I was doing.
3. I felt depressed.
4. I felt that everything I did was an effort.
5. I felt hopeful for the future. **R**
6. I felt fearful.
7. My sleep was restless.
8. I was happy. **R**
9. I felt lonely.
10. I could not "get going."

Note. R = reverse-coded.

APPENDIX M

QUESTIONS FROM THE SWLS

Below are five statements with which you may agree or disagree. Using the scale below, indicate your agreement with each item by clicking the appropriate circle.

Likert scale from 1 (Strongly disagree) to 7 (Strongly agree)

1. In most ways my life is close to ideal.
2. The conditions of my life are excellent.
3. I am satisfied with my life.
4. So far I have gotten the important things I want in life.
5. If I could live my life over, I would change almost nothing.

APPENDIX N

PROLIFIC RECRUITMENT LANGUAGE

This study is specifically for participants ages 18-25 who are currently enrolled in **fully online programs and/or only online college classes.** In this study, you will answer demographic questions about yourself. You will also be asked questions about stressors as well as psychological and physical health outcomes. Finally, you will answer questions about self-compassion (how you relate to yourself when going through a rough time) and online student connectedness. The survey should take approximately 20 minutes to complete, and you will be compensated $4.00 for participation.

APPENDIX O

COVER LETTER FOR UTA NURS 4325 STUDENTS

UNIVERSITY OF TEXAS ARLINGTON | Department of Psychology

Dear Student,

I am a doctoral student in the department of Psychology at the University of Texas at Arlington. My dissertation project is examining the relationship between stressors in everyday life and health outcomes in emerging adult (18-25 years old) online students. If you agree to participate in the study, you will be asked questions about your demographic information, daily experiences, psychological health outcomes (e.g., loneliness), and physical health outcomes (e.g., sleep quality).

Your participation in this survey could help us learn more about how experiences in everyday life impact health outcomes in emerging adult online students, and how online student connectedness and self-compassion can help protect emerging adult online students from the effects of daily hassles and other stressors. By participating in this survey, you will also be helping me complete my doctoral dissertation.

Completing this survey will take about 20 minutes. The following link will provide you with more information about the study and will take you to the survey if you agree to participate:

<SURVEY_LINK>

Your answers will be kept confidential, and all data collected for this study will be stored in a secure, password-protected computer or account. I appreciate in advance your time and cooperation in being part of my research study.

If you have any questions or concerns, please feel free to contact me at Abigail.heller@mavs.uta.edu.

Thanking you in advance,

Abigail C. Heller, M.Ed., M.S.
Doctoral Student
The University of Texas at Arlington
Department of Psychology

APPENDIX P

UTA SONA PARTICIPANT POOL RECRUITMENT LANGUAGE

This study examines the experiences of **emerging adult (18-25 years old)** college students who are taking **only online classes.** Specifically, the study focuses on the relationship between stressors and health outcomes (e.g., depression, sleep quality) via loneliness, and how self-compassion and online student connectedness can impact those relationships.

APPENDIX Q

FLYER FOR SOCIAL MEDIA RECRUITMENT

For my dissertation, I am conducting a study on how stressors affect health outcomes in 18-25-year-old college students **taking only online classes.** The survey takes about 20 minutes to complete. If you or someone you know is 18-25 years old and is taking **all online** college courses, please use/forward the link below or scan the QR code to participate. Thank you so much! Link: https://utaedu.questionpro.com/dailyhassles