Evidence That Intellectual Humility Can Be Heightened via a Self-Affirmation Induction

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Author Note
This research was conducted with IRB approval under the direction of Ted V. Cascio, advisor to the Palm Beach State College Psi Beta Chapter. All guidelines of the APA regarding informed consent and ethical treatment of participants were followed. In addition, we would like to thank Dr. Cascio for his editorial feedback on multiple drafts of this manuscript. Correspondence concerning this article should be addressed to Lily G. Marie, Palm Beach State College, Palm Beach Gardens, FL 33410. Email: marielg@my.palmbeachstate.edu

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Abstract
The dispositional trait of intellectual humility (IH) refers to the degree to which people recognize their beliefs might be fallible. For the most part, it has been conceptualized as a “trait” variable that reflects a stable individual difference, however, in the current study, we examined whether IH also has “state”-like characteristics by testing whether it is susceptible to modification via a self-affirmation (SA) induction, which in previous research has been shown to reduce defensiveness in the face of information that threatens the self. To test this hypothesis, we first threatened participants by having them read a counter-attitudinal essay that contradicted their belief in God and then allowed half of the participants to affirm the self by writing about an important value that they hold. Following this SA induction, all participants completed a brief IH measure. Consistent with our hypothesis, statistical analyses revealed that participants in the SA condition reported significantly higher IH than participants in the control (no affirmation) condition. These findings suggest that in addition to having features associated with relatively fixed personality traits, IH is also amenable to change on the basis of a simple situational manipulation under conditions of self-threat.

Keywords: intellectual humility, self-affirmation, values affirmation, state, trait

Although everyday perception and judgment are susceptible to a host of powerful errors and systematic biases, people nevertheless tend to hold confidently to their assumptions, beliefs, and decisions rather than tolerate a position of cognitive uncertainty. While this sort of overconfidence is indeed the norm (Koehler, 1991; Moore & Healy, 2008), people can also differ in terms of
their willingness to entertain the possibility that their beliefs might be incorrect or incomplete.

**Intellectual Humility**

The dispositional trait of intellectual humility (IH) refers to the degree to which people recognize that their beliefs might be fallible (Leary et al., 2017). This can apply to both matters of fact and opinion; this can also manifest through openness to other people’s views or by a lack of rigidity and conceit regarding one’s own beliefs. Originating within the philosophical field of virtue epistemology (Baehr, 2012; Roberts & Wood, 2006; Whitcomb et al., 2015), this trait has only recently become the target of empirical studies in the behavioral sciences, which have found that IH predicts a range of favorable cognitive and affective outcomes pertaining to the processing of viewpoints that conflict with one’s own, including reactions to counter-attitudinal information (Hopkin et al., 2014; Krumrei-Mancuso & Newman, 2020; Leary et al., 2017; Porter, 2015), motivations to further investigate such information (Koetke, et al., 2021; Porter, 2015), and perceptions of ideological opponents (Colombo, et al., 2020; Leary et al., 2017; Stanley et al., 2020). Based on this research it has become evident that, in general, individuals high in IH appear better able to assimilate views that threaten their pre-existing beliefs, and also better able to tolerate the people who hold those views.

Across these various traditions, IH has been treated as a stable dispositional quality that has the potential to predict a range of desirable outcomes. In the current study, we aim to extend this previous literature by examining whether IH can be temporarily enhanced through a self-affirmation induction.

**Self-Affirmation**

Self-affirmation (SA) theory (Steele, 1988) posits that individuals are motivated to maintain global feelings of self-worth following a perceived threat to the self by means of various psychological defenses (Sherman & Cohen, 2002; Sherman & Hartson, 2011) and that one of the more adaptive of these defense strategies is to restore self-perceptions of moral integrity in a separate domain from the one that is threatened. For example, when an athlete experiences defeat in a sporting context, she can deflect the resulting self-threat by privately affirming an alternate identity (e.g., parent, professional, religious devotee, etc.). The experimental SA paradigm, therefore, involves offering participants the opportunity to affirm their most important values, which provides an effective means to reestablish the integrity and self-worth that have been threatened, thereby lowering subsequent defensiveness while simultaneously bolstering resilience and equanimity in the face of the threat.

A large body of empirical work has demonstrated that SA lowers defensiveness in connection with a diverse range of threatening information, which in turn reduces bias in assimilating such information (e.g., Cohen et al., 2000; Cohen et al., 2005; Correll et al., 2004). These effects have been demonstrated in the domains of threatening health information (e.g., Harris & Napper, 2005; Reed & Aspinwall, 1998; Sherman et al., 2000), evaluative stress (e.g., Creswell et al., 2005; Taylor et al., 2003), and cognitive dissonance (e.g., Blanton et al., 2001; Matz & Wood, 2005).

On the other hand, the unfulfilled need to defend a valued identity or self-view is a major source of biased processing and closed-mindedness (Sherman & Cohen, 2006). Because strongly held beliefs are often connected to important identities, they may be surrendered only with significant hesitancy, and they may endure even when they conflict with reality (e.g., Abelson, 1986; Sears & Funk, 1991). Thus, we expect that the lowered defensiveness brought about by SA may enhance IH, a cognitive and affective stance that is fundamentally marked by openness, inquisitiveness, and a willingness to tolerate epistemic vulnerability.

**The Current Study**

Therefore, in the current study, we hope to experimentally test this potential impact of SA on IH by manipulating SA and measuring indices of IH in the presence of self-threat. Specifically, our hypothesis is that, upon being threatened, participants...
that are subsequently self-affirmed will exhibit higher levels of IH than participants who are not self-affirmed. **Method**

**Participants**

The participants (N = 133) included students enrolled in introductory-level psychology courses at a southeastern college of moderate size. All participants received extra credit as an incentive for their participation in the study which amounted to 3% of the total course grade. Complete datasets were obtained from 133 participants (38 males, 95 females) ranging in age from 18 to 49 (M = 22.39, SD = 5.61). Datasets from five participants were excluded for failure to follow the study instructions. **Measures & Procedure**

All prospective participants were notified via email about the research project, and they were offered an opportunity to participate for extra credit. At the outset, all participants read a consent form describing the nature of the study and the instruments and measures included in the study protocol. Participants who chose to participate then digitally signed the form. Upon completing the form, participants then clicked a second link that directed them to the online study, which was administered via Qualtrics online study software.

In the online study, participants were first prompted to make up a random and anonymous 5-digit subject ID number and answer a few demographic questions, including their age and preferred gender identification. Next, all participants underwent a self-threat induction (adapted from Leary et al., 2017), which is designed to threaten a core belief. This procedure involved two steps. In step 1, participants responded to a binary, yes-no question that asked about their belief in God. In step 2, they were then prompted to read one of two counter-attitudinal essays that were assigned in such a way so as to contradict their previously expressed belief. That is, if participants indicated belief in God, then they read an essay arguing that God does not exist, and vice-versa.

Following the threat induction, participants were then randomly assigned to either the self-affirmation (SA) or non-affirmation (NA) condition. In the SA condition participants were prompted to rank six values from most to least important and then given five minutes to write about why their highest-ranked value is important to them. Similarly, in the NA condition participants were instructed to rank the six values, but they were then asked to write about why their lowest-ranked value might be important to another student at the same institution. This values-oriented procedure and others similar to it have been found to be highly effective for inducing SA in previous research (see McQueen & Klein, 2006, for a review).

Participants then completed the Intellectual Humility Scale (IHS; Leary et al., 2017), a 6-item self-report questionnaire that measures individual differences in IH. Participants responded to the six items, which included questions such as, “I reconsider my opinions when presented with new evidence,” and “I accept that my beliefs and attitudes may be wrong,” on a 1 (Not at all like me) to 5 (Very much like me) scale. This measure was found to have marginal internal consistency reliability (α = .60).

On the final page of the study, participants clicked on a link that redirected them to a separate webpage where they then entered their names and thereby received extra credit for their participation. **Results**

We hypothesized that the mean IH score in the SA condition would be greater than the mean IH score in the NA condition. In order to test this hypothesis, we conducted a two-sample t-test, in which the mean IH score in the experimental SA group (M = 24.16; SD = 3.27) was significantly higher than the mean IH score in the control (NA) group (M = 22.83; SD = 3.62; t(131) = 2.23; p < .05; d = .39). See Figure 1 for a graphical depiction of these results.
Figure 1

Mean Intellectual Humility Scores by Study Condition

Note. SA CONDITION = self-affirmation condition; NA CONDITION = non-affirmation condition. Error bars represent standard errors.
Discussion
The current study provides evidence that IH can be increased via a self-affirmation induction. This finding is broadly consistent with previous research, which has shown that SA lowers defensiveness in the face of a range of threats to the self that appear in the form of counter-attitudinal information (Cohen et al., 2000; Cohen et al., 2005; Correll et al., 2004). Our findings serve to extend this literature by suggesting that this lowered defensiveness can result in heightened IH. In addition, by demonstrating that intellectual humility is susceptible to manipulation these findings represent a significant contribution to existing theory and research around IH itself. Specifically, this new evidence implies that in addition to its role as a so-called “trait” variable, IH can also be conceptualized as a “state” variable (see Fridhandler, 1986 for a discussion of the “state-trait” distinction) amenable to change on the basis of situational factors. Finally, from a practical perspective, establishing a means to bolster IH may be particularly important given its potential relevance to critical thinking, sound judgment and decision-making, civil political discourse, and other similarly desirable common goods.

Despite these strengths, the current study suffers from a number of limitations. First, although the mean difference in IH scores between the two SA study conditions was statistically significant the effect size (d = .39) was modest (Cohen, 1988; Cohen, 1992), which suggests either that the manipulation was not especially strong or that the instrument we used to measure IH was not especially sensitive, or both. Second, with a Cronbach’s alpha of .60, the IH scale we utilized in this study did not achieve adequate internal consistency reliability (Hulin, Netemeyer, & Cudeck, 2001), indicating that this instrument may contain items that are not representative of the IH construct or simply too few items, and thus that it may be somewhat prone to random measurement error (Kline, 1994; Nunnally & Bernstein, 1994). This lack of reliability may in turn have contributed to the modest effect size that we observed. Third, we only measured self-reports of IH and did not also include a behavioral outcome measure that could be considered indicative of this construct, which limits the potential real-world applicability of our findings. Fourth, given the limited time frame of the study, our results provide scant insight into the longevity of the effect. Therefore, it remains plausible that SA enhances IH only temporarily and then the effect vanishes rather quickly.

Future research should therefore address these concerns by investigating stronger manipulations of SA in connection with IH, incorporating other measures of IH in lieu of or in addition to the one we used in this study (e.g., the measure devised by Krumrei-Mancuso & Rouse, 2016), testing behavioral measures (e.g., willingness to investigate additional counter-attitudinal information or converse with individuals who express counter-attitudinal viewpoints), and utilizing longitudinal designs that extend the period of time during which IH is measured following the SA manipulation, which would allow for firmer conclusions regarding the durability of this effect.

Everything considered, the findings of this study represent a meaningful addition to the current theoretical understanding of both IH and SA, as well as a useful new approach to boosting levels of IH under conditions of self-threat.

References


An Examination of Factors Predicting College Connectedness During a National Pandemic

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Abstract

The feeling of connectedness with others in society reduces suicide, improves well-being, and enhances effective learning (Jones et al., 2022; Jorgenson et al., 2018). This study examined possible variables contributing to campus connectedness (CC) among students and if such connectedness decreased during the COVID-19 pandemic. We hypothesized that emotional stability, self-efficacy for initiating conversation, extraversion, and participation in an honor society would positively predict CC. We also expected CC scores to decrease due to the COVID-19 pandemic. To test these hypotheses, we distributed an online questionnaire to Orange Coast College students as part of the 2021-22 Psi Beta National Research Project. Measures included Campus Connectedness, Interpersonal Communication Efficacy Scales, and the Ten Item Personality Inventory (TIPI). The project received 1,412 useful responses from community college students nationwide. First, a comparison of CC scores from the current questionnaire and a pre-pandemic survey found a decrease in CC. Next, a multiple regression analysis indicated that all hypothesized variables, except extraversion, were significant predictors for CC, collectively accounting for approximately 15% of CC variability. Further regression analyses revealed that self-efficacy for initiating conversation significantly mediated the relationship between extraversion and CC. Lastly, participation in an honor society significantly increased CC. Based on our findings, colleges may want to find ways to increase campus connectedness by helping students increase their confidence in initiating conversation and encouraging them to participate in honor societies or other campus organizations.

Keywords: connectedness, extraversion, self-efficacy

College connectedness or campus connectedness (CC) is a personal sense of belonging to a college community. More specifically, students’ sense of connectedness to their college involves both the social (e.g., building genuine connections with peers, participating in social groups) and institutional spheres (e.g., perception of support from campus faculty and staff) that influence each other (Jorgenson et al., 2018). For example, students who felt genuine, personal care from faculty and staff reported better institutional support (Jorgenson et al., 2018). CC positively correlates with higher student retention rates, academic success, and student satisfaction (Jorgenson et al., 2018), while it negatively correlates with stress (Samson, 2021). Furthermore, students with higher CC tend to show
better psychological well-being compared to those with lower CC. During the COVID-19 pandemic, high school students who felt close to friends, teachers, or staff members at their schools had significantly lower rates of persistent sadness or hopelessness, suicidal ideation, and suicide attempts than those who felt less connected (Jones et al., 2022). In light of the mental health crisis sparked by the COVID-19 pandemic, with 87% of Gen Z college students reporting increased levels of stress due to their education, identifying possible predictors of CC appears all the timelier and more urgent (APA, 2020).

Self-efficacy for interpersonal communication may be one of the predictors of CC. Self-efficacy is a term coined by Albert Bandura that seeks to agglomerate three key points in human motive behavior: (a) initiation of coping mechanisms, (b) the amount of effort one is willing to distribute, and (c) the longevity of such behavior, even when one faces barriers in positive experience (Bandura, 1977). Expanding on this, competence in interpersonal communication (i.e. the sharing of thoughts, ideas, and feelings between two or more individuals) has been shown to be correlated to self-efficacy (Erozkan, 2013). Extensive research has shown a positive correlation between high levels of self-efficacy and interpersonal communication confidence and competence (Hopf & Colby, 1992).

The personality traits of extraversion and emotional stability may also predict CC. The Big Five Model is the most established personality paradigm today, and it identifies five personality traits (i.e., consistent, individual characteristics), which are as follows: openness, conscientiousness, extraversion, agreeableness, and neuroticism (Shokrkon & Nicoladis, 2021). This study focused on two personality domains – extraversion and emotional stability (i.e. low neuroticism) – because they have been associated with well-being, which is also associated with CC. More specifically, all three components of positive mental health (i.e., emotional, psychological, and social well-being) were found to be positively correlated with extraversion and negatively correlated with neuroticism, even while controlling for demographics (Shokrkon & Nicoladis, 2021). Furthermore, participants who were tested during the pandemic exhibited higher brain activity levels as measured by EEG and reported higher neuroticism levels than those tested pre-pandemic (Rogala et al., 2021).

The purpose of the present research was to analyze and interpret existing results and combine them with current findings on the possible predictive effects of self-efficacy for interpersonal communication, extraversion, emotional stability, and honor society membership on CC. First, this study examined the change in CC scores between the 2010-11 Psi Beta National Research Project research questionnaire and the 2021-22 questionnaire; we predicted a decrease in CC scores during the pandemic. Then, we hypothesized that the following variables would positively predict CC: self-efficacy for initiating conversation, extraversion, emotional stability, and honor society membership. Lastly, we investigated the difference in CC scores between students who participated in an honor society and those who did not; we predicted that CC scores would be lower among nonmembers.

**Method**

**Participants**

This study had 1,412 suitable participants, consisting of 1,008 females, 352 males, 23 non-binary, and 29 people who did not identify with a gender category. The participants were college students with an average age of 24 years ($M = 23.92$, $SD = 7.99$). The ethnicity of the participants was 544 White/European American, 421 Hispanic/Latino, 188 Asian/Asian-American, 102 mixed race, 78 Black/African American, two Pacific Islander, and eight Native/Indigenous, with 24 people stating that they would rather not say and 45 people indicating the “other” category. There were 178 participants who identified as honor society members and 1,234 participants who identified as a nonmember.

The students were from 31 schools throughout the nation, with the highest proportion of

...
respondents residing in California (47.31%) and studying at Golden West College (14.59%). The study used a convenience sampling technique. Research data were collected from October 10, 2021, to February 15, 2022. The incentive for participants to partake in the study, such as extra credit, was at the discretion of each professor who agreed to distribute the survey link to their students at the various colleges.

**Materials**

This research study was conducted through a Google Form created by the Psi Beta National Honor Society for their annual research project, with IRB approval from Irvine Valley College. There were nine scales and 121 items measured in the overall study; however, this study only focused on three of the scales. We chose to include Self-Efficacy for Initiating Conversations (Tucker & Rudmann, 2009), College Connectedness Questionnaire (Tucker & Rudmann, 2008), and a ten-item, brief version of the Big Five Inventory (Gosling et al., 2003) since these measures examined variables that could be related to CC or well-being through researching previous literature. Lastly, this study included a question regarding honor society membership – “Are you a member of an honor society (for example, Psi Beta or Phi Theta Kappa)?” The possible responses were “yes,” “no,” or “not sure.”

**Procedure**

Participants began the experiment by clicking on the link in the Canvas announcement, which took them to a Google Form. Then, they read the informed consent and either agreed to participate or declined and exited the form. After completing all the research questionnaire items and submitting their response, participants were thanked for their participation and exited the Google Form. Since this study was a nonexperimental design and deception was not used, participants were not debriefed upon finishing the survey. At the end of the collection period, the data was exported from the Google Form into an Excel spreadsheet. The statistical software program JASP was utilized to perform a one-sample t-test, Pearson’s correlations, a multiple linear regression, a mediation analysis, and an independent samples t-test (JASP Team, 2022).

**Results**

First, we ran a one-sample t-test to determine any differences in college connectedness between the 2010-11 Psi Beta National Project survey to this current survey. Participants from this study reported a decrease in college connectedness (M = 55.12, SD = 13.77) compared to the survey conducted in 2010-11, t(1411) = -6.629, p < .001. Next, Pearson’s correlations were performed among selected variables (i.e., self-efficacy for initiating conversation, emotional stability, extraversion, and honor society membership) to check for any possible relationships between CC and each selected variable. All hypothesized variables were positively correlated with CC, but self-efficacy for initiating conversation had the highest correlation with CC (see Table 1).

To examine these relationships more closely and see if any of these four variables positively predicted CC, we conducted a multiple regression analysis and found that all four variables collectively accounted for 14.3% of CC variability, R² = 0.143, F(4, 1,407) = 59.906, p < .001. Self-efficacy for initiating conversation, emotional stability, and honor society membership positively predicted CC. Interestingly, extraversion was not a significant predictor of CC (see Figure 1). Thus, all hypothesized variables, except extraversion, positively predicted CC. To investigate the relationship between extraversion, self-efficacy for initiating conversation, and CC more closely, a mediation analysis was conducted to check for any indirect effects of extraversion on CC through self-efficacy. While extraversion did not directly predict CC (β = 0.016, z = .106, p = 0.92), it indirectly predicted CC through self-efficacy for initiating conversation (β = 0.966, z = 8.913, p < .001). Self-efficacy for initiating conversation was a total mediating variable of extraversion’s predictive effect on CC (β = 0.982, z = 8.91, p < 0.001; see Figure 2).
Figure 1

Multiple Regression Path Plot of Campus Connectedness Predictors

Extraversion → β = 0.011**
Self-efficacy → β = 0.298*
Emotional Stability → β = 0.073***
Honor Society → β = 0.188*

Campus Connectedness

Key:
*p < .001
**p = 0.750
***p = 0.004

Figure 2

Mediation Analysis Path Plot of Extraversion, Self-Efficacy for Initiating Conversation, and Campus Connectedness

Self-efficacy

Extraversion → 0.02
Campus Connectedness

2

0.49
Lastly, the relationship between honor society membership and CC was examined by comparing the means of two independent groups. We performed an independent samples t-test and found that students who reported to be members of an honor society (\( M = 62.056, SD = 0.981 \)) showed significantly higher campus connectedness scores, compared to those who were nonmembers or unsure (\( M = 54.120, SD = 0.387 \)), \( t(1,410) = -7.320, p < .001 \).

**Discussion**

From our data analyses, we found that all of the measured variables, except for extraversion, were positive predictors of college connectedness. Notably, self-efficacy for initiating conversation was found to be a mediator for extraversion in predicting CC, which suggests that extraverted students do not necessarily feel connected to their campus; rather, they tend to feel a sense of belonging to their college communities through their confidence for initiating conversation. Since self-efficacy for initiating conversation positively predicts CC, introverted students also are more likely to feel a sense of belonging to their college if they feel confident in starting conversations. With a decrease in CC found from the previous 2010-11 Psi Beta National Research Project survey, it seems that focusing on increasing these positive predictors, and thereby enhancing CC, would benefit students and their respective colleges. The strongest predictor, self-efficacy for initiating conversation, could be a good starting point for colleges in order to increase CC to pre-pandemic levels or more. By cultivating and improving students’ confidence in starting conversations with others, CC would theoretically increase; such a link between self-efficacy and CC can be partially corroborated by previous studies that demonstrate the predictive effect of self-efficacy on enhanced social communication (Erozkan, 2013; Boyle et al., 2018) and the association between low self-efficacy and increased perception of social isolation (Isaac et al., 2018). Additionally, this study revealed that CC scores were higher among honor society members compared to nonmembers. Thus, increasing enrollment in honor societies or other student organizations may increase students’ sense of belonging to their college communities; this relationship between honor society participation and increased CC aligns with previous research that suggests how taking part in ethnic student organizations plays a major role in fostering campus connectedness among first-generation college students of color (Azimita et al., 2018) and how participating in student clubs and organizations helps mediate a sense of belonging for college students with psychiatric disorders (Jones et al., 2015). Therefore, by helping students develop confidence for initiating conversations and encouraging them to participate in student organizations, colleges could help increase students’ sense of belonging to the campus community, thereby possibly improving the likelihood for their students to develop or maintain positive mental health, achieve academic success, and complete their college goals.

However, there are some key limitations to this research. First, the method used is a self-report survey, which tends to have reliability issues. Next, the sample distribution is imbalanced demographically in both location (i.e., southern California) and gender: 71.4% of respondents identified as female; 24.9% as male; 1.6% as non-binary; and 2.0% as other. Furthermore, there is an imbalance in majors: 28.5% of students were psychology majors; 10% nursing; 10% undecided; with the next highest being communications (4.2%) and business (4.2%). As the study relied on distribution from the Psi Beta Honors Society, psychology students were more likely to hear about or encounter the study than other students. Another limitation of this study is the lack of breadth for student clubs: the only campus society or club measured in the survey was honor societies, which showed high CC scores. For future research, it would behoove us to examine the relationship between CC and other student organizations and clubs. It may also be interesting to compare technological access (e.g., easy access to reliable internet and electronic devices) and
advancement (e.g., development of new apps, such as Discord) between this study and the 2010-11 survey to examine if such technological factors play a predictive role in college connectedness.

References


JASP Team (2022). JASP (Version 0.16.2) [Computer software]. https://jasp-stats.org/


### Appendix

#### Table 1

**Correlations Between Variables of Interest**

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tr>
<td>1. Campus Connectedness</td>
<td>1412</td>
<td>55.121</td>
<td>13.772</td>
<td></td>
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<td>2. Extraversion</td>
<td>1412</td>
<td>7.695</td>
<td>3.200</td>
<td>0.228*</td>
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<tr>
<td>3. Emotional Stability</td>
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<td>8.463</td>
<td>2.897</td>
<td>0.141*</td>
<td>0.134*</td>
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<td></td>
</tr>
<tr>
<td>4. Self-efficacy for Initiating Conversation</td>
<td>1412</td>
<td>27.485</td>
<td>9.041</td>
<td>0.325*</td>
<td>0.696*</td>
<td>0.228*</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>5. Honor Society a</td>
<td>1412</td>
<td>1.126</td>
<td>0.332</td>
<td>0.191*</td>
<td>-0.001**</td>
<td>-</td>
<td>0.014****</td>
<td>---</td>
</tr>
</tbody>
</table>

*a 1 = non-member or unsure and 2 = member. *p < .001. **p < .001. ***p < .001. ****p < .001.
Impact On Loneliness During the COVID-19 Pandemic Lockdown Based On Age and Household Size

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Abstract
During the COVID-19 global pandemic, individuals have had to learn to cope with isolation and adjust to new social protocols (Nooraie et al., 2021). In Washington state, a lockdown mandate was issued between March to May 2020 in response to a surge in COVID-19 cases (Washington Governor, 2020). This study aimed to analyze how King County residents experienced the lockdown and the impact it had on their daily activities, behaviors, and well-being. We examined the age and the dynamics within the household including household size and how they relate to the person’s experience of loneliness. The UCLA Loneliness Scale (Appendix A; Russel et al., 1978) was distributed online through Qualtrics, an online survey provider. The participants were adults between the ages of 18-65 living in King County during the lockdown. We hypothesized (H1) that people living alone or in crowded households experienced the highest levels of loneliness during the COVID quarantine and (H2) that age groups experienced isolation differently, specifically loneliness increases with age. The results demonstrate a significant main effect for age. The largest differences in feelings of loneliness were found between the youngest age group (18-24) and the oldest age group (55-64), although it appears that overall loneliness decreased as age increased. No significant effects were found for household size which contradicts the findings of previous studies.

Keywords: COVID-19 pandemic, King County, loneliness, household size, age

During the COVID-19 global pandemic, individuals have had to learn to cope with isolation and adjust to new social protocols (Nooraie et al., 2021). In Washington state, a lockdown mandate was issued between March to May 2020 in response to a surge in COVID-19 cases (Washington Governor, 2020). This study aimed to analyze how King County residents experienced the lockdown and the impact it had on their daily activities, behaviors, and well-being. We examined the age and the dynamics within the household including household size and how they relate to the person’s experience of loneliness. Different age groups are likely to experience different challenges in interpersonal relationships. For example, adolescents are more exposed to
exclusion because of the instability of their social networks, physical changes, and identity exploration (Barreto et al., 2021). On the other hand, the middle-aged population is vulnerable to loneliness related to working long hours to support their families, being single parents, and reduced social time due to work and caregiving commitments. Loneliness among older adults often emerges due to losing family members and friends. It has also been found that loneliness at higher ages is most likely established earlier in life (Dahlberg et al., 2018). Participating in few social engagements or having a lack of interpersonal connections earlier in life is correlated with feelings of loneliness later in life, which can be interpreted to mean those who are lonely earlier in life are more likely to continue to be lonely later in life.

During the implementation of the COVID-19 quarantine, people were ordered to follow stay-at-home orders resulting in increased time spent within their own residency (Washington Governor, 2020). Social isolation and solitary living are risk factors for loneliness (Gierveld, 1998; Matthews et al., 2016; Pinquart & Sörensen, 2001), and living alone has been associated with lower mental well-being (Jacob et al., 2019; Sundström et al., 2009). Studies examining the relationship between housing conditions and mental health during initial lockdowns have found mixed results (Groot et al., 2022; Kowal et al., 2020; Tomono et al., 2021). Youth living in denser households in Denmark had a decreased mental well-being than those of the same age living in non-dense households (Groot et al., 2022). Yet, in another study of participants from 26 countries, little association was found between the number of adults in the household and mental well-being (Kowal et al., 2020).

We aimed to investigate if the lockdown measures taken during the early stages of the COVID-19 pandemic led to a rise in loneliness. Loneliness has been associated with major public health concerns such as increased inflammation, heart disease, depression, high blood pressure, and Alzheimer’s disease. (Griffón, 2010; Wolff, 2019). It is therefore vital to research the impact that the current COVID-19 pandemic had on loneliness during the lockdown to better understand who was more vulnerable to loneliness and provide the necessary support (Joosten-Hagyea et al., 2020).

We hypothesized that (H1) people living alone or in crowded households experienced the highest levels of loneliness during the COVID quarantine and (H2) that age groups experience isolation differently, specifically that younger and older individuals are likely to be most lonely.

**Method and Procedure**

This study observed participants’ subjective feelings and behaviors as they occurred during the COVID-19 pandemic. The data collected for this research was based on an online survey distributed through Qualtrics. Approval from the Institutional Review Board (IRB) was attained prior to the distribution of the survey. Participants were asked for their informed consent at the beginning of the survey. Throughout the survey participants had the option to skip questions that may have caused distress, or to discontinue the survey at any time. No personal information was collected from this survey in order to maintain the anonymity of participants. All data were kept confidential. A debrief and support resources were included at the end of the survey.

**Participants**

The survey was distributed to undergraduate psychology classes and faculty at Bellevue College and Seattle Central College as well as to the researchers’ social circles via direct messaging (text message and email) and social media (Facebook, Instagram, and WhatsApp). Extra credit was offered as compensation to students; non-students received no compensation. Participants of the survey were residents of King County during the Washington State COVID pandemic lockdown (March through May 2020) and ranged in age from 18 to 65 years old (Washington Governor, 2020). A total of 252 responses were recorded, of which 48 incomplete responses were deleted, leaving a total of 204 which were included in this research (56 male,
135 female, four non-binary, and nine chose not to identify). Regarding the question on age, 199 participants responded providing the following breakdown: 115 (age 18-24), 37 (age 25-34), 29 (age 35-44), 13 (age 45-54), and 5 (age 55-64) (see Table 1). Regarding the question on household size, 203 participants responded providing the following breakdown: 18 (living alone), 154 (2-4 household members), and 31 (5-7 household members) (see Table 2).

**Measures**

A revised version of the UCLA Loneliness Scale was used in the survey to assess loneliness felt during the pandemic lockdown (Appendix A; Russel, 1996; Russel et al., 1978). The UCLA Loneliness scale has been used widely and demonstrated both reliability and validity (Russell, 1996). Revisions to the scale included framing the questions and answers in past tense and adding an option of “I cannot remember.” An additional 16 questions examined the demographics of participants as well as their habits during the lockdown. Besides asking for the participant’s age and gender, the questions explored if, during the lockdown, participants lived with others, had pets, entered or exited romantic relationships; how participants acquired food (delivery, in-person); how often participants attended, virtually or in person, religious and non-religious gatherings and school or work.

**Results**

**Age**

A significant main effect was found for age, $F(4, 194) = 2.82, p < .03$. Post hoc comparisons using the Tukey LSD test indicated that the mean score for people aged 18-24 ($M = 46.24, SD = 16.89$) significantly differed from people aged 25-34 ($M = 41.05, SD = 13.41$) and 55-64 ($M = 29.00, SD = 21.83$) in the amount of perceived loneliness. However, they did not differ significantly from people aged 35-44 ($M = 41.24, SD = 15.09$) or 45-54 ($M = 40.00, SD = 21.38$) (see Table 1; see Figure 1).

**Household Size**

No significant main effect was found for household size, $F(2, 200) = .29, p = .749$ (See Table 2)

**Discussion**

Our original hypothesis predicted that (H1) people living alone or in crowded households experienced the highest levels of loneliness during the COVID quarantine and (H2) that age groups experience isolation differently, specifically that younger and older individuals are likely to be most lonely. The results from this study partially support our (H2) hypothesis in that younger individuals experienced the most loneliness during the COVID quarantine period. The older individuals included in this study, however, experienced the least amount of loneliness, contrary to our (H2) hypothesis. The results of this study do not support our (H1) hypothesis as the analysis found no relationship between loneliness and household size.

---

**Table 1**

*Loneliness on the UCLA Loneliness Scale by Age*

<table>
<thead>
<tr>
<th>What was your age during the quarantine lockdown between March and May in 2020?</th>
<th>$M$</th>
<th>$SD$</th>
<th>$N$</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-24</td>
<td>47.24</td>
<td>16.89</td>
<td>115</td>
</tr>
<tr>
<td>25-34</td>
<td>41.05</td>
<td>13.41</td>
<td>37</td>
</tr>
<tr>
<td>35-44</td>
<td>41.24</td>
<td>15.09</td>
<td>29</td>
</tr>
<tr>
<td>45-54</td>
<td>40.00</td>
<td>21.38</td>
<td>13</td>
</tr>
<tr>
<td>55-64</td>
<td>29.00</td>
<td>21.83</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>44.29</td>
<td>16.79</td>
<td>199</td>
</tr>
</tbody>
</table>
Although we hypothesized that loneliness would impact the youngest and oldest groups the most, only the youngest age group experienced the most loneliness. In this study, individuals in the oldest age group reported the least amount of loneliness during the COVID pandemic lockdown. The difference in loneliness levels found was largest between the youngest age group (18-24) and oldest age group (55-64), when compared to all other age groups. Other studies have shown that different age groups simply experience loneliness in different ways (Fried, 2020). It is possible that although the oldest age group experienced some feelings of loneliness, they may have life experiences that help them to overcome any extreme feelings of loneliness. Having quality friendships is more common with an increase in age and such friendships are shown to reduce loneliness (Wolff, 2019). These quality friendships can still be maintained even from a distance with phone calls, video chats, and other technology used to connect with others.

The youngest age group (18-24) in this study reported the highest levels of loneliness during the lockdown. Considering that adolescents who have high usage of social media are significantly lonelier than those who do not, it is quite possible that the use of social media impacted this age group (Wolff, 2019; Ellis et al., 2020). We did not ask about social media usage in our study, which would be valuable to explore in future studies about loneliness.

### Table 2

**Loneliness on the UCLA Loneliness Scale by Household Size**

<table>
<thead>
<tr>
<th>How many people including yourself lived in your household during the quarantine lockdown?</th>
<th>M</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>I was living alone</td>
<td>43.22</td>
<td>14.10</td>
<td>18</td>
</tr>
<tr>
<td>2-4</td>
<td>43.86</td>
<td>17.06</td>
<td>154</td>
</tr>
<tr>
<td>5-7</td>
<td>46.26</td>
<td>18.01</td>
<td>31</td>
</tr>
<tr>
<td>Total</td>
<td>44.17</td>
<td>16.91</td>
<td>203</td>
</tr>
</tbody>
</table>

### Figure 1

**Loneliness Distributed by age**

![Graph showing loneliness distributed by age](image-url)
Even for respondents who may have had some in-person interaction, such as with family members or roommates, feelings of loneliness are not necessarily reflected upon complete social isolation but rather the perception that one is alone or separated from their social network (Pantell & Shields-Zeeman, 2020; Laranjeira, 2021).

The second youngest age range (25-34) also reported high levels of loneliness, only second to the youngest group. It is possible this is due to similar reasons as the youngest group, with the difference that the group is often in a transitory period of time where they are beginning to create families (getting married, having children) and starting careers which therefore may lead to different feelings of loneliness (Barreto et al., 2021).

The loneliness levels of the 35-44 and 45-54 age groups did report loneliness but their rates were not statistically significant. It would likely be beneficial to do further qualitative studies to better understand the differences in loneliness between age ranges, specifically during periods of social isolation.

In this study, no relationship was found between loneliness and household size. These findings contradict previous studies that have found that living alone as well as in dense households can negatively impact a person’s well-being (Fuller et al., 1996; Tomono et al, 2021). It is possible that living alone may be a preference for many people in our sample in King County. Even for individuals who live with others, the quality of relationships between household members likely has a greater influence on loneliness than does the number of people living in the household (Pantell & Shield-Zeeman, 2020; Woznicki et al., 2021).

Although our study explored a wide span of age groups, ranging from 18 to 64 years old, participation appeared to decrease as age increased, resulting in only five participants from the oldest age group. The decline in the participation of older age groups participating in this study is likely due to the survey being distributed through community colleges and social circles of the researchers on social media. It would be advantageous for future studies to explore alternative methods to attract more diversity of ages.

This study investigated the household size of participants, however, it would have been useful to understand the dynamics of their household, such as if they lived with parents, siblings, roommates, etc. One aspect that was not examined was socio-economic status which may have had a major impact on feelings of well-being and loneliness during the lockdown. It would be helpful for future studies to look at the impact of the socio-economic status of participants and their households and how that relates to loneliness. We also did not include any questions on race which may be an area to include in future research to assess the diversity of participants included in the study.

This research was conducted approximately one year after people experienced the lockdown in Washington state. It is very possible that not all individuals remembered their feelings of loneliness during the lockdown or that they remembered them differently than how they actually may have felt (hindsight bias). Measurements about how individuals felt at the time of the survey, to use as a comparison measure to help eliminate hindsight bias, were not included in this study.

This research contributes to the growing need to explore the impact of loneliness during the COVID pandemic. The findings of this studying point to significantly higher feelings of loneliness for youth (18-24), which presents an opportunity for future studies to explore actionable ways to help young adults cope with loneliness and navigate mental health challenges post the COVID-19 pandemic restrictions. Considering the low rates of loneliness in older ages (55-64), it is worth exploring what exactly helps these individuals to shield themselves from extreme feelings of loneliness and see if any connections can be made to those who struggle with loneliness.
References


Appendix A

Revised Version of UCLA Loneliness Scale

I was unhappy doing so many things alone.
- I never felt this way.
- I rarely felt this way.
- I sometimes felt this way.
- I often felt this way.
- I cannot remember.

I could not tolerate being so alone.
- I never felt this way.
- I rarely felt this way.
- I sometimes felt this way.
- I often felt this way.
- I cannot remember.

I lacked companionship.
- I never felt this way.
- I rarely felt this way.
- I sometimes felt this way.
- I often felt this way.
- I cannot remember.

I felt as if nobody really understood me.
- I never felt this way.
- I rarely felt this way.
- I sometimes felt this way.
- I often felt this way.
- I cannot remember.

I found myself waiting for people to call or write.
- I never felt this way.
- I rarely felt this way.
- I sometimes felt this way.
- I often felt this way.
- I cannot remember.

There was no one I could turn to.
- I never felt this way.
- I rarely felt this way.
- I sometimes felt this way.
- I often felt this way.
- I cannot remember.

My interests and ideas were not shared by those around me.
- I never felt this way.
- I rarely felt this way.
- I sometimes felt this way.
- I often felt this way.
- I cannot remember.

I was no longer close to anyone.
- I never felt this way.
- I rarely felt this way.
- I sometimes felt this way.
- I often felt this way.
- I cannot remember.

I felt left out.
- I never felt this way.
- I rarely felt this way.
- I sometimes felt this way.
- I often felt this way.
- I cannot remember.
I felt completely alone.
  o I never felt this way.
  o I rarely felt this way.
  o I sometimes felt this way.
  o I often felt this way.
  o I cannot remember.
I was unable to reach out and communicate with those around me.
  o I never felt this way.
  o I rarely felt this way.
  o I sometimes felt this way.
  o I often felt this way.
  o I cannot remember.
My social relationships were superficial.
  o I never felt this way.
  o I rarely felt this way.
  o I sometimes felt this way.
  o I often felt this way.
  o I cannot remember.
I felt starved for company.
  o I never felt this way.
  o I rarely felt this way.
  o I sometimes felt this way.
  o I often felt this way.
  o I cannot remember.
I felt isolated from others.
  o I never felt this way.
  o I rarely felt this way.
  o I sometimes felt this way.
  o I often felt this way.
  o I cannot remember.
I was unhappy being so withdrawn.
  o I never felt this way.
  o I rarely felt this way.
  o I sometimes felt this way.
  o I often felt this way.
  o I cannot remember.
It was difficult for me to make friends.
  o I never felt this way.
  o I rarely felt this way.
  o I sometimes felt this way.
  o I often felt this way.
  o I cannot remember.
I felt shut out and excluded by others.
  o I never felt this way.
  o I rarely felt this way.
  o I sometimes felt this way.
  o I often felt this way.
  o I cannot remember.
People were around me but not with me.
Does Meeting Belongingness Needs Through Social Media Impact One's Fear of Missing Out and Self-Esteem?

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\textbf{Abstract}

The purpose of this study was to explore how meeting belongingness needs through social media use may impact one's fear of missing out (FoMO) and self-esteem. It was predicted that individuals with increased levels of FoMO would have higher levels of the need to belong. It was also predicted that individuals with lower levels of self-esteem would have higher levels of FoMO and the need to belong. A total of 592 participants (447 female, 137 male) in various psychology courses at a community college and a university participated in an online survey. Consistent with the hypothesis, increased FoMO is related to a higher level of need to belong. Additionally, lower levels of self-esteem are related to higher levels of FoMO and a higher level of the need to belong. Based on these findings, perhaps lower levels of self-esteem further exacerbate the positive feedback loop between one's desire for belongingness and their FoMO when utilizing social media. As such, these results may caution college students from meeting their need for belongingness through social media usage, and more so, those with a lower level of self-esteem.

\textit{Keywords:} fear of missing out, FoMO, need to belong, self-esteem, social media

Does Meeting Belongingness Needs with Social Media Impact One's Fear of Missing Out and Self-Esteem?

The Pew Research Center reports that 75\% of Americans use some form of social media today, detailing a stark contrast to the 5\% of Americans who reported use in 2005 (Brooke & Anderson, 2021). With social media being accessible to practically anybody at any time or location, this may result in benefits such as increased global connections and feeling supported online (Nadkarni & Hofmann, 2012; Wright et al., 2021). Thus, social media may become attractive and valuable as a self-management tool for satisfying one's needs. However, negative ramifications can arise when social media fails to fulfill those needs, leaving many vulnerable. Unfortunately, numerous risks associated with using social media only inhibit one from meeting their needs (Chai et al., 2018; Ostendorf et al., 2020). Further, fear and addiction stemming from those unmet needs may foster increased levels of worry and low self-image (Greenaway et al., 2016).

The need to belong is the innate drive to form enduring, mutually positive, and significant interpersonal relationships. In general, one must
fulfill two requirements to satisfy the need to belong and increase well-being. First, one must regard most of their relationships as neutral, positive personal interactions, and second, have a genuine perception of a close bond within those relationships (Baumeister & Leary, 1995). When looking to satisfy their desire for belongingness, people may turn to social media to compensate (Lai et al., 2019; Nadkarni & Hofmann, 2012; Wang et al., 2018). In support, researchers find that persons with a greater need to belong use social media more frequently, and it is crucial to highlight that specific habits of social media usage are seen to satisfy the need to belong online (i.e., information seeking and communication; Beyens et al., 2016; Elhai et al., 2018; Rollero et al., 2019). However, it is still unclear whether using social media to cope with unmet belongingness needs is a viable or healthy coping strategy as it does come with risk (Iannone et al., 2018). Although researchers Lai et al. (2019) find certain social media usage correlates with enhanced well-being when being used with the intention of information seeking or communication, other studies display negative results, such as anxiety about what experiences others may be having without them and a lowered self-concept (Buglass et al., 2017; Neira & Barber, 2014).

FoMO is the intrusive anxiety that others may be having more gratifying experiences; FoMO is often displayed as the all-consuming desire to continuously connect and learn what others are doing (Przybylski et al., 2013). Social media has become valuable as a self-management tool offering one the ability to gather information and connect to a seemingly endless number of people. Thus, social media use and FoMO become inter-reliant: as social media use increases, so does one's FoMO, and as one's FoMO increases, so does their social media use (Beyens et al., 2016; Przybylski et al., 2013). As previously said, one can satisfy their desire for belongingness by using social media, but this is a confined road. For example, when one is unable to meet their need for belongingness online, meeting the need may compromise the practice of self-regulation behaviors that protect one from FoMO and problematic social media usage (Chai et al., 2018; Ostendorf et al., 2018). Researchers find that those higher in their need to belong are also higher in FoMO, both associated with increased social media use (Elhai et al., 2018) (Beyen, Frison, & Eggermont 2016; Elhai et al., 2018). This suggests that when a person's psychological needs are unmet, they become more susceptible to FoMO. Although the cyclic nature of social media use and FoMO is well understood in existing literature, little research explores the cyclic nature of FoMO and the need to belong.

Unmet needs and increased social media use can also have additional negative consequences impacting how one feels about oneself (Neira & Barber, 2014). According to Baumeister and Leary (2000), self-esteem is a human adaptation that gauges where they stand in their sense of belonging or social inclusion. More to this point, Timeo et al. (2020)'s research finds that those who receive fewer likes than others reported an increased threat to their needs (i.e., belonging, self-esteem) as well as negative emotions. We understand social inclusion through social exclusion: being ostracized or rejected by someone you associate with leaves an unpleasant feeling (Twenge, 2001). Existing research shows that social media allows one to self-measure and cope with unmet SE needs (Chou & Edge, 2012; Hou et al., 2019). For example, Chou & Edge (2012) found that those who spend more time on Facebook may view others as being happier and having better lives than they do, especially if they have a significant number of "friends" on Facebook whom they do not know personally. Moreover, those who experience chronic ostracism (feeling excluded and ignored frequently) will have a higher need to belong, driving social media usage to increase, which may lower SE (Hou et al., 2019; Iannone et al., 2018). Social media allows for almost endless social comparison opportunities (Dijkstra et al., 2010). As increased social media use becomes a
mediator for coping with unmet needs, FoMO may also increase with low self-esteem (Buglass et al., 2017).

Therefore, the purpose of the present study was to explore the process of the modern approach to meeting belongingness needs (e.g., social media) alongside the analysis of several variables indicative of the unsuccessful meeting of needs such as lowered self-esteem and FoMO. First, we hypothesized that individuals with lower levels of self-esteem would have higher levels of FoMO (Buglass et al., 2017). Second, we hypothesized that individuals with lower self-esteem would have higher levels of need to belong (Greenaway et al., 2016). Third, we hypothesized that individuals with increased levels of FoMO would have higher levels of need to belong (Wang et al., 2018).

**Method**

**Procedure**

A correlational design was used to test the posed hypotheses. After receiving approval by the Institutional Review Board, participants were recruited from introductory psychology courses at a community college and a university to take part in an omnibus study by completing an online survey for course credit or a chance at winning one of four $25 Amazon gift cards. A total of 592 (447 Female, 137 Male, and 8 Non-binary) undergraduate students completed the survey. Our sample ranged in age from 18 to 61, with an average age of 21.24 (SD = 6.76). Completion of the survey served as the participants' consent; data were collected over a period of approximately 8 weeks. Participants who wished to enter the prize drawing were asked to enter their e-mail address; however, this information was separated from survey responses to ensure anonymity. The data was securely stored electronically and only accessible to the research team.

**Measures**

Participants indicated their sex by typing their response to "What is your gender?" and their age by typing their response to "What is your age?" The need to belong was measured using the Need to Belong Scale (Leary et al., 2012), including 10 statements rated using a 5-point Likert Scale (1 = strongly disagree to 5 = strongly agree). This scale was scored by averaging the answers to all items, with higher scores denoting a greater need for belonging. FoMO was measured using the Fear of Missing Out Scale (Pryzbylski et al., 2013), which includes 10 statements rated using a 5-point Likert Scale (1 = not at all true of me to 5 = extremely true of me). This scale was scored by averaging the answers to all items, with higher scores denoting greater FoMO. Self-esteem was measured using the Rosenberg Self-Esteem Scale (Rosenberg, 1965), containing 10 items rated using a 4-point Likert Scale (1 = strongly disagree to 4 = strongly agree). This scale was scored by reverse scoring appropriate items and summing all items, with a higher score denoting higher self-esteem.

**Results**

In testing our first hypothesis, a Pearson correlation analysis was performed to evaluate the negative relation between self-esteem ($M = 28.44$, $SD = 5.79$, with scores ranging from 11 to 40) and FoMO ($M = 2.53$, $SD = .87$, with scores ranging from 1 to 5). A statistically significant, moderate negative correlation was found, $r(489) = -.386$, $p < .001$, $r^2 = -.146$, indicating that participants with lower levels of self-esteem tend to be higher in FoMO.

In testing our second hypothesis, a Pearson correlation analysis was performed to evaluate the negative relation between participants with low levels of self-esteem and need to belong ($M = 3.35$, $SD = .74$ with scores ranging from 1.1 to 5). A statistically significant, moderate negative correlation was found, $r(489) = -.361$, $p < .001$, $r^2 = -.127$, indicating that participants with lower levels of self-esteem tend to be higher in need to belong.
Finally, in testing our third hypothesis, a Pearson correlation analysis was performed to evaluate the positive relation between participants with increased FoMO and need to belong. A statistically significant, moderate positive correlation was found, \( r(489) = .623, p < .001, r^2 = .384 \), indicating that participants higher in their FoMO tend to be higher in need to belong.

**Discussion**

Results showed support for all hypotheses in the present study. Participants with lower levels of self-esteem exhibited higher levels of FoMO as well as the need to belong. Those with higher FoMO also displayed greater levels of the need to belong. These findings are consistent with previous research (Buglass et al., 2017; Greenaway et al. (2016); Chai et al., 2018; Ostendorf et al., 2018). Researchers Buglass et al. (2017) and Greenaway et al. (2016) found significant relationships among low self-esteem, FoMO, and the need to belong. These results suggest that low levels of self-esteem may have a significant impact on one's overall level of FoMO and desire for belongingness. It may be possible that in the context of social media use, those who have low self-esteem are more vulnerable to the negative implications of using social media. In fact, previous research supports the notion that such risks can inhibit one from meeting their needs (Chai et al., 2018; Ostendorf et al., 2020). This unsuccessful meeting of needs can also be linked to those who experience FoMO alone.

Similar to Wang et al. (2018), we found that those with higher FoMO also have higher belongingness needs. With the cyclic nature of social media use and FoMO being well understood in existing literature, the results of our study are important because they add to the literature regarding what drives a person's FoMO (Beyens et al., 2016; Przybylski et al., 2013). Our results suggest that those who have a desire for belonging experience FoMO, lending to the idea that when one cannot meet their need for belongingness online, they may no longer use the self-regulatory behaviors that could allow for benefits of social media use and use social media to the degree that invokes FoMO (Chai et al., 2018; Ostendorf et al., 2018). Since over 90% of emerging adults have a social media profile, and nearly all (97%) use the internet (Mander, 2020), understanding the potential implications of social media use is important for collegiate populations. Social media doesn’t seem to be going anywhere any time soon and having the resources to create safeguards or caution students with low self-esteem from depending on social media to fulfill their need for belonging seems to be more problematic than helpful. Our research suggests that perhaps a higher need to belong and lower levels of self-esteem exacerbate social media and FoMO's positive feedback loop.

Despite the fact that the results of this study are consistent with previous research and have practical implications such as cautioning those with low self-esteem against using social media to fulfill their desire for belongingness, it is important to note that it has limitations. First, although consistent with the make-up of our sampled population, the average age of our participants was 21 years old. Given this, results cannot be generalized to older populations. Second, and again consistent with our sampled population, the majority of participants were female (76%). In light of this, our results may not be as generalizable to male or non-binary collegiate populations. However, as gender differences have been noted in self-esteem (Kling et al., 1999) and FoMO (Gezgin et al., 2017), future research in this area would benefit from exploring gender differences within the context of the need to belong, self-esteem, and FoMO.

With social media use only growing, it is essential that we proceed with caution and create safeguards, resources, and information accessible to those most at risk (e.g., those with low self-esteem; Brooke & Anderson, 2021). The results of our study suggest that those with low self-esteem may not be able to use social media to meet their
need for belonging, therefore missing out on the potential benefits social media can offer when used appropriately. Thus, based on the results of the current study, we urge caution for those with low self-esteem when using social media.

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The Relationship Between Problematic Social Media Use and Time Spent on Social Media: Exploring Neuroticism as a Moderator

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Abstract

A growing body of research shows that social media use is positively correlated with depression, anxiety, low self-esteem, and neuroticism. Problematic social media use (PSMU), for the purpose of this study, was characterized by behaviors similar to those displayed in gambling and addiction such as shame, guilt, and loss of control. This study explored the relationship between PSMU and the amount of time spent on social media. It was predicted that the number of hours spent on social media would be positively correlated with PSMU and that an individual's neuroticism score would have a moderating effect on this relationship. Data were collected from college students across the United States through an online survey as part of the Psi Beta National Research Project (N = 1,422). The survey included questions regarding PSMU, hours spent using social media, and personality. Results found a moderate correlation between problematic social media use and hours of daily media use. Neuroticism did not appear to have a moderating effect on the relationship. This study aimed to offer supporting data to further the understanding of the effects of social media on mental health. Our results can help provide a guide in which future studies can focus on improving social media use outcomes for all people.

Keywords: social media, neuroticism, mental health, screen time, personality

The use of social media networking sites has grown exponentially over the last ten years (Ortiz-Espinosa, 2019). With approximately 3.8 billion users worldwide, about half of the world’s population uses social media in some way. People rely on social media to stay in contact with friends and family, promote small businesses, and stay updated on current events. Businesses use social media to recruit candidates for jobs and employees may be required to have an online presence (Segal, 2018), so even those who prefer not to use social media may have no choice. Social media has become deeply integrated into the everyday lives of its users. When shutdowns due to Coronavirus disease 2019 (COVID-19) began, many people were forced to depend on virtual interactions for work, school, and the majority of their social connections. COVID-19 was the first global pandemic since the
advent of social media, and the world saw an unprecedented rise in social media use: Internet use increased by 50-70%, and half of that increase was reflected in the time spent on social media (Pandya & Lodha, 2021). The increased prevalence of social media usage warrants research into the way it impacts people.

This study aimed to further the current understanding of the relationship between social media use and mental health to identify potential risk factors and variables within a user’s control that could mitigate negative impact. Existing work shows a strong positive correlation between social media use and negative mental health consequences such as depression, anxiety, and low self-esteem (Woods & Scott, 2016). A study by Twenge and Farley (2021) of 11,453 adolescents showed that participants who spent more time on social media had worse mental health and were at a higher risk for self-harm and suicidal thoughts. Another study of 207 participants in the United States found that those scoring higher in neuroticism were significantly more likely to exhibit social media addiction (Blackwell et al., 2017). A systematic review of 56 articles examining the relationship between neuroticism and internet addiction also found that neuroticism was a predictor of social media addiction (Marciano, et al., 2022). The researchers found that people scoring high in neuroticism were more likely to act impulsively, be more sensitive to criticism, and be less likely to expand their existing social circles. Due to the overlapping nature between neuroticism, social media addiction, and frequency of social media use, this study aimed to bridge the gap between these variables and identify potential factors of negative mental health outcomes. This study aimed to determine whether neuroticism acted as a moderator between hours spent on social media and PSMU. These factors were assessed using survey responses to measure the relationship between time spent on social media and problematic behavior regarding social media. Additionally, statistical analyses were conducted to determine how a person’s level of neuroticism possibly influenced the relationship. The research team hypothesized that PSMU would be positively correlated with hours per day of social media use and that neuroticism would be positively correlated with hours per day of social media use. The team also hypothesized that neuroticism would have a moderating effect on the relationship between PSMU and hours per day of social media use.

**Method and Procedure**

**Participants**

The research study contained an original sample of ($N = 1,422$) community college students but retained ($N = 1,370$) participants who specified the number of hours per day they spent on social media. Participants were between the ages of 18-65, ($M = 23.80$, $SD = 7.80$). Students under the age of 18 as well as those who did not clearly indicate their age were excluded. Genders included were female ($n = 979; 71.5$%), male ($n = 347; 25.3$%), non-binary/non-conforming ($n = 19; 1.4$%), other ($n = 17; 1.2$%), and prefer not to answer ($8; 0.6$%). Of the 1,370 participants, 25 did not indicate race, of those who did: White ($532; 38.8$%), Hispanic/Latino ($411; 30.0$%), Asian/Asian American ($181; 13.2$%), Mixed race ($99; 7.2$%), Black/African American ($77; 5.6$%), Middle Eastern/Arab ($21; 1.5$%), Other ($15; 1.1$%), Native American/Indigenous ($9; 0.7$%).

**Materials**

**Social Media Use Questionnaire**

Problematic social media use was measured using the Social Media Use Questionnaire (SMUQ; Xanidis & Brignell, 2016). This scale was developed to assess dependence on social network sites. The SMUQ questions were initially generated based on the gambling addiction symptoms described in the 5th edition of the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2013), the Internet Addiction Test (Young, 2017), and the Fagerstrom Test for Nicotine Dependence (Heatherton, et al., 1991). There were nine questions formatted on a 5-point Likert scale such as: “I lose track of time when I
use social media,” and “I feel guilty about the time that I spend on social network sites.”

**Hours Per Day**

An hours-per-day metric was based on the average time spent on a participant's preferred social media platform on their phone. Users were directed to their phone settings and instructed to record the screen time listed.

**10 Item Personality Inventory**

The Ten-Item Personality Inventory (TIPI) was used to measure neuroticism scores (Gosling, et al., 2003). The TIPI serves as a brief measure of personality using the Big-Five Inventory (BFI) personality dimensions (John, et al., 1991). The inventory uses ten 7-point Likert scale questions. Neuroticism was measured using two items, scoring opposite directions, on the TIPI in which they rated to the extent the description matched their personality. The two items consisted of the following descriptions: “Anxious, easily upset” and “Calm, emotionally stable.”

**Procedure**

**Recruitment**

Psi Beta’s National Research Committee designed the national research project questionnaire (Psi Beta, 2021) used for this study and sent out the study materials to participating chapters in the United State after meeting IRB requirements on their local campuses. Participants were recruited through convenience sampling via faculty and chapter members. Data were collected from October 10, 2021, to February 15, 2022.

**National Research Project Online Questionnaire**

The questionnaire consisted of 117 questions. After informed consent was obtained at the start of the questionnaire, participants answered 40 questions pertaining to social communication, college connectedness, and the number of semesters completed in college. Next, participants answered ten personality questions adapted from the TIPI. Then, participants were asked eight questions about shyness, and 30 questions about social media usage aims, followed by 11 questions from the social media use questionnaire. Next, one question asked participants to identify their most preferred social media platform, then another question sought the average time spent daily on social media. Finally, the rest of the questionnaire asked nine demographic questions.

**Data Collection**

This survey was administered through a Google forms link, participants under 18 years were removed from the dataset, and no identifiable information was collected.

**Results**

**Primary Analysis**

Hierarchical regression was conducted to predict problematic social media use from time spent on social media and neuroticism scores. The final model did not account for a significant amount of variance in problematic social media use, \( F(3,1366) , p < .001, R^2 = .165 \). The coefficients for each step are shown in Table 1. Entered on model 1, time spent on social media accounted for a significant amount of variance in problematic social media use, \( F(1,1368) , p < .001, R^2 = .122 \), supporting the hypothesis. Entered on the second model, neuroticism was unable to significantly improve the variance accounted for, \( \Delta F(2,1367), p < .001, \Delta R^2 = .165; \) therefore, not supporting the hypothesis. We were unable to conclude that interaction between time and neuroticism was significantly related to problematic social media use, \( b = -.002 (\beta = -.001 ), p > .05 \).

**Secondary Analysis**

Individual regression analyses were conducted to assess the individual relationships between PSMU, time, and neuroticism. We found that PSMU was significant and positively correlated with hours per day \( (r = .349, p < .001) \) (Figure 1). Additionally, we were able to conclude that the relationship between PSMU and neuroticism was significant with a positive correlation \( (r = .235, p < .001) \) (Figure 2).

**Discussion**

Valid measurements of neuroticism may have been a limiting factor in this study. The Big Five Inventory originally uses eight questions to measure
neuroticism while this questionnaire only used two questions. Other limitations include those typical with self-report studies such as the possibility of socially desirable, but inaccurate responses. The data for hours spent on social media was collected using self-report and could be inaccurate so it could be better to use a program that specifically monitors social media use. Further research using a more thorough assessment of neuroticism and a more reliable measurement of time spent on social media would be valuable to expose or rule out neuroticism as a moderating variable in the relationship between time spent on social media and PSMU.

In this study, neuroticism did not appear to be a moderating factor, however, the findings do support research by Blackwell and colleagues (2017) and Marciano and colleagues (2022), which found neuroticism to be a predictor of social media addiction. In the current study, the relationship between neuroticism and PSMU appears to be distinct from the relationship between hours of social media use and PSMU, meaning that individuals who spend a great deal of time on social media, even those scoring low in neuroticism, are susceptible to PSMU and may experience a negative psychological impact.

Table 1
Hierarchical Regression Results for Problematic Social Media Use

<table>
<thead>
<tr>
<th>Variable</th>
<th>b</th>
<th>SEb</th>
<th>β</th>
<th>R^2</th>
<th>ΔR^2</th>
</tr>
</thead>
<tbody>
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<td>Model 1</td>
<td></td>
<td></td>
<td></td>
<td>0.122</td>
<td>0.122</td>
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<tr>
<td>Constant</td>
<td>21.429**</td>
<td>0.206</td>
<td>0.206</td>
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<td></td>
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<tr>
<td>Time</td>
<td>1.049**</td>
<td>0.076</td>
<td>0.349</td>
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<tr>
<td>Model 2</td>
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<td>0.165</td>
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<tr>
<td>Constant</td>
<td>21.433**</td>
<td>0.201</td>
<td>0.201</td>
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<td></td>
</tr>
<tr>
<td>Time</td>
<td>0.983**</td>
<td>0.075</td>
<td>0.327</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neuroticism</td>
<td>1.164**</td>
<td>0.139</td>
<td>0.208</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 3</td>
<td></td>
<td></td>
<td></td>
<td>0.165</td>
<td>0.000</td>
</tr>
<tr>
<td>Constant</td>
<td>21.434**</td>
<td>0.202</td>
<td>0.202</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>0.983**</td>
<td>0.075</td>
<td>0.327</td>
<td></td>
<td></td>
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<tr>
<td>Neuroticism</td>
<td>1.163**</td>
<td>0.139</td>
<td>0.208</td>
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<tr>
<td>Time × Neuroticism</td>
<td>-0.002</td>
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<td>-0.001</td>
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</table>

*p < .05, **p < .01
Figure 1

*Scatterplot of Problematic Social Media Use and Hours Per Day*

Note. PSMU range is 9-45; calculated by the sum of responses to nine questions, each measured on a five-point Likert scale.

Figure 2

*Scatterplot of Problematic Social Media Use and Neuroticism*

Note. Neuroticism was measured by calculating the mean of responses to two questions on a seven-point Likert scale. The values shown in this figure are mean centered. PSMU range is 9-45; calculated by the sum of responses to nine questions, each measured on a five-point Likert scale.
Analyses in this study showed that hours per day of social media use was a significant predictor of PSMU. This indicates a potentially negative impact on an individual’s mental health and well-being. This research supports findings in previous studies claiming that social media use can have significant associations with negative consequences such as depression (Lin et al., 2016), poor sleep quality, and low self-esteem (Woods & Scott, 2016). In the context of prior research and the characteristics of PSMU, the current study suggests that more time on social media could translate to more negative mental health outcomes.

Less time on social media may lead to fewer negative mental health outcomes. This idea could be explored through experimental research using interventions that limit participants’ social media use. A mixed design study comparing the mental health outcomes of the treatment group to the control group and changes of all participants over time could reveal more about the effects of reducing social media use. In the meantime, we should consider the relationship between time spent on social media use and PSMU, as well as its relationships with mental health shown in previous research. It may be valuable for people to monitor their social media use, assess both the benefits and harms they experience and implement strategies to use social media in ways and frequencies that enhance their wellbeing.

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https://doi.org/10.1016/j.adolescence.2016.05.008

https://doi.org/10.1016/j.chb.2015.09.004

How Mindfulness and Self-Compassion Relate to the Inclination of Seeking Support and to Depression, Anxiety, and Stress Levels

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Suggested bibliographic reference

Abstract

Due to the rise of positive psychology, mindfulness and self-compassion have become part of Western culture, and research on these topics is growing at an exponential rate. Mindfulness and self-compassion help an individual recognize, accept, investigate, and determine the cause of suffering. When people are faced with difficult life struggles such as symptoms of stress, anxiety, and depression, practitioners of mindfulness and self-compassion often respond with kindness and self-love, recognizing that imperfection is part of human nature (Neff, 2011). With the challenges of the COVID-19 pandemic such as adjusting to virtual campuses and increasing isolation, students, in particular, are experiencing more difficulty in coping with this unprecedented global situation. The purpose of this study was to examine the relationships between mindfulness and self-compassion with the levels of depression, anxiety, and stress of community college students. We predicted that students who were more likely to seek out support from others and/or engage in self-care practices will experience lower levels of stress, anxiety, and depressive symptoms. The participants were recruited from a local community college and they completed an online survey, which included the Depression Anxiety Stress Scales (Lovibond & Lovibond, 1994), Five-Facet Mindfulness Questionnaire (Baer et al. 2012), Self-Compassion Scale (Neff, 2003a), and demographic information. Our findings provide important insight into providing self-care practices such as mindfulness and self-compassion training on college campuses to help students develop and strengthen their emotional awareness, resilience, and overall well-being.

Keywords: mindfulness, self-compassion, anxiety, stress, depression

Due to the growing field of positive psychology over the past two decades, a growing interest in the clinical applications of mindfulness and mindfulness-based approaches has emerged. Bishop et al. (2004) have defined mindfulness as being aware of one’s present moment experience without judgment. In other words, the person can see the suffering with clarity and balance without running away. Self-compassion, on the other hand, is explained as the ability to extend compassion to one's self (Neff, 2003), so individuals can treat themselves with the same kindness, concern, and support as they would show to a good friend. Overall, mindfulness and self-compassion may be conceived as a healthy self-attitude with which the person recognizes suffering and responds
sympathetically to it. Researchers have found that mindfulness and self-compassion positively impact a variety of psychological factors such as the engagement of meditation techniques, originating from Buddhist spiritual practices, in helping individuals stay mindful and improve their wellbeing (Hanh, 1987; Baer et al., 2012; Bluth, et al., 2014).

Researchers have found a significant mediating effect of mindfulness and self-compassion in psychological wellbeing, as well as in depression and anxiety levels (Bostock et al., 2019; Pérez-Aranda et al., 2019; Takahashi et al., 2019, 2020). Mindfulness and self-compassion are strong predictors of reduced stress, as well as greater life satisfaction (Van Dam et al., 2011). Moreover, mindfulness and self-compassion are positively associated with social support (Wilson et al., 2020) which leads to better emotion-regulation, as well as increased positive affect and decreased negative effect on thriving (Feeney & Collins, 2014a). Social support may also potentially help a person to be focused on the present moment, instead of being isolated and dwelling on the past or worrying about the future.

Several studies have reported that during Coronavirus Disease 2019 (COVID-19) many people felt isolated, alienated, and had difficulty accessing social support (Xie & Kim, 2022; Saltzman et al., 2020). From March 2020 to June 2021, most schools and universities in the United States were closed and students participated in remote learning. The abrupt shift from face-to-face interactions between teachers/professors and students to online learning prompted us to ask the following question. During the COVID-19 pandemic, do students reach out for support from others and/or engage in self-care practices when encountering emotional or personal problems? Some researchers have suggested that self-care practices can decrease stress and anxiety and overall quality of life among students from various backgrounds (Moore & Wilhelm, 2019; Ayala et al., 2018).

In the current study, we examined the relationships between Depression, Anxiety, and Stress (DAS), self-compassion, and mindfulness. Although there are numerous studies on self-compassion, mindfulness, and DAS, there has been a paucity of research regarding seeking external support among college students. Therefore, we formulated the following three hypotheses: 1) participants who are mindful and self-compassionate will experience less depression, anxiety, and stress, 2) participants who are mindful and self-compassionate are more likely to seek out support from others, and 3) participants who engage in meditation practices will experience lower levels of DAS.

Method

Participants

Participants answered questions about their demographic information, such as age range, annual household income, race-ethnicity, gender identity, GPA, major and religious affiliation. Our sample included a total of 191 participants with 143 females (74.9%), 42 males (22%), 4 identified as gender-non-binary (2.1%), 1 participant preferred not to answer (0.5%) and 1 case was missing (0.5%). The majority of our participants were between the ages of 18 and 24 years old (59.2%). The ethnicity of our participants was as follows: 63 Latino/Latino-American/Hispanic (33%), 60 European/European-American (31.4%), 42 Asian/Asian-American (22%), 17 mixed ethnicities (8.9%), 9 Middle-Eastern (4.7%), 3 Pacific Islander or Tongan (1.6%), and 3 African/African-American (1.6%). Moreover, our sample had a total of 51 participants who meditate (i.e., 33 participants meditate less than an hour/week (26.56%), 13 meditate 1-2 hours/week (6.77%), 3 meditate 2-3 hours/week (1.56%), 6 meditate 3-5 hours/week (3.125%), 3 meditate 5-10 hours/week (1.56%), 0 meditate more than 10 hours/week, 2 did not respond (1.05%).

Design

We recruited participants by contacting 17 faculty members via email who were from various departments (i.e., psychology, counseling, communication, mathematics, English) at a community college and 12 faculty shared the “Mental Health
and Resilience” Google Forms survey with their students. The data collection lasted for 3 weeks (3/2/2021-3/21/2021). These students received extra credit or volunteer compensation for completing the survey. The research project was reviewed by the IRB committee and later approved by the Foot-hill-De Anza Community College District Office of Institutional Research and Planning. The data were self-reported and all participants provided an informed consent form. The survey took approximately 20 minutes.

Measures

The entire research questionnaire was presented in the Google Forms online survey tool.

**Self-Compassion scale.** Self-compassion was measured using Neff’s (2003) Self-Compassion Scale. The questionnaire has a total of 26 questions that assess the student’s level of self-compassion and consists of 5 sub-scales: Self-Kindness, Self-judgment, Common humanity, Isolation, Mindfulness, and Over-identification. More specifically, the instrument includes five items on self-kindness (e.g., “I try to be loving towards myself when I’m feeling emotional pain”), four items on common humanity (e.g., “When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people”), four items on mindfulness (e.g., “When I fail at something important to me I try to keep things in perspective”), five reverse-coded items on self-judgment (e.g., “I’m disapproving and judgmental about my own flaws and inadequacies”), four items on isolation (e.g., “When I think about my inadequacies, it tends to make me feel more separate and cut off from the rest of the world”), and four items on over-identification (e.g., “I try to be loving towards myself when I’m feeling emotional pain”). Responses to all the statements are rated on a 5-point Likert scale (1 = “almost never” to 5 = “almost always”).

**Depression, anxiety, and stress scale (DASS).** The DASS (Lovibond & Lovibond, 1993) consists of 42 questions that assess levels of depression, anxiety, and stress over the past week (i.e., 14 measured depression, 14 measured anxiety, 14 measured stress). Responses are rated on a 4-point scale ranging from “Did not apply to me at all” (0) to “Applied to me very much, or most of the time” (4). Depression items (e.g., “I could see nothing in the future to be hopeful about”), items focused on anxiety (e.g., “I found myself in situations which made me so anxious I was most relieved when they ended”), and items related to stress (e.g., “I found that I was very irritable”).

**Mindfulness scale.** We measured mindfulness using the Five Facet Mindfulness Questionnaire (Baer et al., 2008). The 15 items consist of 3 questions each based on “observing,” “describing,” “acting with awareness,” “non-judging,” and “non-reactivity.” The scale is composed of both positive-worded items and negative-worded items. The positive-worded items are 1, 2, 5, 6, 10, 11, and 12, and they are scored on a 5-point Likert scale that ranges from “never” (1) to “Very often or always true” (5). Examples of questions are “I’m good at finding words to describe my feelings” and “I pay attention to sensations, such as the wind in my hair or the sun on my face.”

Results

The Pearson bivariate correlation test was used for the analysis. Participants who scored higher on mindfulness were less likely to experience DAS \( r(189) = -0.59, p<0.001, r^2=.35 \) (see Figure 1). Analyses were also conducted on mindfulness and individual scales for depression, anxiety, and stress. As predicted, participants who had higher mindfulness scores were more likely to demonstrate lower depression \( r(189) = -0.60, p<0.001, r^2=.36 \), anxiety \( r(189) = -0.47, p<0.001, r^2=.22 \) and stress levels \( r(189) = -0.54, p<0.001, r^2=.29 \) respectively. We also found that there was a negative correlation between self-compassion and the DAS scale \( r(189) = -0.61, p<0.001, r^2=.37 \) (see Figure 2). In further analyses, self-compassion and depression, \( r(189) = -0.61, p<0.001, r^2=.37 \), anxiety, \( r(189) = -0.46, p<0.001, r^2=.210 \), and stress, \( r(189) = -0.61, p<0.00, r^2=.37 \), were all found to be negatively correlated.
Figure 1

*Mindfulness Vs. Depression, Anxiety, and Stress*

![Mindfulness vs Depression, Anxiety, and Stress](image)

*Note.* Relationship between mindfulness and depression, anxiety, and stress levels ($r (189) = -0.59, p<0.001, r^2=.35$).

Figure 2

*Total score of Self-Compassion and Depression, Anxiety, and Stress*

![Self-Compassion vs Depression, Anxiety, and Stress](image)

*Note.* Relationship between self-compassion and depression, anxiety, and stress levels ($r (189) = -0.62, p<0.001, r^2=.36$).
The second hypothesis was confirmed. We found that participants who reported being more mindful \((r(189) = 0.22, p = 0.002, r^2 = 0.05)\) and self-compassionate \((r(189) = 0.17, p = 0.018, r^2 = 0.03)\) were more likely to seek out support when they are struggling emotionally (see Table 1). More specifically, mindful participants were more likely to seek support from their parents \((r = 0.26, p < 0.001, r^2 = 0.07)\), a family member \((r(189) = 0.29, p < 0.001, r^2 = 0.08)\), a physician \((r(189) = 0.17, p = 0.02, r^2 = 0.03)\), and a teacher \((r(189) = 0.17, p = 0.02, r^2 = 0.03)\). However, we found no significant correlations regarding these individuals seeking out their partner, friend, mental health professional, helpline, religious figure, and youth workers, (see Table 1). Similarly, self-compassionate individuals were more likely to seek out support from their parents \((r(189) = 0.18, p = 0.15, r^2 = 0.03)\), a family member \((r(189) = 0.24, p = 0.001, r^2 = 0.06)\), a religious figure \((r(189) = 0.16, p = 0.02, r^2 = 0.03)\), or a teacher \((r(189) = 0.19, p = 0.01, r^2 = 0.04)\). However, no significant correlations were found between self-compassionate participants in seeking out their partner, friend, mental health professional, helpline, physician, and youth workers, (see Table 1).

We conducted further analyses to address our second hypothesis by exploring the support-seeking behavior of participants who scored high on the DAS scale. We found that participants who indicated higher levels of depression were less likely to seek support from others \((r(189) = -0.24, p = 0.001, r^2 = 0.06)\), particularly from their parents \((r(189) = -0.32, p < 0.001, r^2 = 0.10)\), a family member \((r(189) = -0.29, p < 0.001, r^2 = 0.08)\), or a teacher \((r(189) = -0.15, p = 0.04, r^2 = 0.02)\). However, they were more likely to look for support from a mental health professional \((r(189) = 0.18, p = 0.014, r^2 = 0.02)\). We did not find significant correlations between people who reported higher levels of depression with their partner, friend, helpline, physician, religious figure, or youth workers, (see Table 1). Moreover, participants who reported higher levels of anxiety also were less likely to seek others for support \((r(189) = -0.16, p = 0.30, r^2 = 0.03)\), particularly from their parents \((r(189) = -0.28, p < 0.001, r^2 = 0.08)\) or a family member \((r(189) = -0.28, p < 0.001, r^2 = 0.08)\). We did not find correlations between people who had higher anxiety and their likelihood to seek out their partner, friend, mental health professional, helpline, physician, teacher, religious figure, or youth workers, (see Table 1). Lastly, participants who stated higher levels of stress were more likely to seek support from their parents \((r(189) = -0.31, p < 0.001)\), a family member \((r(189) = -0.31, p < 0.001, r^2 = 0.10)\), or a teacher \((r(189) = 0.19, p = 0.01, r^2 = 0.04)\), and a mental health professional \((r(189) = 0.20, p = 0.005, r^2 = 0.04)\). Moreover, we did not find any significant relationships between those individuals who reported higher stress and their tendency to seek out their partner, friend, helpline, physician, or youth workers for support (see Table 1).

The third hypothesis was supported. Independent samples t-tests were conducted on the difference between participants who meditate versus those who do not meditate on their levels of mindfulness, self-compassion, and DAS. There were significant differences in mindfulness, \(t(188) = 4.21, p < 0.001\), self-compassion, \(t(189) = 3.65, p < 0.001\), depression, \(t(189) = -2.32, p = 0.02\), and stress levels, \(t(189) = -2.20, p = 0.029\). Individuals who meditate on a regular basis were more mindful, self-compassionate, less depressed, and had lower levels of stress as compared to the individuals who did not meditate. (Refer to Table 2 for means and standard deviations).

**Discussion**

The present work aimed at exploring the correlations between DAS, self-compassion, mindfulness, and the likelihood of asking for support. The results supported our first hypothesis. We found that participants who scored higher on mindfulness and self-compassion were less likely to experience DAS. Previous studies align with our results as mindfulness and self-compassion have symptomatic effects on DAS (Bostock et al., 2019; Pérez-Aranda et al., 2021). Mindfulness and self-compasion often improve psychological well-being due to
Table 2

<table>
<thead>
<tr>
<th></th>
<th>Mindfulness</th>
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</table>

Note. Means and standard deviations of participants (N=191) who meditate versus those who do not mediate on their levels of mindfulness, self-compassion, and depression, anxiety, and stress.

the individual being fully aware of one’s present state, which can help the individual experience the moment with openness and non-judgmental acceptance.

The second hypothesis was also confirmed. We found that participants who reported being more mindful and self-compassionate were more likely to seek out support when they have emotional struggles. More specifically, “mindful” participants were more likely to seek support from their parents, a family member, a physician, or a teacher. Similarly, “self-compassionate” participants were more likely to seek out support from their parents, a family member, a religious figure, or a teacher. Consistent with the existing literature, perceived social support was positively related to mindfulness, self-compassion, and better psychological well-being (Wilson et al., 2020; Victorson et al., 2021). These results illustrate that these participants readily rely on close others when they are coping with difficulties in their lives, which may protect them from increasing negative symptoms such as stress or anxiety.

We also found that participants who indicated higher levels of depression were less likely to seek support from others, particularly from their parents and a family member. However, they were more likely to seek out a mental health professional and a teacher. Participants who reported higher levels of anxiety also were less likely to seek others for support, particularly support from their parents or family members. Furthermore, participants who stated higher levels of stress were not likely to seek support from their parents and a family member, whereas they would seek help from a mental health professional and a teacher. It is possible that they do not feel comfortable and/or do not want to burden their parents and family members with their emotional struggles, and thus they turn to help from mental health professionals.

Lastly, our third hypothesis on the effects of meditation was supported as well. Participants who reported that they meditate tend to exhibit higher levels of mindfulness and self-compassion. Moreover, people who meditate were less stressed and had lower levels of depression. Surprisingly meditation did not affect participants’ anxiety levels. Our finding was inconsistent with past research on the benefits of meditation on highly anxious individuals (Bailey et al., 2019; Breedvelt et al., 2019; Saeed et al., 2019). It may be that we need more sensitive measures for anxiety, and to address the length of time that participants have been meditating.

With regard to the limitations of our study, there is a lack of gender diversity since most of our participants were females. In future studies, we would investigate the levels of mindfulness, self-compassion, and support-seeking in a larger, gender-balanced sample. In addition, it would be important to further examine possible ethnic and cultural differences in seeking support from others as
well as the dynamics within the family. A future direction would conduct an experimental study in which participants are assigned to a mindfulness program versus a non-mindfulness program and pre and post-measures are in place.

Due to the abrupt shift to remote learning during the COVID-19 pandemic and the lack of in-person interactions, it was particularly challenging for faculty members to observe and understand the students’ emotional struggles. The results of this study can potentially be used by academic institutions to improve their mental health support (e.g., services, resources) for students. Our results showed that mindfulness and self-compassion, as well as practicing meditation, can be beneficial for students. Moreover, classes and training workshops focused on wellness can guide students on how to navigate their emotions, increase their psychological well-being, and offer ways to seek support.

References


Personality Factors and Their Influence on Student Engagement Amid The COVID-19 Pandemic

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Suggested bibliographic reference

Abstract
Classic research conducted by Terenzini & Pascarella (1991) and Tinto (1993) concluded that college students learn more if involved in both academic and out-of-class activities. This study examined how unprecedented college campus closures during the COVID-19 pandemic impacted students’ sense of college connection. In this study, participants (N=1,409) completed an online questionnaire that measured participants’ college connectedness, shyness, the Big Five (extroversion, agreeableness, openness, conscientiousness, and neuroticism), and several aspects of interpersonal communication. It was hypothesized that non-shy and extroverted students would more successfully maintain a sense of college connectedness during the pandemic than shy and introverted students. It was also hypothesized that there would be a significant drop in college connectedness scores compared to a pre-pandemic connectedness study (Psi Beta, 2011). The first hypothesis was supported as there was an inverse relationship between non-shy students and college connectedness. The second hypothesis was also supported; in comparison to the mean of college connectedness prior to COVID-19, college connectedness declined. Additional findings include no significant relationship between extraversion scores and college connectedness, and a significant correlation between honor society membership and college connectedness. Future research might explore other factors that may impact college connectedness, such as immigration status, and first-generation status.

Keywords: COVID-19, pandemic, college connectedness, student, Big Five, personality

The connection students have with their campus goes far beyond colors and mascots, as college connectedness has been shown to affect the depth and quality of student learning. For instance, college students involved in both academic and out-of-class activities were shown to have learned more from their classes (Terenzini & Pascarella, 1991; Tinto, 1993). The loyalty, connection, and sense of identity associated with one's college are closely related to the term “campus connectedness” (Baynard, 2008). Researchers have used questionnaires in an attempt to identify what creates a sense of pride and connection to an institution. One such measure, The College Connectedness Questionnaire (Tucker & Rudmann, 2008), amalgamated several unique college connection scales to fully measure the level of connection a student felt to their particular campus. The questionnaire contains items about campus engagement. However, it is possible that certain personality traits (e.g., extroversion, shyness) play a role in college connectedness.
Personality has been measured through the five-factor model of personality (McCrae & Costa, 2003). A shortened version of this measurement, the Ten Item Personality Inventory, more briefly examines the main five aspects of personality: agreeableness, conscientiousness, extroversion, openness, and neuroticism (Gosling et al., 2003). It has been found that introversion correlates negatively with social engagement (Tuovinen et al., 2020). Shyness and introversion differ, and this difference may be important to recognize when determining the role of personality in college engagement. Shyness is defined as the feeling of anxiety and inhibition people experience in social situations, while introversion conceptually is an orientation toward one’s internal private world, as opposed to the outer social world (American Psychological Association, 2022). Essentially, shyness inhibits social connection and interaction while introversion is a preference for fewer social connections.

The COVID-19 global pandemic undoubtedly shifted much of the world into an entirely online setting. In this present study, it was first hypothesized that participants would report a lower level of college connection compared to the level of college connectedness measured in a pre-pandemic study conducted by Tucker & Rudmann, 2008. Second, it was hypothesized that extroverted students would have more successfully maintained a sense of college connectedness during the pandemic than introverted students. Third, it was hypothesized that non-shy students would have more successfully maintained a sense of college connectedness during the pandemic than shy students.

Method

Procedure

This study was conducted as part of the 2021-2022 Psi Beta Honor Society national research project. Chapters of the honor society were given the opportunity to participate. Upon registration and securing local IRB approval, a link to the research questionnaire was made available to participating Psi Beta chapter researchers. The questionnaire was created using the Google Forms platform. Each chapter then recruited a minimum of 30 participants. The online research questionnaire was available from October 10, 2021, to February 15, 2022. Once the data gathering period ended, the Psi Beta national office exported an Excel file and placed a link to it on the Psi Beta national website where visitors could download the raw data file. Upon receiving the data file, our research team cleaned and prepared the data (e.g., recorded reverse variables and deleted incomplete cases). The data was then imported into the JASP statistical analysis program, where total scores for the connectedness, shyness, and Ten-Item Personality Inventory were computed. Cronbach’s alpha coefficients were also computed for each scale to ensure the reliability of the scales.

Participants

One thousand four hundred and nine participants were recruited by participating Psi Beta chapters. Two hundred thirty-six participants were removed (32 did not give their consent to participate, 35 were underage, 120 gave invalid responses, and 49 had missing data). Students from participating colleges were removed if less than 15 participants filled out the questionnaire from each college. In all, 11 colleges provided participants for this study.

Participants were asked to state their ethnicity by either choosing an ethnicity provided as a multiple-choice or by using a fill-in-the-blank in case their ethnicity was not listed. Of the participants, 40% were of White/European American ethnicity, 27% Hispanic/Latino, 20% Asian/Asian American, 4% Black/African American, and 9% were mixed race or other. Of the participants, 29% were male, 69% were female, and 2% were other. The participants’ mean age was 23.55. Participants identified their college from a dropdown item that listed all of the participating colleges, indicated the number of semesters they had attended college and reported if they were part-time or full-time students.
Measures

College Connectedness

College connectedness served as the dependent variable for our study. Participants were asked to self-rate their college connectedness experience through an 18-item College Connectedness Questionnaire (Tucker & Rudmann, 2008). Questions asked participants to what extent they felt a certain emotion toward their college (e.g., “proud,” “connected,” and if they would recommend the college to potential students) using a Likert scale (1 = Not at all; 5 = Extremely). Participants then responded “Yes”, “No”, or “Unsure” to questions regarding their college-related behaviors (e.g., “Have you purchased any item with the college logo on it?” “Are you taking any performance-based classes this semester?” Participants were asked whether they were part of an honors society (for example, Psi Beta or Phi Theta Kappa).

Personality

Participants’ Big Five personality traits were measured using a Ten-Item Personality Inventory (Gosling et al., 2003). Participants were asked to indicate the extent to which they Agree or Disagree with 10 statements about their personality (e.g., extraverted enthusiastic, critical quarrelsome, dependable self-disciplined) using a Likert scale (1 = Disagree strongly, 7 = Strongly agree).

Shyness

Participants were asked to answer 19 questions on the Shyness Scale (Weyer & Carducci, 2001) to assess their level of shyness. The questions asked to what extent participants felt or acted a certain way (e.g. “I feel nervous when speaking to someone in authority,” “I have trouble looking someone right in the eye,” “I am usually a person who initiates conversation.”) Responses were gathered using a Likert scale (1 = Very Uncharacteristic; 5 = Very Characteristic).

Results

In comparison to the previous measure of college connectedness (M=57.55 in the year 2010), college connectedness declined to M=54.073, t(1,408) = -6.684, p = .001. There was an inverse relationship between non-shy students with college connectedness, r(1,408) = -.175, p = .001. In other words, as shyness scores increased, college connectedness decreased. There was a significant relationship between extraversion scores and college connectedness, r(1,408) = 0.23, p < .001. The mean Connectedness score was significantly higher for honor society membership compared to participants not in an honor society, t(1,408) = 7.23, p < .001. In other words, the students who were members of an honor society had higher college connectedness scores than non-members.

Lastly, a multiple regression analysis was conducted to clarify the relative contribution of each variable in explaining the variation in the dependent variable of College Connectedness. The adjusted $R^2$ of 0.087 revealed that taken together, Shyness, Extraversion, and honor society membership accounted for just 8.7 percent of the Connectedness variance. As can be seen in Table 2, honor society engagement, and Extraversion produced significant standardized beta coefficients, while Shyness did not.

Discussion

The first hypothesis was supported as participants reported a lower level of college connection compared to the level of college connectedness measured in an earlier, pre-pandemic study in 2010. One reason participants in this study had a lower level of college connectedness compared to pre-pandemic levels could be due to a lack of in-person engagement, particularly when it came to school activities such as clubs, sports, and other extracurriculars. The second hypothesis—that extroverted students would have more successfully maintained a sense of college connectedness during the pandemic than introverted students—was supported; while the Pearson r between connectedness and extroversion was significant, extroversion was found to be a significant predictor of connectedness in the linear regression model. The somewhat weak relationship between extraversion and college connectedness is unclear; perhaps introversion/extroversion has less impact when instruction is virtual. The last
The hypothesis was partially supported as non-shy students more successfully maintained a sense of college connectedness during the pandemic than shy students according to the Pearson $r$ test. Shyness, however, did not significantly predict connectedness in the linear regression analysis. This may be the case as shy individuals tend to keep to themselves, but in online courses on video conferencing programs like Zoom, they have the option to turn off their cameras to avoid being active participants. In an in-person event, however, shy individuals are forced to step outside of their comfort zone. Although we had not hypothesized it, we found active engagement in an honor society to correlate with significantly higher college connection scores.

The results of this study reflect how students were impacted by remote learning and several factors that impact college connectedness. Our findings suggest the benefits of an on-campus learning environment. Face-to-face engagement is important when it comes to clubs or extracurriculars, for example. In-person engagement facilitates a connection between club members and students involved in other extracurricular activities. We should not take for granted the value of the interaction that takes place in clubs and other programs in one’s college. For many students, face-to-face interaction may be essential to fostering a sense of college connection. These programs give individuals a sense of belonging and purpose; when something as uncertain as COVID-19 strikes, belonging and purpose are especially important. Another benefit of the study was the realization that some individuals need a nudge to break out of their interpersonal shells. It is beneficial to accommodate all types of individuals to join a club or extracurricular activity whether it takes place online or in person.

Future research could look into ways to encourage students to become more involved in extra-curricular and co-curricular options available on campus. Assuming campus connection contributes to positive academic outcomes (Pascarella & Terenzini, 1991; Tinto, 1993), promoting student engagement should be a top priority. It could also be beneficial to measure whether honors society membership alone increases college connectedness or whether a variety of organized group activities have the same positive impact on college connectedness. Future research may also benefit from studying the relationship between ethnic and cultural influences on community college connectedness. For instance, which ethnicities had greater college connectedness during the pandemic? Is there a difference in college connectedness among students from collectivist and individualist cultures? Exploring these different factors may allow for a better understanding of how students connect to the community college, allowing colleges to make use of such factors in order to enhance college connectedness and, therefore, college retention.

The present study was not without limitations. The research questionnaire was long and may have fostered survey fatigue. The study did not address the variety of negative experiences students experienced during the pandemic such as loss of loved ones, contracting the virus, and/or loss of occupations. An additional limitation is that the study did not compare the results for participants enrolled on campuses that were completely closed to those from campuses that provided at least limited on-campus activities. The study used a brief (10-items) version of the Big 5 personality inventory; using this shorter version of the Big 5 probably sacrificed greater precision that the longer 44-item version would have provided. Lastly, because participants responded to an online questionnaire, there is no definitive way to be sure that there were no duplicate responses.

Altogether, the current study provided an opportunity to explore the relationship between community college connectedness during the COVID-19 pandemic, and factors (i.e., shyness, personality differences, honors program participation) that may have influenced college connectedness. Understanding these factors may better assist students and professors in encouraging campus connectedness and suggest more ways to engage students in campus life.
Table 1

Descriptive Statistics for Measurement Scales

<table>
<thead>
<tr>
<th>Scale</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connectedness</td>
<td>1,409</td>
<td>55.10</td>
<td>13.74</td>
<td>0.84</td>
</tr>
<tr>
<td>Shyness</td>
<td>1,409</td>
<td>54.07</td>
<td>15.16</td>
<td>0.92</td>
</tr>
<tr>
<td>Extraversion</td>
<td>1,409</td>
<td>7.69</td>
<td>3.20</td>
<td>0.70</td>
</tr>
</tbody>
</table>

Note. Shyness was measured on a Shyness Scale (Weyer & Carducci, 2001). Honor society membership was measured by asking participants whether or not they were members of any honor society. Extraversion was measured on the Ten Item Personality Inventory (TIPI) (Gosling et al., 2003).

Table 2

Linear Regression Statistics for the Study Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>β</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shyness</td>
<td>-0.052</td>
<td>-1.59</td>
<td>0.113</td>
</tr>
<tr>
<td>Extraversion</td>
<td>0.194</td>
<td>5.94</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Honor Society</td>
<td>0.189</td>
<td>7.43</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

References


Analysis of Loneliness and Participation in Recreational Activities, Spirituality, Work, and School in East King County, Washington during the COVID-19 Lockdown

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https://doi.org/10.54581/JJJC1614

Abstract
Over the course of the COVID-19 Pandemic, researchers have examined how people adjusted to the conditions of social isolation. As a follow-up to those studies, it was investigated if, in King County Washington State, there was a correlation between people’s new level of participation in work/school, religious, or recreational activities during the March-May 2020 lockdown (in comparison to pre-pandemic levels) and how lonely they felt during that time. Two hundred fifty-two King County residents (aged 18 - 65 years old) were surveyed over the internet. They were asked about their level of participation in work/school, religious, and non-religious recreational activities, whether the activities were conducted in-person or virtually, and if the amount of participation was more or less than before the pandemic. Participants were collected through snowball sampling, starting with immediate friends, families, and colleagues. Based on previous studies, it was predicted that participants who engaged in religious and recreational activities would feel significantly less lonely, while those who had engaged in work and school activities would feel significantly lonelier. The only significant difference that was present was regarding recreational activity; people who participated at the same level of recreation as they had before the pandemic were significantly less lonely than those who participated in recreation at greater or lesser levels during the pandemic. This finding is important because it suggests that a balanced amount of recreation can alleviate loneliness and its impacts on factors such as depression, anxiety, poor mental functioning, decreased motivation, etc. This study also illustrates the importance of maintaining routines that lessen loneliness.

Keywords: Recreation, Loneliness, Virtual, COVID-19, Social Isolation

In response to the COVID-19 pandemic in 2020, social isolation measures and restrictions took place in various countries to lessen the spread of the virus and follow science-backed guidelines such as limiting social contact with others – which have been proven in research to be extremely effective, especially when comparing states and countries that refuse to follow social isolation guidelines to those that do (Erwin, 2021). However, one of the biggest unintended risks of social isolation measures and restrictions was putting people at increased risk for loneliness (Li, 2021;
Loneliness is when one is unable to meet desired social goals, regardless of if one is surrounded by others or not (Luchetti, 2020). Loneliness has already risen within the last 43 years at similar rates between Asians, Europeans, and Americans (Kara-Yakoubian, 2022) and its impacts include poor family functioning, poor economic/education efficiency (Williams, 2020), anxiety, difficulty with cognitive tasks (Wei, 2020), depression, self-harm (Bird, 2021), decreased motivations, decreased well-being, and withdrawal from activities and people that bring joy (Telyani, 2021).

**Recreational, Religious, School, and Work Activities during the first COVID-19 lockdown**

During the first COVID-19 Lockdown in March-May 2020, certain activities such as outdoor exercise and international tourism decreased (Fatmi, 2020) and sedentary behavior and over-use of depressants - such as binge-watching TV or alcohol respectively – increased (Estedlal, 2021; Rhodes, 2020). However, others reported that social isolation gave them more time for hobbies (Maryann, 2020), with 41% of people in a study developing new hobbies and 45% improving relationships (Williams, 2021). Recreational activities that helped alleviate feelings of loneliness and improved mental health included watching movies on TV, listening to radio programs or podcasts, engaging in creative writing, arts and crafts, games, or physical activities like walking, swimming, indoor cycling, martial arts or yoga, horseback riding, and so on (Eklund, 2022). Video apps such as Zoom and Facetime helped rekindle social interaction among distant friends and family (Cairns, 2020).

Malaysian Christians, Muslims, and Buddhists reported that there was stress in adapting to social distancing practices as in-person religious rituals/gatherings increased the chances of contracting COVID-19 (Ting, 2021). In another study, a quarter of Americans reported an increase in faith during the Pandemic (Defranza, 2021). Religiously engaged people see maintaining faith as the key to living a positive and healthy life (Eklund, 2020). Studies have found that religiously active people experienced better resilience, and mental well-being, especially in times of great trauma or distress (Arslan, 2021).

While studies suggest distanced/virtual learning does come with advantages that in-person learning lacks, students also faced disadvantages such as difficult socio-economic conditions and lacking a good learning environment at home (Cairns, 2020). Thus, researchers warn that the quality of one’s learning during COVID-19 could heavily impact work readiness and relationship quality for students once they graduate (Tomasik, 2021). Increased loneliness for students also contributed to anger and loss of concentration (Telyani, 2021). Loneliness and Social isolation also heavily impacted teachers’ ability to connect with their already unmotivated students (Telyani, 2021).

Most workers and organizations had no prior direct experience with remote learning, save for a minority who were rich, tech-savvy, and financially secure (Wang, 2021). If one worked in health, education, community, government, sales, or services (i.e., postal, restaurants, caregiving, waste management) the amount of time spent away from home increased during the pandemic, in contrast to those working in other fields such as the technology industry (Fatmi, 2020). Many working parents had to take on teacher roles while the schools ceased in-person learning (Tomasik, 2021). However, more self-disciplined people demonstrated that they were less prone to procrastinate, had effective work performance, and maintained a better work-family balance than less self-disciplined people (Wang, 2021). When social support was present on work-provided social platforms, loneliness among co-workers could be significantly alleviated, but not to the degree of in-person interactions (Wang, 2021).
Washington and King County During COVID-19

There have been more than 1,409,099 confirmed COVID-19 cases and 11,397 confirmed deaths by COVID-19 in Washington State (Tracking..., 2022). However, most of the research on COVID-19 and social isolation was conducted outside of Washington State. Therefore, this study explored COVID-19’s psychological impact on recreational, religious, educational, and work activities within Washington State. We also examined levels of loneliness using a modified version of the UCLA Loneliness Scale in the King County area of Washington State during the State’s first social isolation lockdown between March and May 2021.

The following results were hypothesized for our study; (H1) People who participated in non-religious/recreational activities equal to or more than they did pre-pandemic will feel less lonely; (H2) People who participated in religious activities equal to or more than they did pre-pandemic will feel less lonely; (H3) People who engaged in work and school activities equal to or more than they did pre-pandemic will feel lonelier.

Method and Procedure

Participants

We used the Qualtrics XM program to host our online survey. Participants included adults ages 18-65 years old, residing in King County, Washington during the March-May 2020 lockdown (Governor, 2020). We started by inviting staff and students at Bellevue Community College and Seattle Central College, then followed up with our family, friends, and local communities through social media (Facebook, Instagram, WhatsApp). We encouraged all participants to share the survey with other people with whom they had connections. A total of 252 people responded to the survey, and 48 responses were deleted due to incomplete responses or failure to meet the criteria desired for the sample. The remaining sample included 204 total participants (56 male, 135 female, four non-binary, nine who refused to identify).

Materials

There were three sections of the survey. The first section focused on gathering demographic information, such as if the participant was a King County resident from March through May 2020. Additional demographic questions included the participant's gender, age group, and pronouns. If the participant’s responses did not match the age and resident qualifications for our desired sample, they were prevented from completing the rest of the survey. Section one of the survey also asked participants for their informed consent in analyzing and publishing their responses.

The survey’s second section focused on four types of activity (religion, recreation, work, and school) and how much time the participant partook in these activities either digitally or in person from March through May 2020. Participants were given a second item where they could provide further detail their level of participation. For example, participants responded to the question, “How much did you participate in religious/spiritual activities during COVID-19 through video?” This question was followed by, “Did you participate in this activity more, the same amount, less than the same amount, or not at all during/before the pandemic?” If a participant did not participate in a certain activity, they were instructed to skip ahead to another item.

The third section utilized the modified UCLA Loneliness scale to assess the participants’ feelings they experienced during the pandemic lockdown. This scale is a reliable and valid measure across various samples and past research on the scale has identified correlations between loneliness and other psychological factors such as depression and affiliative tendencies (Russell, 1978, See Appendix A). In the second and third sections, participants were given the option to reply “I don’t remember” since we were asking participants to recall experiences that happened a year ago and we did not want to encourage participants to guess or be dishonest in their responses.
Procedure

After the IRB had approved our study in November 2022, data collection took place between November 2021 and January 2022. There was no time limit to the survey; we encouraged participants to take as much time as needed to recall their activities and behavior between March and May 2020. The survey was designed to be welcoming and open, as the questions could potentially bring up memories of negative experiences of the first lockdown, social isolation, and the early days of the COVID-19 pandemic. We made the survey accessible by providing mobile and computer versions. We also restricted the number of items so participants could easily complete the survey within 10 minutes. Participants were invited to share the survey with others who fit the desired sample population. As an incentive to complete the survey, student participants were offered extra credit for participation, while non-students were informed of the benefit their participation would provide to their community.

Results

The first univariate analysis of variance was conducted to examine the differences in loneliness between people who did not participate in non-religious/recreational activities (birthdays, happy hour, graduations, etc.; n = 69), those who participated less than before the lockdown (n = 87), those who participated the same amount as before the lockdown (n = 12), and those who participated in more non-religious/recreational activities than before the lockdown (n = 9). A significant difference was found between groups, F = (3, 173) = 3.90, p = .01. Bonferroni post hoc analyses indicated that loneliness was higher in participants who increased participation (M = 37.22, SD = 9.76) and who decreased participation (M = 47.09, SD = 17.41) in non-religious/recreational activities than before the lockdown (n = 9). A significant difference was found between groups, F = (3, 173) = 3.90, p = .01. Bonferroni post hoc analyses indicated that loneliness was higher in participants who increased participation (M = 37.22, SD = 9.76) and who decreased participation (M = 47.09, SD = 17.41) in non-religious/recreational activities from before the lockdown, while compared to participants who engaged approximately the same amount as before the lockdown (M = 31.67, SD = 13.39), F = (3, 173) = 15.43, p = .015.

The last univariate analysis of variance was conducted to examine differences in loneliness between people who did not participate in religious/spiritual activities (prayer, gatherings, meditation, etc.; n = 128), those who decreased their religious/spiritual activities during the lockdown (n = 23), those whose religious/spiritual activities remained the same (n = 17), and those who increased their religious/spiritual activities during the lockdown (n = 12). No significant difference in loneliness was found between these groups, F = (4, 198) = .90, p = .482.

Discussion

Our first hypothesis - (H1) People who participated in non-religious/recreational activities equal to or more than pre-pandemic would feel less lonely was supported. More specifically, people who participated in recreational activities during the March-May 2020 lockdown at the same level as they had before the pandemic were less lonely than people who had increased or decreased participation in those activities before the pandemic (see Table 1 and Figure 1). Our other hypotheses, (H2) People who participated in religious activities equal to and more than pre-pandemic would feel less lonely, and (H3) People who engaged in work and school activities equal to and more than pre-pandemic would feel lonelier, were not supported. There were no significant differences found in people’s level of loneliness when they participated in religious, work, or school activities. Thus, our hypotheses were only partially supported by the results.
Regarding participation in recreation (H1), our results suggest that if one’s level of recreation is maintained and neither decreased nor increased, the level of loneliness will not rise. Regarding participation in Religion and Work/school (H2 and H3), we did not find significant differences. This is perhaps due to so much uncertainty and complexity regarding work (Wang, 2021), school (Telyani, 2021), and religion (Ting, 2021), making it difficult

Table 1

<table>
<thead>
<tr>
<th>Dependent Variable: Total UCLA Loneliness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did you participate in non-religious/recreational activities (birthday, happy hour, graduations...) during the quarantine lockdown?</td>
</tr>
<tr>
<td>------------------------------------------</td>
</tr>
<tr>
<td>No, I did not</td>
</tr>
<tr>
<td>Yes, less than before the lockdown</td>
</tr>
<tr>
<td>Yes, approximately the same as before the lockdown</td>
</tr>
<tr>
<td>Yes, more than before the lockdown</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

Figure 1

Comparison of level of Non-religious Recreational Activity and level of Perceived Loneliness

Estimated Marginal Means of Total UCLA Loneliness

Did you participate in non-religious/recreational activities (birthday, happy hour, graduations...) during the quarantine lockdown?
to identify significant loneliness differences in loneliness within each area of life. Meanwhile, previous studies have found that participating in recreational activities helps improve mental well-being and alleviates feelings of loneliness in the face of uncertainties, even during the COVID-19 pandemic (Eklund, 2022). Though this suggests that increased recreation leads to decreased loneliness, our finding was that when people increased their level of recreation, they reported feeling lonelier compared to those who had maintained their level of recreation. A plausible explanation for this could be that having too much free time can result in lower subjective well-being (Sharif, 2021). An increase in recreational activities can also involve depressants, drug use (Estedlal, 2021), or sedentary behavior like watching TV (Bird, 2021). Such activities are associated with the development of a negative self-image and relationship conflicts, which in turn may bring about more loneliness.

Thus, we can interpret our findings as follows. First, people who participated in the same amount of recreational activity as they had before the pandemic may have felt fewer of the negative effects of this huge lifestyle challenge; they were able to carry on as usual. Next, people who spent more time than before on recreational activities may have felt discord to a greater degree. Having spent more time than usual on recreational activities in response to COVID-19 challenge may also have been dealing with unemployment (Rhodes, 2020), difficulty learning, socioeconomic challenges, the risk of contracting COVID-19, and the risks of their loved ones contracting the virus (Maryann, 2020). They may have been struggling to meet demands from both work and school (Wang, 2021). Since our study also asked if people participated in birthdays, happy hours, graduations, and similar events as part of recreational activities, it can be assumed the more one participated in these things the more one would experience bittersweetness for how things had changed so much; people had to ponder whether or not to follow social guidelines (Erwin, 2021). In-person participation increased the risks of contracting and spreading COVID-19 (Erwin, 2021) and virtual participation lacked the closeness and intimacy present in in-person work (Wei, 2020). No participation at all could have led to feeling alone and left out. Furthermore, having too little recreational time probably increased stress, while having too much time increased boredom (Sharif, 2021). This imbalance increased the difficulty for people to process all these factors while trying to meet relationship goals. Loneliness can increase if relationship goals are not met (Luchetti, 2020). It is recommended that people in King County be mindful of how much or how little they devote to their recreational activities, for the sake of their mental well-being.

Some limitations of our study included hindsight bias while recalling an event two years ago and the challenge of remembering traumatic events. A shortcoming in this study is the failure to gather data on race, income, or occupation; we felt that asking for personal information would deter people from completing the survey. Analysis of H2 and H3 may have lacked significant differences due to the small sample size. Future studies could replicate this survey and focus on the elderly, children, and people living outside of King County, Washington.
Table 2

*Mean level of loneliness between groups participating in Religious/Spiritual Activities*

Dependent Variable: Total UCLA Loneliness

Did you participate in religious/spiritual activities (prayer, gatherings, mediation...)
during the quarantine lockdown?

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>I do not remember</td>
<td>53.33</td>
<td>20.50</td>
<td>3</td>
</tr>
<tr>
<td>No, I did not</td>
<td>44.99</td>
<td>17.26</td>
<td>128</td>
</tr>
<tr>
<td>Yes, but less than before the lockdown</td>
<td>46.30</td>
<td>16.50</td>
<td>23</td>
</tr>
<tr>
<td>Yes, approximately the same as before the lockdown</td>
<td>38.24</td>
<td>16.96</td>
<td>17</td>
</tr>
<tr>
<td>Yes, more than before the lockdown</td>
<td>43.17</td>
<td>14.92</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td>44.55</td>
<td>17.02</td>
<td>183</td>
</tr>
</tbody>
</table>

Table 3

*Mean level of loneliness between groups participating in Attending Work/School*

Dependent Variable: Total UCLA Loneliness

Did you work/attend school during the quarantine lockdown?

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>No, I did not work/attend school during the lockdown</td>
<td>42.11</td>
<td>14.10</td>
<td>18</td>
</tr>
<tr>
<td>Yes, I worked/attended school REMOTELY more than half the time (on zoom, teams)</td>
<td>46.06</td>
<td>16.98</td>
<td>129</td>
</tr>
<tr>
<td>Yes I worked/attended school IN PERSON outside of the home more than half the time (at a work/school site)</td>
<td>40.53</td>
<td>17.01</td>
<td>57</td>
</tr>
<tr>
<td>Total</td>
<td>44.17</td>
<td>16.87</td>
<td>204</td>
</tr>
</tbody>
</table>
Figure 2
Comparison of Religious/Spiritual Activities and level of Perceived Loneliness

Estimated Marginal Means of Total UCLA Loneliness

I do not remember  No, I did not  Yes, but less than before the lockdown  Yes, approximately the same as before the lockdown  Yes, more than before the lockdown

Did you participate in religious/spiritual activities (prayer, gatherings, mediation...) during the quarantine lockdown?

Figure 3
Comparison of Attending Work/School and level of Perceived Loneliness

Estimated Marginal Means of Total UCLA Loneliness

No, I did not work/attend school during the lockdown  Yes, I worked/attended school REMOTELY more than half the time (on zoom, teams)  Yes I worked/attended school IN PERSON outside of the home more than half the time (at a work/school site)

Did you work/attend school during the quarantine lockdown?
References


Kara-Yakoubian, M. Massive Meta-Analysis Finds Loneliness Has Increased in Emerging Adults in the Last 43 Years. PsyPost https://www.psypost.org/2022/01/massive-meta-analysis-finds-loneliness-has-increased-in-emerging-adults-in-the-last-43-years-62377


Appendix A

Modified UCLA Loneliness Survey

Please answer the following questions according to how you felt during the quarantine LOCKDOWN between MARCH and MAY in 2020.

1) I was unhappy doing so many things alone.
   a. I never felt this way
   b. I rarely felt this way
   c. I Sometimes felt this way
   d. I often felt this way
   e. I cannot remember

2) I had nobody to talk to.
   a. I never felt this way
   b. I rarely felt this way
   c. I Sometimes felt this way
   d. I often felt this way
   e. I cannot remember

3) I could not tolerate being so alone.
   a. I never felt this way
   b. I rarely felt this way
   c. I Sometimes felt this way
   d. I often felt this way
   e. I cannot remember

4) I lacked companionship.
   a. I never felt this way
   b. I rarely felt this way
   c. I Sometimes felt this way
   d. I often felt this way
   e. I cannot remember

5) I felt as if nobody really understood me.
   a. I never felt this way
   b. I rarely felt this way
   c. I Sometimes felt this way
   d. I often felt this way
   e. I cannot remember

6) I found myself waiting for people to call or write.
   a. I never felt this way
   b. I rarely felt this way
   c. I Sometimes felt this way
   d. I often felt this way
   e. I cannot remember

7) There was no one I could turn to.
   a. I never felt this way
   b. I rarely felt this way
   c. I Sometimes felt this way
   d. I often felt this way
   e. I cannot remember

8) I was no longer close to anyone.
   a. I never felt this way
   b. I rarely felt this way
   c. I Sometimes felt this way
   d. I often felt this way
   e. I cannot remember

9) My interests and ideas were not shared by those around me.
   a. I never felt this way
   b. I rarely felt this way
   c. I Sometimes felt this way
   d. I often felt this way
   e. I cannot remember

10) I felt left out.
    a. I never felt this way
    b. I rarely felt this way
    c. I Sometimes felt this way
    d. I often felt this way
    e. I cannot remember
A Research Proposal

Social Influence in Virtual Spaces: Social Proof Versus Authority Power

Brittany Kester, Ruth Castillo, Tyler Wong, Lily Franklin, Andrew Cook, Oubadah Alwan, Sevilla Leuteneker, and Hazel Halili

Irvine Valley College, CA
Faculty Advisor: Michael Cassens

Suggested bibliographic reference

Abstract

The proposed research aims to explore the influences of authority power and social proof while considering personality characteristics in a post-pandemic virtual environment. This study will be conducted online as a conceptual replication of a recent experimental study (Danay et al., 2016) that was conducted in person and compared social influence strategies drawn from two of psychology’s most classic studies. This replication will include several personality factors. Scripts, language, inflection, and tone will imitate the classic Milgram experiments of the 1960s to display authority power, while a virtual version of the classic Asch line study will mimic social proof (Asch, 1955; Milgram, 1963). Participants will choose between Milgram's authoritative commands and Asch's intense social pressure. Prior to entering the live experiment participants will complete the Big 5 Inventory (BFI; McCrae & Costa, 2003), Locus of Control Scale (LCS; Rotter, 1966), and Adult Attachment Questionnaire (Simpson, et al., 1996). The two social forces (authority vs. social pressure) will be compared during the proposed study. The hypotheses posed are as follows:

H1) It is expected that a majority of participants will be influenced by social proof rather than authority.

H2) Agreeableness and openness will negatively correlate with authority and positively correlate with social proof.

H3) External locus of control will positively correlate with authority.

H4) Individuals with an avoidant attachment style will adhere to authority while anxiously attached individuals will follow social proof.

This research may provide insight into forces that influence an individual’s judgment in a virtual environment.

Keywords: pandemic, social proof, conformity, authority, personality

The 2020 global pandemic dramatically shifted how humans interact. Millions shifted their everyday life to a virtual environment; schools, workplaces, and family get-togethers all moved behind computer screens. Although this virtual shift undoubtedly decreased the spread of COVID-19, did it impact different social influences? Two classic experiments attempted to measure the strength of different social influences. Asch examined the power of conformity and social pressure in the 1950s, while in the late 1960s Milgram measured obedience and authority power. A recent study (Danay et al., 2016) attempted to pit those two social forces against one another to see which would prevail. That experiment used the harsh authoritative language of Milgram's obedience experiments and the anxiety-inducing social pressure of the Asch line study. The results were an even split,
with 50% of participants more influenced by authority power and the other half more influenced by social pressure. This finding suggests that in face-to-face situations, social proof and authority have equivalent influence. However, the Danay et al. (2016) experiment was conducted in person. Some research found that it is possible for social forces to fluctuate in diverse situations, including an online environment. One study conducted using an online format found a weak but significant negative correlation between the trait openness on the Big 5 personality measure and disinhibition, suggesting not only a behavioral difference in virtual settings, but that personality is a contributing factor (D’Agata & Kwantes, 2020). Another study found that personality and other noncognitive factors such as locus of control can also affect behavior and decision-making (Mihaela, 2015).

The study proposed here will explore the possible influences of personality factors such as locus of control on compliance to social forces when participants serve in a virtual environment. The Big 5 five-factor model of personality and the Locus of Control Scale are measures that have been used in previous research to explain differing behavior between an in-person and virtual environment. Still, there is a possibility that an individual’s behavioral differences may also be affected by their style of attachment. Attachment style has been shown to link to an increased likelihood of authoritarian and authoritative behavior, possibly showing a relationship between attachment and the influence of authority power (Roccato, 2008). This combination of personality measures may influence the predictability of an individual’s adherence to one social force over another. In summary, the proposed study is a conceptual replication of Danay et al. (2016) with the addition of several personality measures. The recent shift to an almost exclusive online environment as a consequence of the pandemic may have affected the relative influence between authority and social proof. It is believed that recreating this study in an online environment may identify changes in social influence and various personality dimensions will be found to moderate which force will be dominant.

This research imposes six hypotheses. First, it is expected that the majority of participants will be influenced by social proof. Second, it is expected there will be a negative relationship between authority power and a positive relationship between social proof and openness to experience. Third, it is expected that there will be a positive relationship between social proof and agreeableness. Next, it is expected that there will be a positive relationship between authority power and an avoidant attachment style. Fifth, it is expected that there will be a positive relationship between social proof and an anxious attachment style. Lastly, it is expected that there will be a positive relationship between social proof and an external locus of control.

Method

Participants

Participants will be introductory psychology students recruited from a southern California community college. IRB approval will be acquired from the college’s Institutional Review Board. Participants will be informed of the study through an email announcement distributed by the psychology department’s professors. Some professors may offer course credit as an incentive. The SONA system, a data collection, management, and storage system, will be used as a survey platform. Informed consent will be provided at the start of the survey and all participants will be required to read and opt-in before gaining access to the study. Within the informed consent message, participants will be made aware that there will be no risk to them during this study and they will be free to withdraw at any time without any penalty.

Measures

Demographics Participants’ sex, age, and ethnicity will be measured using open-ended text boxes.

Personality Agreeableness and Openness to experience will be measured using The Big 5 Inventory, a 44-item self-report measure that uses a 7-point Likert-type scale (BFI; McCrae & Costa, 2003). Participants make their ratings using a 7-point scale.
(1 = totally disagree; 7 = totally agree), with high scores in both subscales reflecting stronger traits.

**Locus of Control** Locus of control is measured using the Locus of Control Scale, a 29-item self-report measure (LCS; Rotter, 1966). The LCS assesses both internal and external locus of control, with high scores indicating an external locus of control and low scores indicating an internal locus of control. Each question asks participants to select one of two options (“yes” or “no”) that best align with their beliefs.

**Attachment** Anxious and avoidant attachment styles will be measured using the Adult Attachment Questionnaire, a 17-item self-report measure; only the Anxious and Avoidant subscales will be used (Simpson, et al., 1996). Participants provide their ratings using a 7-point scale (1 = totally disagree; 7 = totally agree), with high scores on both subscales reflecting a higher attachment style.

**Procedure**

Participant appointments will be available every 30 minutes from 9:00 a.m. to 6:00 p.m. seven days a week from October 27th to December 15th. Participants will use a Zoom link at the scheduled appointment time to connect to the live meeting.

**Trial Sequence**

The trial sequence for each participant will be as follows. Upon admission, participants will be met with three students in plain clothing and one authoritative male wearing glasses and a lab coat who will instruct them to turn their camera and microphone on. The man in the lab coat (the authority figure) will act mildly frustrated and say, “Hello. Thank you for coming. I’d like to talk to you in a break-out room. Hold on one moment.” Then a break-out room is created, and the authority figure and the participant only are sent to that room.

Once in the break-out room, the authority figure says,

“Okay, again, thank you for coming. I have a problem, and I hope you can help. One of my confederates had to drop out of the study today, so if you’re alright with it, I’d like you to act as a confederate rather than a participant. You will get the exact same participation credit, so there is nothing for you to worry about. All those other people who were in the Zoom are actually on my research team. They are all confederates following a script. I’ve already trained them, so I just need to give you a quick training too. I need you to follow a script. It’s really simple. I have another person coming into the meeting in a moment who will be our real research participant. We’re going to try to get them to conform to incorrect information given to them by the rest of the group. So, once we’re all set up, what will happen is that I will show everyone a series of lines of different lengths. I will then ask everyone to tell me which of the Comparison Lines matches the Standard Line, and then we’ll go around the group and give answers. But you’re not going to give the real answers, but what I’ve scripted for you. Your answers are right here on this card.”

The authority figure then shows a note card with the scripted answers for the participant. It says, “1. A, 2. B, 3. A” on it. The authority figure then continues,

“For question 1, you answer A. For 2, you answer B, and for 3, you answer A. I’ll even copy and paste this into a private chat just for you so you can remember. That’s it. Your orders are very easy, but it’s extremely important that you follow this script. These are the answers you must give. The study requires it. Don’t go with what you see on the screen. Always go with these instructions. Do you understand?”

Once the participant confirms that they understand, the authority figure directs them both back to the main room.

Upon returning to the main Zoom room, the participant will see that the four people are still in the room, but now a fifth has joined the meeting. The authority figure now assigns each person a seat number. The three original meeting members are assigned Seats 1, 2, and 3. They are directed to change their screen names to Seat 1, Seat 2, and Seat 3. The participant is asked to change their screen name to Seat 4, and the last person to enter
the meeting is asked to change their screen name to Seat 5. Once all names have been adjusted, the study proceeds. The authority figure now shares his screen, and all members can see a slide that says, “Welcome! THANK YOU for agreeing to participate in this study!” The authority figure advances to the next slide and reads the written instructions on it, which says,

“Instructions: In a moment, you will see a series of slides featuring a standard line and three comparison lines labeled A, B, or C. Your task is to identify which comparison line best matches the standard line. Please leave your camera on and yourself unmuted for the length of the study.”

The authority figure then advances to the first of three slides with line comparisons similar to what was seen in the classic conformity studies conducted by Soloman Asch (Asch, 1955). The authority figure repeats the instruction, “Please identify which of the comparison lines matches the standard line. Seat 1?” The correct answer to the question is Line A. The person identified as Seat 1 (a confederate) says “Line A”. Seats 2 and 3 (both confederates) in order also answer, “Line A”. Now, the authority figure asks the true participant in Seat 4 (who thinks they are a confederate) what they see. Whether they are following the orders of the authority figure’s script (which says A), following the lead of the other supposed confederates, or actually answering what is the correct match on the screen, they should answer “Line A”. (If the participant fails to answer, “Line A”, the study will be discontinued at this point.) The person in Seat 6 (who the participant thinks is the real participant but is actually another confederate) finishes the trial by also answering “Line A”.

The authority figure then advances to the next slide with the second set of lines. For this trial, the correct answer is B. The procedure is repeated with Seat 1 through Seat 3 being asked in order what they see, and all of their answers are “Line B”. When Seat 4 is asked, their script says, “Line B,” all of the confederates have answered “Line B,” and the correct match is Line B. They should answer “Line B”. Again if they fail to do this, the study will be discontinued immediately.

Finally, the authority figure advances to the final slide with the third set of lines. The factually correct match for Trial 3 is Line C. The procedure is followed one more time, and when Seat 1 is asked for their answer, they respond, “Line B”. The people in Seats 2 and 3 also answer “Line B”. Seat 4, the true participant, is then asked for their response. This is the primary dependent variable data that will be collected. There are three choices they have in deciding how to act. They could follow the orders of the authority figure and look to the script (authority power), which tells them to answer, “Line A”. Or they could follow the confederates’ lead, essentially doing what everyone else was doing (social proof), and answer “Line B”, or, lastly, they could look at the slide and reply with the factually correct answer on the screen, which is “Line C”.

After the participant answers, their response will be recorded, they will be thanked for their participation, and then provided a detailed verbal debriefing in which they are informed of the deception used. The participant will also be asked, “On a scale of 1 to 7, how familiar are you with the Asch Line Study on conformity conducted in the 1950s by Soloman Asch?” and “On a scale of 1 to 7, how familiar are you with the Obedience to Authority Studies conducted in the 1960s by Stanley Milgram?” (1 = completely unfamiliar; 7 = thoroughly familiar). The participants’ rating is recorded, and they are provided a digital copy of the debriefing before exiting the Zoom session.

**Results**

Here we will present statistical data. We will begin with a table summarizing statistical data (N, M, SD, coefficient Alpha) for all the scales (Attachment Style, the two Big Five scales, and Locus of Control). We will then describe the statistical tests conducted to test our hypotheses and the findings. We will present one or more tables and figures, but only if they are needed to help make the findings clearer.
Discussion

The Discussion narrative will progress as follows. Which, if any of the hypotheses were supported? How did the findings of this study relate to prior research in this area mentioned? All prior studies mentioned will include APA-style citations and appear in the reference section. Next, limitations to the current study will be described. The paper will conclude with suggestions for further research in this area.

References


