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Welcome to our first issue. Psi Beta’s Journal of Research (PBJR) is a national, independent, peer-reviewed student research journal established in 2021. Our mission is to peer-review, publish, and index scholarly manuscripts that describe psychological research conducted by undergraduate honor students. PBJR maintains high standards for content, has a rigorous review process and provides content access to the public and professionals. We assign a DOI number to every issue and article. We hope that PBJR will contribute to the teaching/learning process by engaging undergraduate students in research. Undergraduate research is known as a high-impact practice that promotes student retention and academic success. PBJR accepts submissions only from Psi Beta members. A submission must describe an IRB-approved research study conducted under the supervision of a psychology professor and written to conform to APA style (7th Edition).

Undergraduate research, scholarship, and creative inquiry is fundamentally a pedagogical approach to teaching and learning. With an emphasis on process, CUR defines undergraduate research as: A mentored investigation or creative inquiry conducted by undergraduates that seeks to make a scholarly or artistic contribution to knowledge.
Council on Undergraduate Research (October 12, 2021)
The Role of Empathy in Justice Sensitivity

Isabella Polito
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Suggested bibliographic reference

Abstract
What role does empathy play in moral decision-making? The present study examined the relationship between several empathy measures and empathy’s role in a person’s justice sensitivity. Prior research shows that empathy is a construct having several components. Research also suggests that an individual’s empathy can influence their thinking when serving social justice. In this study, I asked participants to complete several scales designed to measure empathy and justice sensitivity. Next, participants judged a defendant’s guilt. Participants read a description of Juan Rodriguez’s case, a man currently facing twenty years in jail for accidentally leaving his twins in his car, resulting in their deaths. Participants’ scores on several empathy scales were compared to their judgment of the defendant’s guilt. I hypothesized that subscales of empathy would be positively related to several perspectives of justice sensitivity. Next, I hypothesized that as participant empathy for the defendant, rather than the victims, increased, participants would favor less severe charges. One hundred and twenty-two (39 males, 83 females) participants enrolled in psychology courses at a southern California community college volunteered to complete a 20-minute questionnaire for course credit. A majority of the hypotheses were supported. Results found significant correlations among components of empathy and between the perspectives of justice sensitivity. Participants’ differential empathy for the father and the twins influenced the severity of the punishment they chose for the defendant. The results suggest that empathy can impact specific sensitivities of justice and perceptions in real-life situations. Further research is needed to understand further how empathy affects moral decision-making.

Keywords: empathy, perspective-taking, empathic concern, justice

People have an innate desire to connect socially with others. Empathy, the ability to see things from another person’s perspective, can foster social connectivity. But empathy has both positive and negative aspects. While it can bring feelings of joy and happiness in good circumstances, in times of despair, empathy can bring sadness and distress while attempting to comfort others experiencing difficult times. Empathy, therefore, can be unpleasant at times, hindering its everyday use. The consequence is the loss of empathy’s potential for bringing people together.

Historically, researchers have regarded empathy as a component of Emotional Intelligence, but recent research has studied empathy as an independent psychological construct. Some have described empathy as having two subcategories, Perspective-taking and Empathic Concern (Cameron et al., 2019; Longmire & Harrison, 2018; Murphy & Lilienfeld, 2019; Oliver et al., 2018; Pekaar et al., 2019; Van Der Graaff et al., 2014; Decety & Yoder, 2016). Both dimensions are crucial in determining an individual’s ability to empathize but differ in how they impact an individual’s perspective in situations. Perspective-taking,
described as cognitive empathy or self-focused empathy, is a form of empathy that focuses primarily on interpreting other individuals’ emotions and circumstances while not invoking one’s own emotions. Alternatively, Empathic Concern, sometimes named “other-focused” or “affective empathy,” involves the ability to share and understand another person’s emotional experience objectively.

Investigators have found that empathy includes multiple components. They have studied its lifespan development and the ways empathy manifests in different settings, including the workplace. One study on empathy’s evolution (Van Der Graff et al., 2014) found significant gender differences and evidence that empathy is an integral part of moral development. Studies of the workplace setting found that other-focused emotional intelligence, like perspective-taking, helped decrease subjective stress, while empathic concern or self-focused emotional intelligence benefits task performance (Pekaar, et al., 2019). Supporting these findings, Longmire & Harrison (2018) found that empathic concern is more motivating than perspective-taking in the workplace. However, perspective-taking is more beneficial for supervisors’ relationships with their employees. Cameron et al. (2019) found that research participants often suppress empathy due to its cognitive costs when assessing the costs and benefits of choosing an empathetic route when dealing with a situation. That study suggested that individuals would rather avoid empathy, even if it were the correct response to the circumstance, because of its cognitive and emotional consequences.

Researchers have conducted empathy-related research in social justice involving motivation for justice and prejudice development within the courtroom. Studies on empathy’s involvement in bias suggest that to combat anti-immigrant attitudes among adolescents, there should be a specific focus on perspective-taking and empathic concern (Miklikowska, 2018). A study on social empathy among social work students examined the relationship between empathic concern, perspective-taking, political affiliations, and stances on social justice policies. That study concluded that social empathy helped promote understanding and advanced social justice (Segal & Wagaman, 2017). Some research has investigated empathy’s place in the court system concerning justice sensitivity. Researchers describe justice sensitivity as an individual’s desire and motivation to support certain principles of justice (Decety & Yoder, 2016). Decety and Yoker (2016), in their study, defined cognitive empathy, affective empathy, and motivational empathy. They found that emotional empathy was not associated with justice sensitivity. Instead, they found that cognitive empathy (or perspective-taking) and empathic concern were correlated to individuals’ justice sensitivity, while emotional empathy was not. Another study investigated whether empathy-induced altruism, defined as a selfless concern for others’ well-being, could lead to violations of moral justice principles (Batson et al., 1995). That study found that individuals encouraged not to empathize were more likely to uphold social justice morals. A similar study investigated the effects of empathy manipulation on jurors’ decisions in the courtroom. The findings indicated that the participants encouraged to take the defendant’s perspective found them less guilty of the crime than participants who were not. Through perspective-taking, participants also rated the child abuse as a significant mitigating factor in the killing of the parents by their children (Haegerich & Bottoms, 2000). These findings provide insight into empathy in terms of individual justice sensitivity and provide the impetus for further justice system research.

Nonetheless, the role of empathy in the court system remains controversial but suggests it can have a beneficial influence. The United States court of law is one of few in the world that grants people the constitutional right to have a jury of their peers throughout their trial (United States Constitution: Amendment IX, 1793). Defendants
can enjoy a jury of their peers or “equals,” and jury composition can range widely by ethnicity, race, gender, and sexual orientation. Jurors, of course, hear evidence and decide on the defendant’s guilt or innocence. Our jury system is a form of checks and balances and a way to closely examine the defendant’s alleged crime’s perspective and reasoning. In other words, a jury of peers is the empathy factor in a court of law.

The present study had two parts. Part I explored the relationships among several well-regarded empathy-related measures. Part II was a case study in which participants read a scenario and responded by choosing the severity of a courtroom defendant’s prison sentence. For Part I of the study, reflecting on prior research in this area, I hypothesized a positive relationship between General Empathy and Empathic Concern. Similarly, I hypothesized a positive relationship between Personal Distress and Empathic Concern. I expected to find other relationships among the measures when exploring the resulting data set. For Part II, that involved an actual-life case study, I hypothesized that individuals who empathized with the defendant would arrive at a less harsh sentence. In contrast, those who had greater empathy for the defendant’s victims would choose a harsher punishment.

**Method**

This study used a correlational design. After receiving the Institutional Review Board’s approval to move forward, the researcher visited various psychology classrooms to recruit participants for the online study. Young adults (39 females, 83 males, Mage = 21.52, age range: 18-59) from various community college classes agreed to complete the research questionnaire. Professors agreed to compensate the participants with a small amount of extra credit. The participants (n = 122) received instructions to create an account through a third-party program, the Sona System, then register to take the questionnaire and receive credit for their participation. The researcher removed five participants’ data because they were underage. It was necessary to remove another eight participants’ data following edits to the case study description.

The scales used in the study included the Interpersonal Reactivity Inventory and the Justice Sensitivity Scale. The Interpersonal Reactivity Inventory (IRI) consists of twenty-eight items that focus on the components of empathy defined as Perspective-taking, Fantasy, Empathic Concern, and Personal Distress (Davis, 1980). For this study’s purpose, the Fantasy items were summed to form a composite score but were not individually analyzed. I also administered the Justice Sensitivity Scale to determine participants’ motivation for justice. The Justice Sensitivity Scale consists of forty items, divided into four ten-item sections that focus on four perspectives: Victim Sensitivity, Observer Sensitivity, Beneficiary Sensitivity, and Perpetrator Sensitivity (Schmitt et al., 2010). Also, a real-life case description about a man, Juan Rodriguez, was presented to the participants. Participants read and responded to questions regarding empathy and what they deemed to be the most appropriate sentence for the crime (see the Appendix).

**Results**

Descriptive statistics were computed for each of the empathy measures (see Table 1 for a summary). Next, relationships among the measures of empathy were computed. The results supported the first hypothesis. More specifically, there was a strong positive relationship between Empathic Concern and General Empathy, $r(120) = .29, p < .01$. Secondly, there was a positive relationship between Personal Distress and Empathic Concern. Specifically, $r(120) = .22, p < .01$. Further exploration found a negative relationship rather than a positive relationship between Personal Distress and Perspective-Taking, $r(120) = -.18, p < .01$.

Lastly, the case study hypothesis was that the punishment severity would differ for participants who empathized with the victims (the twins in the case study) and those who empathized with the accused (the father), $\chi^2(8) = 15.81, p < .05; \phi$
As shown in Table 2, the severity of the charge chosen by participants increased if they empathized with the twins and decreased when they empathized with the father. While most participants chose a 5-year prison term, those having greater empathy for the twins were more likely to recommend even greater punishment (e.g., incarceration for 15 or more years) for the accused.

Table 1

<table>
<thead>
<tr>
<th>Measures</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Empathy</td>
<td>3.21</td>
<td>.30</td>
</tr>
<tr>
<td>Empathic Concern</td>
<td>3.88</td>
<td>.67</td>
</tr>
<tr>
<td>Perspective-taking</td>
<td>3.83</td>
<td>.59</td>
</tr>
<tr>
<td>Personal Distress</td>
<td>2.76</td>
<td>.66</td>
</tr>
<tr>
<td>General Justice Sensitivity</td>
<td>3.36</td>
<td>.62</td>
</tr>
<tr>
<td>Victim Sensitivity</td>
<td>3.10</td>
<td>.78</td>
</tr>
<tr>
<td>Observer Sensitivity</td>
<td>3.40</td>
<td>.78</td>
</tr>
<tr>
<td>Beneficiary Sensitivity</td>
<td>3.18</td>
<td>.78</td>
</tr>
<tr>
<td>Perpetrator Sensitivity</td>
<td>3.76</td>
<td>.81</td>
</tr>
</tbody>
</table>

Note. The Interpersonal Reactivity Index is from Davis (1980). The index includes the subscales of Empathic Concern, Perspective-taking, Personal Distress, and its composite score provided the General Empathy score. The Justice Sensitivity Inventory is from Schmitt et al. (2010). The inventory included the subscales of Victim Sensitivity, Observer Sensitivity, Beneficiary Sensitivity, Perpetrator Sensitivity, and its composite score provided the General Justice Sensitivity score.

Table 2

<table>
<thead>
<tr>
<th>Who participants empathized with more</th>
<th>No Charge</th>
<th>Endangerment of a child (1 year)</th>
<th>Criminal Negligence (5 years)</th>
<th>Two accounts of Manslaughter (15 years)</th>
<th>A more significant charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>The father</td>
<td>21.62%</td>
<td>27.03%</td>
<td>43.24%</td>
<td>2.70%</td>
<td>5.41%</td>
</tr>
<tr>
<td>The twins</td>
<td>4.68%</td>
<td>15.63%</td>
<td>50%</td>
<td>21.88%</td>
<td>7.81%</td>
</tr>
<tr>
<td>Neither</td>
<td>15.38%</td>
<td>15.38%</td>
<td>46.15%</td>
<td>7.69%</td>
<td>15.38%</td>
</tr>
</tbody>
</table>

Note. The percentages represent the number of individuals within the groups that empathized with the father, the twins, or neither, and the charge they believed would be appropriate for Mr. Rodriguez.

Discussion

The results supported the study’s three hypotheses. There was a strong positive relationship between Empathic Concern and General Empathy, and there was a positive relationship between Personal Distress and Empathic Concern. Finally, the severity of the charge chosen by participants in-
creased if they empathized with the twins and decreased when they empathized with the father.

These findings supported prior research findings, specifically, the relationships found among General Empathy, Empathic Concern, and Perspective Distress. Oswald (1996), for example, compared the impact of empathic concern and perspective-taking on altruistic helping; she found that individuals who focused on affective empathy instead of cognitive empathy were much more likely to help an individual. Oswald’s study helps to explain the present results. Both empathic concern and perspective-taking are essential, but empathic concern carries more influence in general empathy, explaining a stronger relationship between empathic concern and general empathy than the relationship between general empathy and perspective-taking. A prior study found that most adults, when provided with options on how to respond to a scenario, deliberately avoided using empathy, even when it was considered the correct choice, due to its cognitive and emotional costs (Cameron et al., 2019). As a result of that study’s findings of the relationships between empathy components, I expected that personal distress would correlate positively with general empathy and its elements of empathic concern and perspective-taking. The results found a positive relationship between personal distress, general empathy, and empathic concern as expected, but not perspective-taking. It appears that personal distress plays a key role in empathy, as it can be the deciding factor on whether or not individuals choose to experience it. The negative relationship between personal distress and perspective-taking may be due to the cognitive component of empathy, possibly inhibiting individuals’ emotional distress.

This study’s findings are comparable to a study investigating social work students’ empathy to various other factors, including political affiliation and stances on certain policies. That study found that teaching social empathy helped students understand and advance in economic and social justice (Segal & Wagaman, 2017). The current study’s results found a positive relationship between general empathy and general justice sensitivity, as would be expected. Also, there was a positive relationship between general empathy and all perspectives of justice sensitivity. Finally, the finding that participants chose punishment levels according to whom they felt greater empathy (the father or the twins) supported prior research. An earlier study also investigated the effects of empathy manipulation on jurors’ decisions in the courtroom. In that study, participants read trial transcripts involving the killing of a parent by a child in self-defense due to an environment of ongoing abuse. The findings indicated that participants encouraged to take the defendant’s perspective found defendants less guilty of the crime (Haegerich & Bottoms, 2000). These findings parallel the current study’s results; those who empathized with the father leaned toward a lesser charge than those who empathized more with the twins.

This study’s findings provide food for thought in light of a defendant’s right within the American court system to a jury of their peers. These findings suggest empathy can play in jurors’ justice sensitivities and their motivation and thought processes when making decisions as jury members. The literature review did not find a consensus on whether or not circumstances and environmental factors should be considered when judging a crime. If they are, to what extent? Various factors clearly can change the perspectives and methods of reasoning when understanding and assigning blame for a crime. Should the jury selection process include juror empathy? However, as shown in this study, individual empathy is complex and has multiple factors and components, which are undoubtedly too challenging to isolate during jury selection. The findings may initiate a conversation within the legal community about the possible weaknesses of the current jury selection process and the implications that juror empathy profiles can have on decisions ranging from small fines to years or even life sentences, as
in Juan Rodriguez’s case. Research should continue to explore this area. Further research may play a significant role in furthering our understanding of empathy’s role in justice sensitivity and how it impacts the American court system.

This study was completed within a short period, resulting in several limitations. The study would benefit from a replication having a larger number and range of participants. Future research could benefit from gathering additional information on participants’ past experiences and knowledge of situations depicted in the case study. Finally, this study used a correlational design. An experimental design that manipulates various empathy components might further our understanding of how people respond to real-life situations, such as the Juan Rodriguez situation.

References


Schmitt, M., Baumert, A., Gollwitzer, M., & Maes, J. (2010). The Justice Sensitivity Inventory: Factorial validity, location in the personality facet
Appendix

Case Description

Participants read and responded to questions regarding the following real-life scenario.

Juan Rodriguez is a 39-year-old married man. He is an Iraq War veteran with three children. Mr. Rodriguez normally takes his 1-year-old twin daughters to daycare in the morning before going to his 8-hour shift at the James J. Peters VA Medical Center in Bronx, New York. One day, there was construction on his usual path, so he took an alternate route. After his shift was over, he returned to his car and discovered the bodies of his 1-year-old twin daughters strapped to their car seats in temperatures reaching the high 80’s. Rodriguez told police officers that he believed he had dropped them off at school before arriving to work that morning. Rodriguez, distraught, told officers, “I blanked out, my babies are dead, I killed my babies.” Rodriguez’s defense attorneys told reporters that Rodriguez was beside himself and did not intend to kill his babies (“Delay in grand jury action,” 2019)
Dispositional Mindfulness and Stress Coping Amid the COVID-19 Pandemic: An Exploration of Problem-Focused Mediators

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Suggested bibliographic reference

Abstract
The psychological phenomenon of mindfulness – a nonjudgmental attention to and awareness of one’s present experience – has been linked to effective coping with a range of situational stressors such as the transition to college, romantic relationships, and cancer. However, the potential mediating role of problem-focused coping strategies in predicting these outcomes has not been sufficiently addressed. In the current study we rectified this void in the literature by testing several problem-focused mechanisms for mindfulness’s relationship with situational stress coping in college undergraduates affected by the current COVID-19 pandemic. Using a correlational design, we tested whether: (1) dispositional mindfulness would predict less stress, less negative affect, and greater positive affect in the face of stressors manifested by the COVID-19 pandemic and (2) several problem-focused coping strategies would mediate the zero-order relationships between mindfulness and these criterion variables. We collected self-reports of all study variables from college students enrolled in the principal investigator’s undergraduate psychology courses via an online questionnaire. Results supported the expected associations between mindfulness and each of the well-being variables and partially supported the mediational hypotheses, with two out of the proposed five problem-focused strategies serving as statistically significant mediators. These results suggest that in addition to the primarily cognition-based mechanisms examined in previous research, mindfulness may also confer resistance to negative emotional states through adaptive behavior-based coping strategies.

Keywords: mindfulness, coping strategies, stress reduction, COVID-19, stress coping

Although there is no single integrated model that unanimously defines the psychological concept of mindfulness or describes its mechanistic relationship to enhanced well-being (Chiesa, 2013; Holzel et al., 2011; Khoury et al., 2017), there is general consensus that it can be essentially characterized as a nonjudgmental attention to and awareness of one’s present experience (Brown & Ryan, 2003; Brown et al., 2007). Fundamentally, the mindful individual is not “lost in thought” re-living the past, anticipating the future, entertaining counterfactual or hypothetical scenarios, or perseverating about the self, but rather fully attuned to his or her current sensations (visual, auditory, tactile, etc.) and the thoughts that arise in relation to those sensations in real time.
What Are the Benefits of Mindfulness?

Many studies throughout multiple contextual frameworks have explored the myriad of beneficial psychological outcomes associated with mindfulness (Tomlinson et al., 2017). The results of these studies indicate that both dispositional and situationally induced mindfulness predict a range of beneficial clinical outcomes, including anxiety (Kabat-Zinn et al., 1992; Miller et al., 1995), depressive symptoms and relapse (Strauss et al., 2014), and subjective stress (Chiesa & Serretti, 2009). Furthermore, as Keng et al. (2011) point out, dispositional mindfulness has specifically been linked to numerous psychological health benefits including life satisfaction (Brown & Ryan, 2003), conscientiousness (Giluk, 2009; Latzman & Masuda, 2013; Thompson & Waltz, 2007), self-esteem (Brown & Ryan, 2003; Rasmussen & Pidgeon, 2011), agreeableness (Thompson & Waltz, 2007), empathy (Dekeyser et al., 2008), competence, and optimism (Brown & Ryan, 2003).

In addition to the clinical benefits and positive psychological outcomes associated with this multifaceted construct, mindfulness has also been shown to aid in the process of coping with specific stressors, such as the transition to college (Palmer & Rodger, 2009; Ramasubramanian, 2016), romantic relationships (Carson et al., 2004), and cancer (Kang & Oh, 2012). More recently, a study of middle-aged adults in Italy showed a negative relationship between dispositional mindfulness and overall psychological distress during the COVID-19 pandemic (Conversano et al., 2020).

How Does Mindfulness Aid in Stress Coping?

In addition to the zero-order relationships observed between the mindful state and effective stress coping, a number of studies have implicated multiple clusters of emotion regulation mechanisms as potential mediators of the mindfulness-subjective stress relationship (Baer et al., 2006; Corcoran et al., 2010; Farb et al., 2012; Guendelman et al., 2017; Iani et al., 2018; Keng et al., 2011). Investigators have proposed that various facets of mindfulness promote adaptive emotion regulation (cognitive responses) by facilitating flexibility of emotion reactivity through multiple pathways (Corcoran et al., 2010; Farb et al., 2012; Garland et al., 2017; Iani et al., 2018). Specifically, non-judgmental acceptance is thought to foster a reduction of initial automatic appraisals which may reduce emotional suppression, avoidance, and cognitive distortion (Garland, 2015; Iani et al., 2018). Furthermore, the unique relationship with thoughts and emotions unique to mindfulness is thought to establish psychological distance (Grecucci et al., 2015) and interfere with habitual cognitive response cycles (Corcoran et al., 2010; Farb et al., 2012; Garland et al., 2017), which would otherwise perpetuate rumination and over-reactivity (Iani et al., 2018). Shapiro et al. (2006) posit that the clarity afforded by cognitive inhibition, enhanced self-regulation, and cognitive-behavioral flexibility may conspire to promote more adaptive coping skills.

The Present Study

Despite this impressive body of theory regarding potential mechanisms of the mindfulness-stress relationship, there are currently very few studies that have empirically tested specific mediators. The present study was intended to rectify this void in the literature by testing multiple potential mediators of mindfulness’s relationship with situational stress coping in college undergraduates affected by the current COVID-19 pandemic. We hypothesized that, in addition to the rather passive, cognitive and emotion-focused mechanisms described in previous literature, several problem-focused coping strategies such as planning, seeking social support, and suppression of competing activities would also play a mediational role. In light of this possibility, using a correlational design, we tested the following hypotheses: (1) Dispositional mindfulness would predict less stress, less negative affect, and more positive affect in the face of the stressors brought on by the COVID-19 pandemic and (2) A number of
problem-focused (approach) coping strategies (adapted from the inventory proposed by Carver et al., 1989) would mediate the zero-order relationships observed between mindfulness and these criterion variables.

**Method**

**Participants**

The participants \( N = 102 \) included students enrolled in introductory psychology courses at a southeastern college of moderate size. All participants received extra credit as an incentive for their participation in the study that amounted to 3% of the total course grade. Complete datasets were obtained from 102 participants (30 males, 72 females) ranging in age from 18 to 50 \( (M = 21.81, \ SD = 6.02) \). No datasets were excluded from the analysis.

**Measures**

We measured dispositional mindfulness using the Mindful Attention and Awareness Scale (MAAS, Brown & Ryan, 2003), a self-report questionnaire consisting of 15 items that tap into the traits and dispositions characteristic of mindfulness. The MAAS has been extensively validated and used in a large number of previous studies (see Brown et al., 2007, for a review). This scale achieved adequate internal reliability \( (\alpha = .88) \).

To assess the different ways participants responded to pandemic-related stress, they were administered the COPE Inventory (COPE; Carver et al., 1989) which is designed to measure a range of problem-focused (i.e., aimed at resolving the stressful situation or event, or altering the source of the stress), emotion-focused (i.e., aimed at managing the emotions associated with the situation, rather than changing the situation itself), and dysfunctional coping strategies (i.e., aimed at avoiding the situation or associated emotions by ignoring the problem through disengagement or substance abuse). We used a version of this scale in which respondents are prompted to indicate the degree to which they have evinced each response during the present period using the present perfect (I have been ...) verb form. In total, the scale contains 60 items, representing 15 separate, unipolar coping strategies comprised of four items each. Because our investigation only explored approach-focused coping strategies, we specifically adopted four problem-focused strategies for analysis: active coping (taking active steps to deal with the stressor), planning (thinking about how to cope with a stressor), suppression of competing activities (putting other projects and events aside in order to deal with the stressor), and seeking of instrumental social support (seeking advice, assistance, or information).

Participants completed the 10-item Perceived Stress Scale (PSS; Cohen et al., 1983) to report their subjective stress experienced in relation to the COVID-19 pandemic. Participants were asked about their feelings during the previous 30 days. This scale failed to achieve adequate internal consistency reliability \( (\alpha = .61) \).

The Positive and Negative Affect Schedule (PANAS; Watson et al., 1988) was used to assess participants’ positive and negative mood states over the past 30 days using a COVID-19-specific prompt similar to those which accompanied the previous two measures. Participants’ scores for each of the positively and negatively valenced items were summed to yield separate total scores for positive affect \( (\alpha = .88) \) and negative affect \( (\alpha = .88) \).

**Procedure**

The study was conducted in a digital format, administered via a Qualtrics® survey to be completed in one session. A series of self-report measures, including the MAAS, COPE, PSS, and PANAS were completed in succession. We collected data over the course of approximately one week during the Spring 2020 academic semester. Participants were sent a Qualtrics® survey link directly to their college email, which contained the instructions and all of the study questionnaires. Upon providing voluntary consent to participate and creating anonymous subject ID numbers, participants proceeded to complete the study questionnaires. The survey questionnaires required ap-
approximately 15 minutes to complete in total. Once participants finished the questionnaires, they were redirected to a separate webpage where they were asked to record their name and course section in order to receive course extra credit. All participants received extra credit in return for participation and all participant data remained strictly anonymous and confidential.

Results

Correlational Analyses

Our general correlational hypothesis was that dispositional mindfulness (MIND) would predict less perceived stress (PS), less negative affect (NA), and more positive affect (PA) as reported by our study participants in connection with the COVID-19 pandemic. To test these specific hypotheses, we conducted a series of Pearson correlation analyses depicted below in Table 1, which also includes intercorrelations with the four problem-focused coping strategies we adapted from Carver et al. (1989) COPE measure.

These analyses indicated moderately strong negative correlations between MIND and the criterion variables of NA, ($r(100) = - .35, p < .001$) and PS ($r(100) = -.31, p < .001$) and a moderate positive correlation between MIND and PA ($r(100) = .33, p < .001$). The outcome of these correlational analyses collectively indicate that higher self-reported mindfulness corresponded with more positive affect, less negative affect, and less stress in our study sample.

Mediational Analyses

Our broad mediational hypothesis was that one or more of the problem-focused coping strategies, RESTRAINT, SUPPCOMPAC, and (ACTCOPE PLANNING) would mediate the zero-order relationships observed between MIND and one or more of the criterion variables of PS, PA, and NA. In order to test this hypothesis, we conducted a series of regression analyses in line with the procedure described by Baron & Kenny (1986). We conducted this procedure using the predictor of MIND, each of the candidate mediator variables (ACTCOPE, RESTRAINT, SUPPCOMPAC, and PLANNING) and all three criterion variables (PS, PA, and NA) in separate analyses. For the sake of brevity, we will report only the results of the analyses that indicated either full or partial mediation.

MIND, ACTCOPE, PA Analyses

In Step 1 of the mediation model that included MIND, ACTCOPE, and PA, the regression of PA scores on MIND scores was significant, $b = .21, t(100) = 3.47, p < .001$. Step 2 showed that the regression of the ACTCOPE scores on the MIND scores was also significant, $b = .06, t(100) = 3.08$, resulting in a $p < 0.1$. Moving on, Step 3 of the mediation process showed that ACTCOPE was a significant predictor of PA scores, $b = 1.58, t(100) = 5.52, p < .0001$. Finally, Step 4 of the analyses revealed that, controlling for ACTCOPE, MIND scores were still significant predictor of PA scores, $b = .13, t(99) = -4.94, p < .05$. However, we conducted a Sobel test and found partial mediation in the model ($z = 2.63, p < .01$). See Figure 1 for a visual depiction of these results.

MIND, PLANNING, PA Analyses

In Step 1 of the mediation model that included MIND, PLANNING, and PA, the regression of PA scores on MIND scores was significant, $b = .21, t(100) = 3.47, p < .001$. Step 2 showed that the regression of the PLANNING scores on the MIND scores was also significant, $b = .08, t(100) = 3.92, p < .001$. Step 3 of the mediation process showed that PLANNING was a significant predictor of PA scores, $b = 1.58, t(100) = 6.55, p < .0001$. Finally, Step 4 of the analyses revealed that, controlling for PLANNING, MIND scores were no longer a significant predictor of PA scores, $b = .09, t(99) = 1.66, p > .05$. We then conducted a Sobel test, which confirmed full mediation in the model ($z = 3.42, p < .001$). See Figure 2 for a visual depiction of these results.
Table 1
Inter correlations Between Mindfulness, Coping Strategies, and Well-Being Outcomes

<table>
<thead>
<tr>
<th>Measure</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
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</thead>
<tbody>
<tr>
<td>1. MAASTOT</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. ACTCOPE</td>
<td>.30**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. RESTRAINT</td>
<td>.21*</td>
<td>.33**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. SUPPCOMPAC</td>
<td>.01</td>
<td>.61**</td>
<td>.29**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. PLANNING</td>
<td>.37**</td>
<td>.77**</td>
<td>.43**</td>
<td>.57**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. PSSTOT</td>
<td>-.31**</td>
<td>-.09</td>
<td>-.00</td>
<td>-.11</td>
<td>-.24*</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. PATOT</td>
<td>.33**</td>
<td>.48**</td>
<td>.30**</td>
<td>.35**</td>
<td>.55**</td>
<td>-.31**</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>8. NATOT</td>
<td>-.35**</td>
<td>.15</td>
<td>.16</td>
<td>.15</td>
<td>-.02</td>
<td>.42**</td>
<td>.01</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Note. MAASTOT = total mindfulness; ACTCOPE = active coping; RESTRAINT = restraint coping; SUPPCOMPAC = suppression of competing activities; PSSTOT = total perceived stress; PATOT = total positive affect; NATOT = total negative affect.  
*p < .05; **p < .01.

Figure 1
Partial Mediation of Active Coping on the Relationship Between Mindfulness and Positive Affect

Note. MAASTOT = total mindfulness; ACTCOPE = active coping; PATOT = total positive affect.  
*p < .05; **p < .01.
**Discussion**

The results of this investigation supported all of the correlational hypothesis and part of the mediational hypothesis, with two of the proposed problem-focused coping strategies serving as statistically significant mediators between MIND and PA. These findings serve to extend previous research examining the mechanisms that account for the relationship between mindfulness and successful stress coping (Baer et al., 2006; Corcoran et al., 2010; Farb et al., 2007; Garland, 2015; Garland et al., 2017; Guendelman et al., 2017; Iani et al., 2018; Keng et al., 2012) by finding evidence for a different type of mechanism than has been hitherto considered, namely problem-focused coping strategies. On the other hand, our study failed to find the hypothesized mediational effects for the NA and PS criterion variables. In the latter case, this null result may have been at least partly due to the failure of the PSS to achieve adequate internal consistency reliability in our study and, more generally, our relatively small sample may have limited the statistical power to detect effects. Future research should address these limitations, test additional problem-focused mediators, and utilize fully randomized designs for the purposes of revealing causal relationships. Overall, these results suggest that in addition to the primarily cognition-based mechanisms examined in previous research, mindfulness may also confer resistance to negative emotional states through adaptive problem-based coping strategies.

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Smiling By Way of Zygomatic Electrical Stimulation: Investigating the Facial Feedback Hypothesis

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Suggested bibliographic reference

Abstract

While it is widely accepted that affective states precede facial expressions, the facial feedback hypothesis (FFH) proposes the inverse. The FFH postulates that facial muscle region activity (e.g., smiling or frowning) directly influences the experience of emotion. The purpose of the present study was to evaluate the validity of the FFH—specifically whether smiling independently enhances positive mood. A methodological error in previous similar studies was inadequate control of variability between participants in the activity of the zygomaticus major (i.e., muscle region producing smiles). This methodological error was addressed here with the introduction of a novel procedure. Intermittent electrical stimulation to the zygomaticus was administered to 56 participants while they viewed a randomized sequence of affectively positive and neutral images. Half of the images were presented along with electric zygomatic stimulation while the remaining half were displayed without stimulation. Throughout the procedure, participants’ zygomatic activity was measured with facial electromyography in order to precisely monitor variability. Overall, participants rated all images as more positive when displayed synchronously with zygomatic stimulation than without. Positive images were rated more positively while viewed concurrently with electrical stimulation, but no significant effect was seen with neutral images. These findings suggest that induced zygomatic activity enhances positive affect when experiencing positive stimuli, thereby supporting the FFH and offering an innovative methodology that can be used to further investigate the relationship between zygomatic activation and positive affect and other dimensions of the FFH.

Keywords: facial electromyography, electric stimulation, facial muscle, facial feedback hypothesis, emotion

The facial feedback hypothesis (FFH) suggests that facial expression has an effect on the experience of emotion. According to this hypothesis, simply the act of smiling will cause one to feel happy, or at least happier. Given that smiling is universally associated with happiness (Hofmann et al., 2017), this idea appears reasonable; although, in reality, the FFH has become a matter of controversy due to inconsistent findings in research conducted over the past five decades (Coles et al., 2019; Tourangeau & Ellsworth, 1979; Wagenmakers et al., 2016).

The FFH can be considered an expansion of the James-Lange theory (i.e., body movement affects emotional experience), especially considering James’ interest in muscular feedback (Tou-
rangeau & Ellsworth, 1979). The roots of the FFH may be traced back to the late-nineteenth century writings of Darwin (1872) and James (1890), both of whom rejected the idea that internal experience always precedes outward expression. Darwin argued that facial expression modulates emotion, while James argued that facial expression is the emotion. Eventually, the speculated role of facial feedback in emotional experience evolved into a matter of considerable dimensionality (i.e., sub-hypotheses for the FFH) and became more complex as further research was conducted in the mid-to-late twentieth century (Ekman, 1973; Gellhorn, 1964; Izard, 1971; Lanzetta et al., 1976; Tomkins, 1962). Once the facial feedback hypothesis became ubiquitous in facial feedback research, it had already expanded to encompass an array of more specific sub-hypotheses, each serving to further explain the relationship between facial expression and emotion (Coles et al., 2019). Many studies have investigated the validity of the FFH. The general finding of FFH research is that facial expression indeed modulates emotional experience, though inconsistencies in findings exist among specific FFH sub-hypotheses (Coles et al., 2019).

Research on the facilitative effect of zygomatic (i.e., muscle region associated with smiling) feedback on positive emotion—both when defined dimensionally (e.g., positive affect) and discretely (e.g., amusement, happiness)—has mixed findings (Coles et al., 2019; Wagenmakers et al., 2016). Strack et al., (1988) published what is arguably the most influential, albeit controversial, study to examine the FFH. The controversy derives from studies that supported the FFH and used methodology in which participants were unaware of experimental facial feedback manipulation. The procedure required participants to hold a pen in between their teeth in a manner that induces a facial expression bearing a high resemblance to an open mouth smile (i.e., wide grin with visible teeth), an expression associated with affectively positive discrete emotions of interest (e.g., funniness, amusement). Since its publication, Strack et al. (1988) became widely known as a critical piece of evidence for the FFH, and often is referenced in introductory psychology courses and textbooks (Wagenmakers et al., 2016). The fascination revolving around the study’s methodology and conclusions inspired similar FFH studies (i.e., measuring the facilitative effect of facial expression on affect in response to emotional stimuli) in the following decades; studies used either the pen-in-mouth technique or an alternative method of zygomatic manipulation (e.g., Ekman, 1993; Kleineke et al., 1998; Söderkvist et al., 2018; Sousignan, 2002; Wagenmakers et al., 2016). This wave of studies—either adapting elements from or replicating Strack et al. (1988)—produced mixed outcomes, thus stirring the debate on the FFH’s validity. Most interestingly, Wagenmakers et al. (2016) conducted a wide-scale Registered Replication Report that compiled the findings of 17 independent replications of the 1988 study. Despite efforts to meticulously and precisely replicate the procedure used by Strack et al. (1988), the replications failed to produce statistically strong evidence for the FFH. Nonetheless, Wagenmakers et al. (2016) noted that their findings did not necessarily refute FFH but may have suffered from flawed methodology. This suspicion is reasonable considering much of prior research provided overall support of the FFH (Coles et al., 2016). Through an examination of FFH studies concerning the zygomaticus, it seems possible that discrepancies in results across specific FFH studies may be attributed to methodology having low statistical power.

Low statistical power in FFH research can be attributed to two key factors: (1) inconsistent levels of zygomatic activation across participants or, (2) imprecise monitoring of zygomatic activity allowing unknown variability. First, previous studies have used unreliable methods of consistently activating the zygomaticus major across partici-
pants (Coles et al., 2019) possibly yielding inconsistent effect sizes of facial feedback manipulation on emotional response. This suggests procedures such as the pen-in-mouth technique have low power. Second, previous studies have used imprecise means of monitoring participants’ zygomatic activity. In some FFH studies, researchers verified appropriate facial expression through visual observation of video recordings of participants (Hennenlotter et al. 2009; Kleinke et al., 1998; Soussignan, 2002; Tourangeau & Ellsworth, 1979; Wagenmakers et al., 2016); however, human observation of zygomatic activity is far from precise and objective—it is not feasible to use human visual observation alone to examine the variability of zygomatic activation between participants given the dynamic and complex nature of facial muscle activity. Thus, studies that use imprecise means of both manipulating facial feedback and measuring this variability, cannot reliably determine the true effect size of facial feedback. In addition, knowledge of being videotaped may have interfered with participants’ emotional experiences and facial expressions (Strack, 2016). As such, facial electromyography (fEMG) is likely better suited for zygomatic observation than human visual observation. This argument is supported by findings from previous fEMG studies showing that participants presented with affectively positive stimuli will exhibit an autonomic response of activation in the zygomaticus major region before the participant is consciously aware of the stimuli’s affective nature; this effect occurs before a smile is even visible to the human eye (Söderkvist et al., 2018; Soussignan, 2002). Additionally, though Strack et al. (1988) investigated the discrete emotions of funniness and amusement in response to humorous stimuli, it is possible that the subjective nature of humor served to hamper replication of the study’s findings (Strack, 2016). In the present study, a more general, dimensional rating of positive affect was used to account for variability between individual interpretations of positive affect.

The primary purpose of the present study was to investigate whether or not activation in the zygomaticus major (i.e., muscle region related to smiling) facilitated the experience of positive affect (i.e., how positively a participant felt) while perceiving affective stimuli. A secondary purpose was to provide a more controlled test of the FFH by introducing a novel procedure allowing the researcher control over typical variability of zygomatic activity between participants. Examining facial muscle activity as an independent enhancer of affective responses to positive stimuli allows for insight into the effect of facial feedback alone on emotional experience. This novel procedure utilized a high voltage stimulator to electrically stimulate and activate the zygomaticus major at a consistent level for each trial across participants while fEMG was used to verify consistent zygomatic activation as a product of electrical stimulation between participants. Two hypotheses were (1) participants will report overall higher positive feelings when viewing all images (positive and neutral) while experiencing zygomatic electrical stimulation than in the absence of zygomatic stimulation, and (2) participants will demonstrate more variability in zygomatic activation when expressing a baseline (i.e., natural) smile and less variability in zygomatic activation when the researcher directly administers electrical stimulation to the zygomaticus major.

Method and Procedure

Participants (n = 56), primarily young adults, were recruited from introductory psychology courses at a southern California community college. Informed consent forms were approved by the Institutional Review Board (IRB). The forms were subsequently signed by each participant, thus expressing their consent to participate in the study. After being welcomed into the study room and completing the consent form, the researcher applied bilateral electrodes for the high voltage stimulator and facial electromyography to the participants’ zygomaticus major regions. To verify consistent muscle activity across participants, zy-
gomatic activation was quantitatively recorded with fEMG. Participants then viewed a randomized sequence of the same 20 images (10 positive and 10 neutral) displayed on a laptop as electrical stimulation was simultaneously administered to participants’ zygomatici during the display of every other image (i.e., participants were stimulated for 10 out of the 20 images). Each image was displayed for 10 seconds, with a blank image being shown between all images to avoid carryover effects. Responding to a Google Form, participants were instructed to rate how positively they felt about each image as it was displayed. Responses were rated based on a 10-point Likert scale, ranging from 1 (not positive at all) to 10 (extremely positive), defining affect from a dimensional approach. After viewing all 20 images, fEMG was used to record participants’ baseline zygomatic activity during natural neutral and smiling expressions after being presented with a display of prompts on the laptop, instructing them to hold a smile and neutral position for the 10 seconds that each prompt was displayed. A blank image was displayed between each expression to minimize carryover effects.

**Materials**

An iWorx IX-TA-220 data recorder and iWire-BG3 were used in conjunction with a high voltage (HV) stimulator and facial electromyography (fEMG) to stimulate and record the zygomaticus major muscles. The HV stimulator and fEMG devices were applied to participants’ zygomatici with electrodes secured with medical tape. fEMG recorded participants’ facial muscle activity data throughout trials. Labscribe 4, a data acquisition and analysis program, was used alongside the iWorx system to program and safely administer electric stimulation sequences while displaying randomized image sequences and recording fEMG data. The HV stimulator was used to administer 0.5 milliamperes (mA) of electrical current to each participant’s zygomaticus major region. In an earlier pilot study, the electrical stimulation was found to be painless, unintrusive, and most often undetectable by participants, while still creating feedback in the zygomatic region. Only 5 out of 20 participants in a pilot study reported feeling the stimulation, each reporting a very minor sensation. The use of electrical stimulation in the present study allowed experimental zygomatic stimulation to be entirely controlled by the experimenter, requiring no effort on part of the participant to engage the zygomaticus. fEMG was specifically utilized in this study to (a) confirm electrical stimulation mitigated variability between participants, and (b) observe the difference in variability between the artificial and baseline stimulation conditions (i.e., zygomatic activation from electrical stimulation compared to a natural smile).

Images used in the image sequences were borrowed from the Open Affective Standardized Image Set (OASIS) developed by Kurdi et al. (2017)—an expansive collection of photographs containing data on mean participant ratings of valence (i.e., degree of positive or negative affect) and arousal (i.e., intensity of emotional experience) for each image. The present study selected affectively positive images (e.g., dogs, a cat, fireworks, lakes, and a sunset) based on high valence and neutral images (e.g., blank walls, office supplies, and rocks) based on moderate valence and low arousal. A set of 10 neutral ($M = 4.10, SD = 0.07 \text{ [valence]}; M = 1.81, SD = 0.04 \text{ [arousal]}$) and 10 positive photographs ($M = 6.28, SD = 0.12 \text{ [valence]}; M = 4.46, SD = 0.42 \text{ [arousal]}$) were used.

**Results**

Dependent samples $t$-tests were used to compare stimulated versus non-stimulated conditions (see Table 1). Participants rated images significantly more positively when receiving zygomatic stimulation than when not receiving zygomatic stimulation, $t(54) = 2.341, p = .031$. The effect size was small ($d = 0.252$). When comparing only positive images, participants rated images more highly when viewed while receiving zygomatic stimulation than when viewed while not receiving zygomatic stimulation, $t(54) = 2.341, p = .011$. 

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*Page 19*
The effect size was also small \((d = 0.310)\). In addition, participants did not significantly rate neutral images higher when receiving zygomatic stimulation than when not receiving zygomatic stimulation, \(t(54) = -0.188, p = 0.851\). Moreover, a difference was found in zygomatic activity across participants (see Figure 1). High variability between participants \((M = 1.930, SD = 2.157)\) was found when examining baseline (i.e., smiling expressions in the absence of affective stimuli and electrical stimulation) electrical zygomatic activity in millivolts (mV) during a natural smile.

**Figure 1**

*Positivity Ratings for Overall, Positive, and Neutral Images with and without Electric Zygomatic Stimulation*

**Overall Positive Neutral**

![Graph showing positivity ratings](image)

*Note. Error bars represent standard error. (POS) = positive images and (NEU) = neutral images*

**Table 1**

*Positivity Ratings for Images Displayed with and without Electrical Zygomatic Stimulation*

<table>
<thead>
<tr>
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<th>95% CI for Cohen's (d)</th>
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<tr>
<td></td>
<td>(t)</td>
</tr>
<tr>
<td>With Stimulation - No Stimulation</td>
<td>1.902</td>
</tr>
<tr>
<td>(Positive) With Stimulation - (Positive) No Stimulation</td>
<td>2.341</td>
</tr>
<tr>
<td>(Neutral) With Stimulation - (Neutral) No Stimulation</td>
<td>0.188</td>
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</table>

*Note. *\(p < .05\)*

**Discussion**

The results of the present study supported the hypothesis that the activity of the zygomaticus major directly enhances the experience of positive affect in response to affectively positive stimuli. Electrical stimulation to the zygomaticus major facilitated higher levels of positive affect while viewing positive stimuli compared to without electrical stimulation. The same effect was seen with all images overall, although no effect was seen with only neutral images. Furthermore, high variability was found between the zygomatic activity of participants while engaging in a natural
smile. This variability indicates individuals naturally vary significantly in the magnitude of zygomatic activation. As such, it is pertinent in FFH studies to account for variability between subjects in facial muscle activation. Moreover, through using fEMG, the present study allowed for substantial control over zygomatic activation induced by electrical stimulation as opposed to testing participants’ natural smiles. These results provide evidence for the viability of the novel procedure of using electrical stimulation in conjunction with fEMG as a method of testing the FFH.

One limitation of the present study is that it only measured one dimension of the FFH. Nonetheless, the present study’s method of using electric stimulation with fEMG as a means of facial feedback manipulation may be useful for testing other dimensions of the FFH investigated previously with conflicting outcomes. For example, while only the effects of the zygomatic activation were investigated in the present study, the same methods could be used to mimic the muscle activity of the naturalistic Duchenne smile, which engages both the orbicularis oculi (i.e., muscle region around eyes) and the zygomaticus (Ekman, 1993; Sossignan, 2002) and measure its effect on positive affect. Similarly, the effects of corrugator supercilii (e.g., facial muscle region associated with frowning and negative affect) stimulation alongside low valence stimuli on negative affect could be tested. Likewise, the novel procedure introduced may be used to investigate the attenuating effects of facial feedback on emotion, given past evidence for the attenuating effects on existing emotional states stemming from facial feedback (Söderkvist et al., 2018). The effects of corrugator stimulation on emotional states, for example, could also be compared to the apparent attenuation of negative affect when the corrugator undergoes dissimulation (Hennenlotter et al., 2009; Davis et al., 2010). Moreover, some studies investigating a different dimension of the FFH have used an alternate method of limiting variability in facial muscle activity by inhibiting muscle activity with the injection of botulinum toxin (Botox) in the corrugator supercilii region, hypothesizing that corrugator inhibition attenuates negative affect; these studies have yielded consistent findings in support of this hypothesis (Coles et al., 2019; Davis et al., 2010; Hennenlotter et al., 2009). Methods such as this could also be used alongside fEMG as an alternate manner of precisely testing other dimensions of the facial feedback hypothesis.

Using modern methods of physiological experimentation, the present study provides insight to a decades-long debate over the validity of the facial feedback hypothesis. At the time of the current study, no prior studies had investigated the affective implications of facial muscle activity while also using highly controlled methods of facial feedback manipulation and monitoring of facial muscle activity. These findings provide not only promising evidence in support of the FFH but also a reliable method in which to conduct further research on the FFH. For example, the effects of orbicularis oculi and corrugator supercilii activation or inhibition are both facets of the FFH that, if tested while incorporating the present study’s methods, may provide further and stronger evidence for the FFH as opposed to tests that did not include electrical stimulation and fEMG. The next logical step would be to test the effectiveness of using this study’s novel procedure in mitigating variability across participants compared to other artificial methods of zygomatic stimulation—particularly the pen-in-mouth technique. Through combining the utilization of facial electrical stimulation and facial electromyography, the present study’s procedure provides exceptional control to the extent in which these methods may be the key to obtaining the last word on the facial feedback hypothesis.

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The Differential Effects of Positive and Negative Affect on Gratitude After an Intervention

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Abstract
This study sought to explore the relationship between positive and negative affect and the effects of an intervention on gratitude. We used data from the Psi Beta National Research Project to explore positive and negative affect in relation to gratitude and to evaluate the effects of an intervention on gratitude. Using affect to understand gratitude may serve to further our understanding of positive emotions. Perhaps gratitude interventions can have sustainable positive effects. Participants (N = 1,176) attending community colleges from across the United States completed the study. Participants completed a questionnaire designed to measure positive affect, negative affect, and gratitude to determine their current level of gratitude. Participants then completed an eight-minute intervention, followed by responding to several more scales and additional items measuring gratitude. Results supported hypotheses that gratitude would positively correlate with positive affect and negatively correlate with negative affect. Researchers hypothesized that, after an appreciation intervention, those scoring high on positive affect would have a larger increase in gratitude than those scoring low on positive affect and that after a frustration intervention, those scoring high on negative affect would have a larger decrease in gratitude than those scoring low on negative affect. These hypotheses were not supported by the findings; on average, gratitude decreased for participants regardless of the intervention type. The intervention was not a significant moderator. Due to the limitations of this study, further research is needed to explore the way that affect may impact gratitude and to consider different types of interventions that may increase gratitude.

Keywords: positive affect, negative affect, gratitude, interventions

During daily life, people often experience emotions such as joy, anger, excitement, fear, sadness, hope, and anxiety. Some people have a greater propensity to experience positive emotions than others, and others have a greater propensity to experience negative emotions. The Positive and Negative Affect Schedule (PANAS) is commonly used to assess one’s proclivity for different types of emotions, and a growing body of research...
shows that people scoring high on positive affect reap numerous benefits (Watson et al., 1988). Benefits of experiencing positive emotions include a greater sense of well-being, greater satisfaction with life, more fulfilling relationships, and better physical health (Sheldon & Lyubomirsky, 2006; Diaz-Garcia, et al., 2020; Stellar et al., 2015). Research has explored ways to increase positive affect by having participants experience positive emotions (Parks & Schueller, 2014).

Intuitively, there is a relationship between positive affect and gratitude. Therefore, gratitude has been the focus of much research over the last two decades, specifically the biology and benefits of gratitude and ways to increase feelings of gratitude (Allen, 2018). Although there are broad interpretations of gratitude, Emmons and McCullough (2003) explain that gratitude is the result of a two-step cognitive process: recognizing that one has experienced a positive outcome, then recognizing that an external source is responsible for the positive outcome. Emmons and McCullough (2003) found a correlation between gratitude and positive affect. Other empirical evidence shows that cultivating gratitude can lead to an increase in positive affect, which fosters positive benefits such as happiness, well-being, and satisfaction with life (Parks & Schueller, 2014).

The study replicated previous research that found that positive affect and negative affect correlate with gratitude. This study also explored causation. We hypothesized that people scoring high on positive affect would experience more gratitude in response to a positive intervention compared to those scoring low on positive affect.

Method

Participants

The participants (N=1,176) were recruited through convenience sampling from community colleges across the United States. Some participants were offered an incentive through extra credit. The sample included 926 females, 241 males, and 9 who did not specify a gender. The age of participants ranged from 18 to 68 years. All participants were either students or professors at 14 different community colleges.

Materials

Gratitude Scale

Emmons and McCullough (2003) created the Assessment of Gratitude measure. Emmons is known for his research on gratitude; his work was published in APA’s Positive Psychological Assessment handbook (Lopez & Snyder, 2003). The scale is a six-question gratitude questionnaire, the GQ-6. The research questionnaire also included a single Likert scale question, “How grateful do you feel right now,” as a pre and post gratitude measure.

Positive Affect Negative Affect Schedule

The Positive Affect Negative Affect Schedule (PANAS) measures emotionality (Watson et al., 1988). This instrument uses two 10-item questionnaires on a Likert scale to measure both positive affect and negative affect. Our measurements used a modified version with four questions for each affect.

Procedure

IRB approval was obtained by the researchers who designed the study at Irvine Valley College (CA). Next, participating Psi Beta chapters followed their local approval process prior to sampling. Participants were found through instructor recruitment and student recruitment scripts provided by Psi Beta National. Data were collected from October 2020 to February 2021.

The Psi Beta National questionnaire consisted of 216 items. Participants first responded to demographic questions, followed by 14 emotional questions on a 7-point Likert scale. Examples were “To what extent do you feel grateful RIGHT NOW?” and “To what extent do you feel happy RIGHT NOW?” An intervention was randomly assigned using the last digit of each participant’s phone number. Participants were directed to one of three intervention videos intended to evoke thoughts of frustration, appreciation, or neither. More specifically, depending on the assigned treatment, participants were instructed to think of
a person, object, place, and past event they found to be frustrating (treatment 1), appreciated (treatment 2), or neutral (treatment 3). The videos were narrated by a female's voice who led participants through their assigned treatment. The instructions were followed by periods of silence lasting between 45 and 60 seconds during which participants were instructed to think about the stimulus item. The intervention was followed by ten 7-point Likert items on satisfaction with life and general appreciation. Next came ten questions about self-esteem, six about gratitude, and four questions from the Subjective Happiness Scale (Lyubomirsky & Lepper 1999).

A modified version of the PANAS was administered pre-intervention with four questions each for positive and negative affect. The PANAS measures affect through self-report. Post-intervention, McCullough’s (2002) Gratitude Questionnaire (GQ-6) was used to measure gratitude. The GQ-6 is a self-report questionnaire, with six items. The GQ-6 uses a 7-point Likert type scale (1 = strongly disagree, 7 = strongly agree). A single item (a self-rating of gratitude) was used as a pre and post intervention gratitude. These scales measured gratitude, happiness, fortuiteness, appreciativeness, connectedness, and satisfaction with life. (The complete research questionnaire can be obtained by contacting Psi Beta.)

Results

The original number of participants totaled 1,243. Some cases were removed due to incomplete data, reporting an age below 18, and duplicate data from some participants. The final sample included 1,176 cases. SPSS was used to analyze the data file. Pearson's linear coefficient of correlation analyses were conducted between gratitude and positive affect and between gratitude and negative affect. Multiple regression was used to measure the gratitude change after the intervention. Lastly, a comparison on gratitude averages was performed across the three groups pre-intervention and post-intervention for any change in gratitude.

Figure 1

Scatterplot of Positive Affect and Gratitude
Gratitude (GQ-6) was positively correlated with positive affect pre-intervention $r (1174) = 0.35$, $p < .001$ and negatively correlated with negative affect pre-intervention $r (1174) = -0.33$, $p < .001$. Regardless of intervention type, the pre to post gratitude change was not significant. Intervention group type, therefore, was not a significant moderator in the relationship between affect and gratitude.

**Discussion**

The hypothesis that positive affect and gratitude would be positively correlated was supported. These findings support previous research (McCullough & Emmons, 2002; Parks & Schueller, 2014). The results did not indicate that type of intervention (positive, negative, or neutral) had a significant effect on gratitude. We expected the group receiving the appreciation intervention to have an increase in gratitude. However, the reverse was true; regardless of the type of intervention, participants scored lower in gratitude on average after the intervention.

**Limitations**

Previous research shows that brief interventions produce changes of limited duration but that the longer a person participates in activities that cultivate gratitude, the more long-lasting the positive results (Sheldon & Lyubomirsky, 2007). The intervention in the present study was probably too brief and not sufficiently engaging to produce the hypothesized results. After the intervention, participants were required to answer 139 items prior to assessing gratitude a final time. If participants had felt an increase in gratitude after the appreciation intervention, it may have dissipated by the time they reached the final gratitude item. Fatigue may account for the overall drop in gratitude across the groups. Lastly, there were variations across intervention videos that could have introduced one or more confounds.

**Future Research**

Further studies should include randomized variation in pitch or vocal performer to better control for extraneous variables across treatments. Interventions requiring more active engagement from participants should be considered for future research.
References
Humor is quite possibly one of the defining traits of humanity and has continuously played a crucial role in socialization. A sense of humor is a commodity valued within all relations: friends, partners, colleagues, and more. Humor is a staple in human communication. One of the earlier definitions of humor was explained by McGhee (1971) as the perception of something being funny. From a soft quick breath forced from your nostrils accompanied by a slight smirk to a full-blown stomach aching, tear-inducing, laughter, humor itself has a wide range of variation and styles. Just as each of us harnesses our own individual traits that help define our personality so too does our sense of humor. With all the variation in both humor preference and personality, we can speculate that there may be some connection between them. The question is to what extent a specific style of humor connects with a specific personality trait. Is it possible that specific personality traits are accompanied by certain demeanor, world views, and even mental states? Could it be that individuals with certain mood disorders are more likely to prefer a certain style of humor?

Humor has not always been a priority for research, although some humor research has taken

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**Self-Defeating Humor and Negative Emotionality**

Brittany Michelle Kester

Irvine Valley College (CA)

**Suggested bibliographic reference**


**Abstract**

The purpose of the present study was to examine the relationship between the self-defeating humor style and features of negative emotionality. Self-defeating humor is defined as humor that enhances one’s relationships at the expense of the self and is described as a negative humor style, while negative emotionality is described as an overall negativity toward one's world views, outlook, self, and disposition. Four hypotheses were posed. First, it was expected that there would be a positive relationship between self-defeating humor and neuroticism. Second, it was expected that there would be a positive relationship between self-defeating humor and depression. Third, it was expected that those who prefer a self-defeating humor style would be more likely to be high in negative affectivity. Fourth, it was expected that there would be a positive relationship between self-defeating humor and an external locus of control. After acquiring Institutional Review Board approval, the study was conducted at a southern California community college. Participants read and signed an informed consent agreement at the beginning of the study and were debriefed following the study. Eighty-Nine (21 males, 68 females) volunteered to participate. Participants answered questions via an online questionnaire relating to humor styles and preferences, personality, affectivity, depression, and locus of control. Results showed support for all four hypotheses. The findings suggest that individuals who enjoy a self-defeating humor style may be more likely to experience an overall negative emotionality.

**Keywords:** humor, neuroticism, affect, depression, locus of control
place. Martin et al. (2003), for example, organized humor into four different styles: self-enhancing, affiliative, aggressive, and self-defeating. This approach to categorize and define of humor contributed greater understanding of the individuals who prefer different styles of humor, humor itself, and humor's effects on different aspects of the human experience.

While researchers have studied humor's association with factors like intelligence, positive psychology, and well-being, the greatest research focus has been on personality. It was found that certain personality traits actually resonate with particular humor styles. Currently, personality is commonly examined with questionnaires having one encompassing word to represent a category of traits and characteristics. These encompassing personality traits are categorized and measured on a low to high spectrum of extraversion, agreeableness, conscientiousness, openness to experience, and neuroticism (McCrae & Costa, 2003). With the addition of humor style categorization many studies have been conducted to measure any correlation between personality and preferred humor style. A meta-analysis consolidated these findings, and it was consistently found that neuroticism was associated with the self-defeating humor style (Mendiburo-Seguel et al., 2015), a humor style which uses humor to enhance relationships with others at the expense of the self. Further, those high in neuroticism are thought to have a higher overall likelihood to experience negative emotions similar to anxiety, depression, stress, and aggression. With its close link self-defeating humor, it is no surprise that this relationship has been consistently reflected in the research.

Another personality variable with similarities to neuroticism is termed Negative Affectivity (NA). Negative Affectivity has similar connections with the self-defeating humor style. Negative Affectivity, though similar to neuroticism, is defined as having negative emotional reactivity, aversive moods, emotional instability, and a poor self-concept (Watson et al., 1988). A study that examined humor and psychological well-being found a significant relationship between self-defeating humor and negative affectivity. It was also found inversely that individuals low on self-defeating humor had significantly less negative affect (Maiolino & Kuiper, 2016). Though the study measured the effects of humor and affectivity on writing exercises, it is believed that the link between the self-defeating humor style and negative affectivity would be found if further studied.

Associations have also been found between neuroticism and negative affectivity with depression (Mineka et al., 2020). Depression is one of the most common mental disorders and has been characterized by a lack of interest or pleasure in performing activities, fluctuation in weight and sleep patterns, lethargy, and feelings of worthlessness, guilt, and poor self-concept (American Psychological Association, 2000).

Lastly, the term "external local of control" explains a generally negative emotionality and a view that life’s consequences are out of one's control (Rotter, 1966). When an individual expresses an external locus, they believe that much of their life is determined and controlled by outside forces over which they have little ability to influence. An external locus of control has shown a significantly positive correlation with depression (Molinari & Khanna, 1981). This suggests a possible link to self-defeating humor and depression.

The focus of this study was the self-defeating style of humor and its link to neuroticism. Neuroticism is a blanket personality attribute linked to negative affectivity, depression, and an external locus of control. This research imposed four hypotheses. First, there would be a positive relationship between self-defeating humor and neuroticism. Second, there would be a positive relationship between self-defeating humor and depression. Third, those who prefer a self-defeating humor style would be more likely to be high in negative affectivity. Fourth, there would be a positive relationship between self-defeating humor and external locus of control.
Method and Procedure

Eighty-nine (21 males, 68 females), introductory psychology students participated in the present study. The original participant count was 96. But seven sets of participant data were removed due to being under 18 years of age, resulting in 89 participants. The participant pool was gathered from a community college in southern California. The study, which used a correlational design, was conducted with the approval of the college's Institutional Review Board. Participants were informed of our study through an announcement email delivered by psychology professors about the study’s availability using the Sona system (a data collection, management, and storage software system). Google forms was used as a survey platform and once the questionnaire was completed, participant data was integrated into the Sona system. All participants granted informed consent before beginning the questionnaire. After finishing the questionnaire, participants were debriefed and informed of the study's purpose and hypotheses. Participants were then asked to report their age, sex, race, and relationship status. Self-defeating humor was measured using the Humor Styles Questionnaire, a 32-item self-report measure using a 7-point Likert-type scale (HSQ; Martin et al., 2003). Neuroticism was measured using an adapted version of The Big 5 Inventory, a 44-item self-report measure using a 7-point Likert-type scale; only the Neuroticism subscale was used (BFI; McCrae & Costa, 2003). Depression was measured using the Beck Depression Inventory, a 21-item self-report measure using 4-point Likert-type scale (BDI; Beck et al., 1996). Affectivity was measured using the Positive Affect Negative Affect Schedule, a 20-item self-report measure using a 7-point Likert-type scale (PANAS; Watson, Clark, & Tellegen, 1988). Locus of control was measured using the Locus of Control Scale, a 29-item self-report measure using a continuous scale (LCS; Rotter, 1966).

Results

There was a significant positive relationship between self-defeating humor and neuroticism, \( r(87) = .28, p < .01 \). That is, those who tended to prefer self-defeating humor were more likely to be higher in neuroticism than those who tended to have another humor preference. There was a significant positive relationship between self-defeating humor and negative affect, \( r(87) = .40, p < .001 \). That is, those who tended to prefer self-defeating humor were more likely to be higher in negative affect than those who tended to have another humor preference. There was a significant positive relationship between self-defeating humor and depression, \( r(87) = .43, p < .001 \). That is, those who tended to prefer self-defeating humor were more likely to have higher depressive symptoms than those who tended to have another humor preference. Finally, there was a significant positive relationship between self-defeating humor and an external locus of control, \( r(87) = .30, p < .01 \). That is, those who tended to prefer self-defeating humor were more likely to have an external locus of control than those who tended to have another humor preference. See Table 1 for means and standard deviations on all primary variables.
Table 1

Means and Standard Deviations on All Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Self-Defeating Humor</th>
<th>Neuroticism</th>
<th>Negative Affect</th>
<th>Depression</th>
<th>External Locus of Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>3.598</td>
<td>4.271</td>
<td>3.364</td>
<td>10.714</td>
<td>12.549</td>
</tr>
<tr>
<td>Standard Deviations</td>
<td>1.141</td>
<td>1.177</td>
<td>1.274</td>
<td>9.077</td>
<td>3.962</td>
</tr>
</tbody>
</table>

Note. Self-Defeating Humor was measured using the Humor Styles Questionnaire (HSQ; Martin et al., 2003); Neuroticism was measured using The Big 5 Inventory (BFI; McCrae & Costa, 2003); Negative Affect was measured using the Positive and Negative Affect Schedule (PANAS; Watson et al., 1988); Depression was measured using the Beck’s Depression Inventory (BDI; Beck et al., 1996); Locus of Control was measured using the Locus of Control Scale (LCS; Rotter, 1966).

Discussion

The four hypotheses posed in this study were confirmed, some of which support past research. The positive correlation found between the self-defeating humor style and neuroticism was shown to be consistent within a meta-analysis of 15 studies examining the connections between personality and humor preference (Mendiburo-Seguel et al., 2015). This finding gives further evidence to the association between self-defeating humor and neuroticism. Previous research focused on the relationship between the self-defeating humor style and negative affectivity found that as the preference for self-defeating humor increased, negative affect increased as well (Maiolino & Kuiper, 2016). Though not a meta-analysis, the current study replicated these findings and adds to the current evidence of an association between the self-defeating humor style and negative affectivity. The finding of a positive correlation between self-defeating humor and depression aligns with a study in which memes were used to depict a depressive sense of humor were more favored by participants experiencing depressive symptoms than participants in a neutral control group (Akram et al., 2020). My findings also support Cheng et al. (2013) who found a possible relationship between external local of control and the self-defeating humor style. This study's finding adds to the body of research.

Though the current study was conducted with the utmost care and caution there were possible limitations present. One potential limitation involved the sample who volunteered to participate and the unequal distribution of predominantly female participants. This may affect the generalizability of the results of this research. Another possible limitation is the average age of the participants in this study and may affect the generalizability to other generations or ages. Further research on humor preference using the Humor Styles Questionnaire could prove useful comparing different generations and across sex and could shed light on generalizability of the present findings (Martin, et al., 2003).

Considering the links between past research and the results of the current study, it is crucial to examine possible explanations for the relationships found. The first hypothesis focused on the relationship between neuroticism and the self-defeating humor style. Neuroticism, for example, may contain in essence, a self-defeating sub-trait. This would imply that those high in neuroticism may also be high in an overall self-defeating outlook making the use self-defeating humor the preferred type of humor. Similarly, negative affec-
Activity may also exist under the blanket of neuroticism and self-defeat. With this possibility it is suggested that negative affectivity, being an overall negative outlook, would resonate with a negative humor style. Self-defeatism may even be considered synonymous with a negative affect or life outlook and this similarity may be the link to desiring self-defeating humor as an introspective way to cope with an individual's negativity. The correlation found between depression and self-defeating humor may be explained by an individual's need, but inability, to socialize. Individuals suffering from depressive symptoms often withdraw themselves from social relationships and struggle with social situations. The use of self-defeating humor may be a mechanism to feel a sense of intimacy with others and alleviate some of the social isolation felt by the suffering individual. Additionally, an individual using self-defeating humor may not acknowledge the issues they suffer from but use humor to make light of or distract from uncomfortable but needed social contact. Lastly, when examining the relationship between self-defeating humor and an external locus of control, it is suggested that the connection is related to the lack of control one feels they have in life. When an individual believes their life is out of their control, it is possible that this is a form of self-defeatism. With this possibility, it may be that individuals who feel a lack of control may see the self-defeating humor style as a way to alleviate some of the tension caused by perceived external forces in their life. It is also possible that the self-defeating humor style makes one feel a form of comfort with life's unpredictability. The overall findings may suggest that the Humor Styles Questionnaire could be an alternate form to measure aspects of negative emotionality.

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https://doi.org/10.1037/h0092976


As internet use becomes an increasingly prominent component of daily life, problematic behaviors pertaining to a wide range of activities performed using the internet are being seen. The present study focused on two types of online activities: internet gaming and internet pornography use. Excessive involvement with video games may impose on other activities of daily life and potentially lead to the development of Internet Gaming Disorder (IGD; Kuss et al., 2017). Similarly, excessive use of internet pornography may interfere with general functioning, result in negative cognitions, and develop into problematic pornography use (PPU; Crosby & Twohig, 2016). The current study focused on the extent of internet gaming and pornography use in relation to various personality characteristics: trait anxiety, impulsivity, narcissism, sexual narcissism, and Type D personality. In general, anxiety has been found to be a significant correlate of problematic internet use behaviors.
use behaviors (Lee & Stapinski, 2012). Specifically, several studies found that anxiety is positively associated with IGD (Adams et al., 2019; Bargeron & Hormes, 2017; Bonnaire & Baptista, 2019; Marino et al., 2020; Wang et al., 2017) as well as PPU (Niazof et al., 2019; Shirk et al., 2021). Trait anxiety is defined as a relatively stable state of proneness to experiencing anxiety (Julian, 2011). As trait anxiety increases, gaming and pornography use scores also increase. Similarly, impulsivity—the tendency to display behavior with little or no forethought, reflection, or consideration of the consequences—has previously been found to play a role in the development and maintenance of some problematic internet use behaviors, both with IGD (Hu et al., 2017; Kuss & Griffiths, 2012) and PPU (Antons & Brand, 2018).

Narcissism is a relatively stable pattern of grandiosity in which individuals are egotistical, love being the center of attention, and lack empathy for others (Weber, 2016). It has been found that increased pornography use is positively correlated to an individual’s level of narcissism (Kasper et al., 2015); however, the relationship between narcissism and gaming appears to be more complex. Previous research conducted through a clinical lens found narcissism to be positively correlated with online gaming addiction (Stopfer et al., 2015), while other research has found more of an indirect relationship between problematic online gaming and narcissism (Kircaburun et al., 2018). Narcissism may also act as a mediator or moderator for problematic online gaming. Despite this complexity, the general consensus is that as scores for narcissism increase, problematic gaming scores increase as well (Stopfer et al., 2015). Distinct from narcissism, sexual narcissism refers to the relatively stable pattern of dysfunctional forms of sexual interaction that are characterized by the inability to express intimacy and are rooted in low self-esteem as well as insecurity (Apt & Hurlbert, 1995). While it has been found that individuals who use pornography have higher levels of sexual narcissism (Kasper et al., 2015), not much is currently known about the relationship between sexual narcissism and internet gaming.

Holdoš (2017) defined Type D (distressed) personality as the tendency to experience more negative affectivity (i.e., negative emotions) along with social inhibition (i.e., lack of emotion and behavior expression in social situations). While there is a lack of scientific literature specifically examining the relationship between Type D personality and pornography use, Holdoš (2017) states it is plausible that Type D personality could be a predictor of problematic internet gaming, because when someone shows high signs of social inhibition, they are more likely to engage in hobbies that are independent. Individuals who are Type D scored higher on internet addiction than individuals who are not Type D, meaning this personality characteristic could be a risk factor for internet addiction (Holdoš, 2017). Similarly, Kim et al. (2016) found that an internet gaming addiction group had more type D participants than a non-internet gaming addiction group.

Relationships have been established between many personality traits and problematic internet use behaviors such as gaming or pornography, but little to no research has been done on personality traits correlated with both behaviors. Acknowledging both the many similarities and gaps found in the literature review, the present study explored the personality correlates associated with both internet gaming and pornography use. It was hypothesized that anxiety, impulsivity, narcissism, sexual narcissism, and Type D personality characteristics are correlates of both internet gaming use and pornography use. Additionally, it was hypothesized that these personality traits would predict the extent of gaming and pornography use.

**Method**

**Participants**

Participants were 185 individuals recruited voluntarily through online platforms such as social media and college class forums who ranged in
age from 18 to 65 with a mean age of 23.51 years old ($SD = 7.54$). Most of the participants were female (60%) and had at least some college education (74.60%). More participants were in a relationship or married (48.60%) than those who were single or not currently in a relationship (40.5%). The sample was 76.20% European American, 8.10% Hispanic/Latino, 5.90% Biracial/Multiracial, and 4.90% African American.

**Procedure**

After gaining approval from the institutional review board (IRB #1949), an electronic link to a self-report research questionnaire was distributed through the online platforms Facebook and Reddit to recruit voluntary participants. Some participants were recruited through psychology courses and were offered extra credit for participation. Prior to participating in the study, participants were informed about the method of maintaining participant anonymity and data confidentiality as well as the risks and benefits of participation through reading and signing an informed consent. It was explained to participants that the purpose of the study was to examine personality in relation to video game and pornography usage. After completing the questionnaire, participants were provided with the Substance Abuse and Mental Health Services Administration’s (SAMHSA) national helpline (U.S. Department of Health and Human Services, 2021) and an addiction resource website (*Substance Abuse Resources*, n.d.) to answer questions they may have had about their video game or pornography use.

**Measures**

Gaming use was evaluated using the 21-item Game Addiction Scale (Lemmens et al., 2009) which measures potentially problematic gaming behaviors. The 18-item Problematic Pornography Consumption Scale (PPCS; Bӧthe et al., 2018) was used to assess pornography use and the extent to which using pornography is problematic for an individual. The Trait Anxiety Scale, a 20-item subscale of the State-Trait Anxiety Inventory (STAI; Spielberger et al., 1970), was used for participants to describe their anxious tendencies. Impulsivity was measured using the 30-item Barratt Impulsiveness Scale Version 11 (BIS-11; Patton et al., 1995). The Narcissistic Personality Inventory (NPI-16) was used to assess an individual’s grandiose sense of self, level of entitlement, preoccupation with success, and demands for admiration (Ames et al., 2006). Sexual narcissism was measured using the 20-item Sexual Narcissism Scale (SNS; Widman & McNulty, 2010) to assess narcissistic aspects of an individual’s sexual experiences. For each of these measures, scale scores were calculated by averaging the items, and higher scores reflected more of the characteristic being assessed. The Type D Scale-14 (DS14; Denollet, 2005), using seven items to assess negative affectivity and seven items to assess social inhibition, was used to determine the extent to which a person has a Type D personality. A person is classified as having a Type D personality if they score high on both the negative affectivity and social inhibition scales. Research has demonstrated strong psychometric properties of all measures.

**Results**

An average of 7.71 hours of weekly gaming ($SD = 10.58$) was reported, ranging from 0 to 50 hours per week. The average age of first gaming use was 7.56 years old ($SD = 4.72$). An average of 1.28 hours of weekly pornography use ($SD = 2.21$) was reported, ranging from 0 to 20 hours weekly. The average age of first pornography use was 11.76 years old ($SD = 6.38$).

Descriptive statistics for all variables in the current study can be found in Table 1. The coefficient alpha reliability estimates in our sample met the acceptable level of .70 or higher for all variables. Recall that a person is considered to have a Type D personality when they have a specific combination of high negative affectivity coupled with high social inhibition. In our sample, 57.2% of participants identified as Type D.
Table 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gaming Use</td>
<td>1.86</td>
<td>.73</td>
<td>1.00-5.00</td>
<td>1.00</td>
<td>4.43</td>
<td>.95</td>
</tr>
<tr>
<td>Pornography Use</td>
<td>1.47</td>
<td>.75</td>
<td>1.00-7.00</td>
<td>1.00</td>
<td>7.00</td>
<td>.94</td>
</tr>
<tr>
<td>Anxiety</td>
<td>2.46</td>
<td>.54</td>
<td>1.00-4.00</td>
<td>1.20</td>
<td>3.60</td>
<td>.92</td>
</tr>
<tr>
<td>Impulsivity</td>
<td>2.13</td>
<td>.35</td>
<td>1.00-4.00</td>
<td>1.13</td>
<td>3.20</td>
<td>.82</td>
</tr>
<tr>
<td>Narcissism</td>
<td>2.60</td>
<td>.68</td>
<td>1.00-5.00</td>
<td>1.00</td>
<td>4.50</td>
<td>.89</td>
</tr>
<tr>
<td>Sexual Narcissism</td>
<td>2.05</td>
<td>.54</td>
<td>1.00-5.00</td>
<td>1.00</td>
<td>4.30</td>
<td>.85</td>
</tr>
<tr>
<td>Social Inhibition</td>
<td>1.99</td>
<td>.97</td>
<td>0.00-4.00</td>
<td>0.00</td>
<td>4.00</td>
<td>.85</td>
</tr>
<tr>
<td>Negative Affect</td>
<td>2.06</td>
<td>1.05</td>
<td>0.00-4.00</td>
<td>0.00</td>
<td>4.00</td>
<td>.90</td>
</tr>
</tbody>
</table>

Note. Gaming use was measured using the Game Addiction Scale (Lemmens et al., 2009), pornography use was measured using the Problematic Pornography Consumption Scale (PPCS; Böthe et al., 2018), anxiety was measured using the Trait Anxiety Subscale of the State-Trait Anxiety Inventory (STAI; Spielberger et al., 1970), impulsivity was measured using the Barratt Impulsiveness Scale Version 11 (BIS-11; Patton et al., 1995), narcissism was measured using the Narcissistic Personality Inventory (NPI-16; Ames et al., 2006), sexual narcissism was measured using the Sexual Narcissism Scale (SNS; Widman & McNulty, 2010), and Type D personality (social inhibition and negative affect) was measured using the Type D Scale-14 (DS14; Denollet, 2005).

Our first hypothesis assessed anxiety, impulsivity, narcissism, sexual narcissism, and Type D as personality correlates of gaming and pornography use. Results found that gaming use had significant positive correlations with anxiety, \( r(183) = .16, p = .03 \), impulsivity, \( r(183) = .29, p < .001 \), and Type D personality, \( r(183) = .18, p = .02 \), demonstrating small to moderate effect sizes (Cohen, 1992). There were no significant relationships found between gaming use and narcissism or sexual narcissism. We found significant positive relationships between pornography use and impulsivity, \( r(183) = .22, p = .003 \), narcissism, \( r(183) = .28, p < .001 \), and sexual narcissism, \( r(183) = .48, p < .001 \), demonstrating moderate to large effect sizes (Cohen, 1992). There were no significant relationships found between pornography use and anxiety or Type D personality.

Multiple regression analysis was used to test our second hypothesis, that personality traits would significantly predict gaming and pornography use. The results of the regression indicated only impulsivity significantly predicted gaming use, \( \beta = .59, t(183) = 3.68, p < .001 \). Impulsivity explained a significant proportion of the variance in gaming use scores, \( R^2 = .13, F(6, 178) = 4.29, p < .001 \). Type D personality emerged as a marginally significant predictor of gaming use, \( \beta = .22, t(183) = 1.81, p = .07 \). Only sexual narcissism emerged as a significant predictor of pornography use, \( \beta = .57, t(183) = 5.54, p < .001 \). Sexual narcissism explained a significant proportion of the variance in pornography use scores, \( R^2 = .25, F(6, 178) = 10.01, p < .001 \).

Discussion

The goal of the present study was to examine personality correlates of gaming and pornography use to discern similarities and differences in these two problematic internet use behaviors. In partial
support of hypothesis one and consistent with previous research, we found anxiety (e.g., Marino et al., 2020) and impulsivity (Hu et al., 2017; Kuss & Griffiths, 2012) to have a significant positive correlation with gaming use. It may be that as individuals become more anxious and impulsive, their gaming behaviors become more prevalent. We did not confirm a significant relationship between narcissism and increased gaming use, contrary to previous research (Stopfer et al., 2015). A new contribution to the literature is our finding that Type D personality—those individuals that are high in negative affectivity coupled with being high in social inhibition—was also associated with higher gaming use. Interestingly, it may be that anxiety increases when people with Type D are in social situations because for them socializing may not come easily. The internet allows individuals to feel like part of society without the strain of communicating in person, and this can be especially helpful for individuals who are higher in social inhibition. One avenue for future research is to ascertain if Type D individuals are engaging in team gaming to gain more comfortable social interaction. In partial support of hypothesis two, we found that impulsivity and Type D personality (marginally) predicted gaming use, which leads us to consider the combination of impulsivity and Type D personality leading to problematic gaming behavior.

Regarding pornography use in hypothesis one, we confirmed previous research in that those with more impulsivity, narcissism, and sexual narcissism were more likely to engage in pornography consumption (Antons & Brand, 2018; Kasper et al., 2015). Interestingly, we did not find a direct relationship between anxiety and an individual’s pornography use, contrary to previous research (Niazof et al., 2019; Shirk et al., 2021). It appears that engaging in more pornography did not correspond with more anxiety in our sample. Furthermore, in partial support of hypothesis two, sexual narcissism was the only personality characteristic to predict pornography use. Individuals who are more self-absorbed in their sexual encounters and not as concerned about their partner’s enjoyment seem to watch more pornography, perhaps making it all about their own pleasure.

Results suggest that despite falling under the umbrella of problematic internet use behaviors, gaming and pornography use appear to be quite distinct; we found only impulsivity to be correlated to both gaming and pornography. Still, we wonder about the use of these behaviors as coping mechanisms for people with certain personality characteristics, or combinations of personality characteristics. Individuals with more anxiety, impulsivity, or negative affect coupled with social inhibition may be more likely to cope by gaming. Additionally, individuals with more impulsivity, narcissism, or sexual narcissism might be more likely to use pornography as a coping strategy. Considering these findings, we conclude that knowing the personality correlates of internet gaming and pornography use may be valuable in mitigating the risk of developing problematic or addictive internet use behaviors. Future investigations should examine to what extent these problematic behaviors are coping strategies.

As with all research, there are certain limitations of our study. The data in our study were responses to a self-reported questionnaire using standardized, reliable, and valid measures. However, there is a possibility that self-report data can lead to common method bias. Gaining access to data that is not self-reported in future research studies can help to avoid threats to the internal validity of a study. Also, regarding limitations within our sample, most (76.20%) identified as European American and 60% identified as female, which limits generalizability of the results. Future research would benefit from having a more diverse sample. Finally, our participants reported a relatively low number of average hours of weekly gaming and weekly pornography use. Caution should be used when trying to determine how the personality characteristics examined in this study
relate to excessive gaming and pornography use. Perhaps future research can intentionally sample individuals with greater internet use to allow comparisons to be made between moderate and excessive gaming and pornography use.

References
Julian L. J. (2011). Measures of anxiety: State-Trait Anxiety Inventory (STAI), Beck Anxiety Inventory (BAI), and Hospital Anxiety and Depression Scale-Anxiety (HADS-A). Arthritis Care & Research, 63(11), S467–S472. https://doi.org/10.1002acr.20561
Kuss, D. J., Griffiths, M. D., & Pontes, H. M. (2017). DSM-5 diagnosis of Internet Gaming Disorder: Some ways forward in overcoming issues and


The act of being appreciative and grateful, or lack thereof, may have significant influence on one’s overall happiness, emotional health, and life satisfaction. Appreciation occurs when someone acknowledges the value or meaning of something in a positive way (Adler, 2002); gratitude is the positive feeling someone experiences after something good happens to them or something is given to them (Adler & Fagley, 2005). Researchers have found that one cannot experience gratitude without appreciation, yet appreciation can occur without gratitude (Tucker, 2007). For example, one can witness a kind act, such as seeing someone get help loading their groceries into their car, which would result in one having appreciation for that event yet have no feeling of gratitude for it because it was not personally relevant to them. If the individual was the one receiving the help, then a feeling of gratitude would result because the act of help is received personally. Watkins et al. (2003) showed the interconnectedness of these two concepts, and that people who are grateful tend to appreciate simple pleasures in life, such as walking outside and feeling the sunshine on one’s face. Other examples of simple pleasures are finding comfort in knowing one has a bed to sleep in,
clean running water to bathe and drink, and food to eat. However, despite the concepts of appreciation and gratitude being similar, few studies have investigated appreciation. Over the years, many studies focused primarily on gratitude; these studies generally involve the emotional factor of happiness.

Research conducted on all three concepts (appreciation, gratitude, and happiness) has shown positive relationships among these concepts (Abbe et al., 2003; Adler & Fagley, 2005; Tucker, 2007). It has been found that happiness involves both appreciation and gratitude, in part in how individuals react to and perceive life events (Diener, 2000). The happier the person is, the more appreciative they are and the unhappier the person is, the less appreciative. For example, one study found that happier individuals have greater appreciation for rewarding events, whether these events be real-life or hypothetical (Tucker, 2007). Researchers have also found that individuals who are both grateful and appreciative are generally happier (Tucker, 2007; Watkins et al., 2003). Other researchers have found that if an individual practices expressing gratitude (Watkins et al., 2003) they can increase their happiness (Abbe et al., 2003; Lyubomirsky, 2007). Researchers have also found a significant relationship between gratitude and life satisfaction (Adler & Fagley, 2005; McCullough et al., 2002; Ramzan & Rana, 2014). Just as grateful people are happier, they also tend to be more satisfied with their lives (Tucker, 2007).

Appreciation and gratitude have been found to relate to an emotional component of happiness - positive affect. Specifically, there are positive relationships among appreciation, gratitude, and positive affect (see Diener, 1984; Diener, 2000). Numerous studies have found positive relationships between gratitude and positive affect (Ramzan & Rana, 2014; Tucker, 2007; Watkins et al., 2003). Additionally, one study found that individuals who claimed to regularly experience gratitude have greater positive affect and well-being in their lives, and that being grateful had a significant relationship with the individual’s positive affectivity (McCullough et al., 2002).

In addition to positive affect, appreciation and gratitude have been found to be related to negative affect. Ramzan and Rana (2014) found that there is a negative relationship between gratitude and negative affect, and that participants who revealed more depressive symptoms were lower in gratitude. Also, it has been found that if someone lacks gratitude, they are more prone to developing mental health issues such as anxiety and/or depression (McCullough et al., 2002). These results reveal the impact that lacking gratitude may have on an individual’s life and overall emotional health.

The purpose of the present study was to examine the relationships among appreciation, gratitude, happiness and the emotional components of positive affect, negative affect, and life satisfaction. Several hypotheses were posed: It was expected that there would be positive relationships among appreciation and gratitude in relation to happiness, positive affect, and life satisfaction. It was also expected that appreciation and gratitude would be inversely related to negative affect.

**Method and Procedure**

A correlational design was used to test the posed hypotheses. After receiving approval by the Institutional Review Board, participants were recruited from various psychology classes at a community college to complete an online survey for course credit. Participants completed informed consent forms prior to taking the survey which ensured their anonymity throughout the entire research process. A total of eighty-seven participants (23 males and 64 females) completed the survey. The data were collected over a period of five days.

**Measures**

Participants indicated their sex by selecting male or female and their age by typing in a numerical value. Appreciation was measured using the General Appreciation Scale (GAS; Tucker,
which includes five statements and measures one’s general level of appreciation; participants were asked to indicate how true each statement was to them using a 7-point Likert scale (1 = not at all true of me; 7 = extremely true of me). Gratitude was measured using the Gratitude Questionnaire-Six Item Form (GQ-6; McCullough et al., 2002), which includes six statements; using a 7-point Likert scale (1 = strongly disagree; 7 = strongly agree) participants indicated which best described themselves. Happiness was measured using the Subjective Happiness Scale (SHS; Lyubomirsky & Lepper, 1999), which has four items; participants were asked to indicate which statements best described themselves using a 7-point Likert scale (1 = not a very happy person; 7 = a very happy person). Affectivity was measured using the Positive and Negative Affect Schedule (PANAS; Watson et al., 1988), which contains twenty items used to measure an individual’s general level of mood; using a 7-point Likert scale (1 = very slightly; 7 = extremely) participants were asked to indicate the extent to which they felt each item in general. Life satisfaction was measured using the Satisfaction with Life Scale (SWLS; Diener et al., 1985), which has five items and asks participants to indicate the extent to which each statement is true for them using a 7-point Likert scale (1 = strongly disagree; 7 = strongly agree).

Results

All hypotheses were tested using the Pearson Product-Moment Correlation Coefficient. Prior to final data analysis, ten participants were removed from the data set because nine were underage and researchers did not gain parental consent and one had an apparent response set (i.e., a participant responded with the same number regardless of the question which would have reduced the data’s reliability). These factors resulted in a sample of seventy-seven participants (22 males and 55 females) for data analysis. Reverse coding was performed on the third and last items of the GQ-6 and the last item of the SHS.

Table 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>APPR</th>
<th>GRAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appreciation</td>
<td>77</td>
<td>5.17</td>
<td>1.15</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Gratitude</td>
<td>77</td>
<td>5.29</td>
<td>0.98</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Happiness</td>
<td>77</td>
<td>4.47</td>
<td>1.28</td>
<td>.55**</td>
<td>.49**</td>
</tr>
<tr>
<td>Positive Affect</td>
<td>77</td>
<td>4.82</td>
<td>1.04</td>
<td>.58**</td>
<td>.43**</td>
</tr>
<tr>
<td>Negative Affect</td>
<td>77</td>
<td>3.30</td>
<td>1.32</td>
<td>-.37**</td>
<td>-.26**</td>
</tr>
<tr>
<td>Life Satisfaction</td>
<td>77</td>
<td>4.33</td>
<td>1.46</td>
<td>.62**</td>
<td>.53**</td>
</tr>
</tbody>
</table>

*p < .05. **p < .01.

Data analysis found several significant relationships across all hypotheses (see Table 1 for descriptives and correlations on each of the primary variables). There were positive relationships shown between appreciation and happiness, $r(75) = .55$, $p < .001$, appreciation and positive affect, $r(75) = .58$, $p < .001$, and appreciation and life satisfaction, $r(75) = .62$, $p < .001$. Also, there were positive relationships shown between gratitude and happiness, $r(75) = .49$, $p < .001$, gratitude and
positive affect, $r(75) = .43, p < .001$, and gratitude and life satisfaction, $r(75) = .53, p < .001$. Additionally, negative relationships were shown between appreciation and negative affect, $r(75) = -.37, p < .001$ and gratitude and negative affect, $r(75) = -.26, p < .05$.

**Discussion**

Results showed support for all hypotheses in the present study. Participants who scored high on appreciation and gratitude also scored high on happiness, positive affect, and life satisfaction. Those who scored low on appreciation and gratitude scored low on happiness, positive affect, and life satisfaction. Also, the participants who scored low on appreciation and gratitude scored high on negative affect, and those who scored high on appreciation and gratitude scored low on negative affect.

These results align well with findings of previous research. Tucker (2007) found significant positive relationships among appreciation, happiness, positive affect, and life satisfaction. The results are also consistent with the relationships found by other researchers when studying gratitude and happiness and its emotional components of positive affect, negative affect, and life satisfaction (McCullough et al., 2002; Ramzan & Rana, 2014). These results suggest that appreciation and gratitude have an influential impact on the overall quality of an individual’s emotional functioning and quality of life. It is possible that participants who scored high on appreciation, gratitude, positive affect, and life satisfaction have a greater desire to live a life of happiness. This potential desire to be happy and experience satisfaction with life may be the reason why these individuals are generally more appreciative and grateful; that is, it is possible that motivation for happiness and life satisfaction is an underlying factor for these results. In fact, research done by Lyubomirsky (2007) supports the notion that there may be a link between such motivation and achieving and sustaining happiness. This motivational factor of desiring happiness could also be linked to appreciation and gratitude.

Related to some type of happiness motivation, Maslow (1943) postulated his hierarchy of needs theory that proposed there is a human drive for individuals to fulfill different needs throughout their life. Once lower needs are fulfilled (i.e., basic physiological needs, safety, sex, social belonging, esteem), humans are then motivated to strive for the highest need, self-actualization, which involves the meaning of human existence and life (Funder, 2016). It could be that happiness is involved in achieving this higher self-actualization need. In fact, it may be that appreciation and gratitude are associated motivational factors which enhance one’s ability to achieve this higher need.

These results are important because they suggest the impact being appreciative and grateful impacts one’s emotional health and quality of life. It seems that appreciation and gratitude serve as key components for living a happy, satisfying, and fulfilling life. Additionally, it could be that these two constructs have the potential to help those experiencing lower levels of emotional functioning, and suggests coping strategies (e.g., practice enjoying the simple pleasures in life, writing a daily gratitude list, being thankful for the little things; see Lyubomirsky, 2007) to help combat negative emotional symptoms. Furthermore, it is possible that these results may also be beneficial on a societal scale and could lead to an overall happier society. It has been found that happy people engage in more prosocial behavior (Lyubomirsky, 2007); if more individuals within a society were more appreciative, grateful, and happy, then perhaps a gradual movement toward positive, helpful behavior would take place resulting in higher quality of societal life.

Although the present results align well with previous research and provide practical implications, it is appropriate to address that this study was not without limitations. First, the study was conducted using participants of a younger population with an average age of twenty years old. Giv-
In this sample, this study cannot be generalized to older populations; however, it is suspected that the inclusion of older age groups would reveal similar correlations because appreciation, gratitude, and happiness appear to be stable across time and situations (see Lyubomirsky, 2007). Second, only one scale, the General Appreciation Scale (Tucker, 2007), was used to measure appreciation. The GAS is intentionally designed as a general measure. Therefore, future research could investigate more specific aspects of appreciation by examining the construct in terms of different categories (e.g., friends, family, workplace, etc.). Additionally, it would be beneficial to further examine appreciation in relation to one’s happiness and satisfaction with life. Considering the implications of this study’s results, future research should aim to further deepen our understanding of the underlying mechanisms, such as motivation, for the relationships that exist among appreciation, gratitude, and happiness.

References


In assessing personality, some traits are more easily detectable than others. For example, one study found that participants who rated themselves on extraversion had friends who accurately assessed them on that dimension (Funder, 1995). However, other traits, such as neuroticism, were not as accurately rated by the participant’s friend (Funder & Dobroth, 1987). Along these lines, Passini and Norman (1966) performed a study involving college freshmen, asking new roommates to assess one another’s personality minutes after a first meeting, and then compared those assessments to the individuals’ own self-reported personality scores. Results showed that accuracy on
the self-other reports were highest for the notably outward traits—extraversion and conscientiousness, respectively. Perhaps most difficult to assess is neuroticism, for it is almost completely internally experienced. A study performed by Norman and Goldberg (1966) between Peace Corps trainees and seniors assessed the seniors’ ability to accurately match the trainees’ scores on self-reported personality. This study concluded that agreeableness and neuroticism were the least accurately rated traits. These results suggest that some traits can be more easily detected by other individuals, while other traits require more information to be judged accurately by others.

Some personality traits (e.g., openness to experience, agreeableness, and neuroticism) are more individual-centered, meaning they may not show within a first-impression conversation (Funder & Dobroth, 1987); on the other hand, Funder (1995) concludes that other traits may be more obvious (e.g., extraversion and conscientiousness). Extraversion is assessed by observing the individual’s tendency to share information about themselves with others, which is likely to happen immediately after he or she is introduced to someone else (Letzring, 2008). Similarly, conscientiousness is also an outward trait, demonstrated by the careful choice of words or thoughtfulness shown in conversation (Watson, 1989). It is likely that one must have several previous experiences with others to detect openness to experience, an inward trait (Bernieri, et al., 1994). Moreover, there needs to be at least a minimum amount of closeness between the two people, as the observer must know what his or her friend has already experienced and what experiences are new to him or her (John & Robins, 1993). Traits such as agreeableness are shown by one’s tendency to go along with others and avoiding the feeling of conflict or a contradicting opinion. Borkenau & Liebner (1992) assert that perhaps for this trait to be judged accurately by others, additional interpersonal time and experiences are needed.

One may wonder if the accuracy of a friend’s scores on an individual’s personality is correlated to the closeness that they feel toward that person. That is, the closer one feels to another, does accuracy in judging another’s personality increase? Interestingly, Funder & Colvin (1988) found that with having assigned partners, those in which the pairs did not know one another well, the accuracy was lower than that of pairs who were well-known friends.

In the present study, self-other agreement on Big Five Inventory personality traits was examined. The specific traits included extraversion, agreeableness, openness, conscientiousness, and neuroticism, as well as closeness as rated by friendship pairs. Several hypotheses were posed: 1) ratings by a participant’s friend on all Big Five Inventory traits would correlate with the participant’s self-reported scores on the same trait. Second, it was expected that closeness scores would correlate with participant-friend difference scores on each Big Five trait. In other words, as closeness scores increased, a decrease was expected in self-to-other difference scores on each of the Big Five Inventory personality trait, thereby suggesting that people are better at estimating personality traits of people with whom they feel close.

**Method and Procedure**

**Participants**

One hundred forty-eight participants who were taking psychology courses at a southern California community college volunteered to participate for course credit. Eight participants were omitted due to familial relationships between the chosen friend and the participant, and four participants were omitted because they were under the age of eighteen. The average age of participants was 21.31 years. One hundred and one females and 47 males participated.

**Measures**

Participants provided demographic information such as age and sex. Extraversion, agreeableness, conscientiousness, openness, and neuroticism were measured using the Big Five Inventory
Participants were asked to read each of the 44 characteristics (e.g., talkative, forgiving, reliable, curious, tense, etc.) and then rate the extent of their agreement that the characteristic applied to them using a 7-point scale (1 = strongly disagree; 7 = strongly agree). Each of the participants’ chosen friends then rated the respective participant using the same Big Five Inventory scales; however, rather than rating themselves, friends rated the participant on the degree to which they agreed each of the characteristics applied to their friend (i.e., the participant).

Accuracy in personality judgements was assessed by subtracting each participant’s friend’s ratings on each dimension from the participant’s own ratings; scores close to zero were considered perfectly accurate. These ratings of participant’s own personality traits and those of the participant by the participant’s friend were key to the study as they provided concrete information about the perceived personality of an individual by another person.

Participants’ friends were asked to rate the level of closeness they felt with the participant using six different questions (e.g., the extent to which they felt close, loved, appreciated, trusted, supported, encouraged) rated on a 7-point scale (1 = strongly disagree; 7 = strongly agree). Closeness ratings provided a way to gauge the experience that one individual, the friend, may have had with the participant, thus providing information about the legitimacy of the friend’s ratings of the respective participant’s personality.

Design and Procedure

The present study used a correlational design to examine accuracy of personality trait judgements between the participant and the participant’s respective friend. Participants were greeted in their college classrooms, given a description of the study, and shown instructions for accessing the online survey link through the SONA system. (SONA is an online survey system used by schools to assess participants and accurately provide credit for their respective classes.) Participants were told that their individual identity would remain anonymous at all times—that is, their names would not be linked to their responses in any way. According to the ethical guidelines established by the American Psychological Association (2017), all participants read and signed consent forms before beginning the research questionnaire. Participants were fully debriefed after finishing the questionnaire. Participants then completed the questionnaire. Participants’ friends completed the questionnaire, and the closeness rating items.

Results

Self-Other Agreement

Participants’ friends who reported high levels of extraversion in their participant were accurate when comparing the scores to their participant’s own self-reported high levels of extraversion, \( r(146) = .57, p < .01 \). This was also found for ratings on agreeableness, \( r(146) = .43, p < .01 \); conscientiousness, \( r(146) = .40, p < .01 \); and neuroticism, \( r(146) = .50, p < .01 \). However, there was no correlation between participants and friends’ ratings on openness, \( r(146) = .17, p = ns \). See Table 1 for means and standard deviations for all primary variables.

Accuracy in Personality Assessments and Perceptions of Closeness

As expected, closeness scores inversely correlated with self-other accuracy scores on the Big Five Inventory scales. Extraversion was negatively, but not significantly correlated with closeness, \( r(146) = -.17, p < .05 \). For other personality dimensions, the greater the friends’ perceived closeness, the greater correlation with agreeableness, \( r(146) = -.41, p < .01 \); conscientiousness, \( r(146) = -.34, p < .01 \); and openness, \( r(146) = -.34, p < .01 \). However, there was no relationship between closeness and neuroticism.
Table 1
Means and Standard Deviation on All Primary Variables

<table>
<thead>
<tr>
<th>Participants’ Self-Ratings</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extraversion</td>
<td>4.25</td>
<td>1.16</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>5.10</td>
<td>0.73</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>4.64</td>
<td>0.82</td>
</tr>
<tr>
<td>Openness</td>
<td>4.78</td>
<td>0.83</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>4.15</td>
<td>1.08</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Friends’ Ratings</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ratings of Participants’ Extraversion</td>
<td>4.61</td>
<td>1.12</td>
</tr>
<tr>
<td>Ratings of Participants’ Agreeableness</td>
<td>5.38</td>
<td>0.97</td>
</tr>
<tr>
<td>Ratings of Participants’ Conscientiousness</td>
<td>5.07</td>
<td>0.98</td>
</tr>
<tr>
<td>Ratings of Participants’ Openness</td>
<td>4.85</td>
<td>0.82</td>
</tr>
<tr>
<td>Rating of Participants’ Neuroticism</td>
<td>3.73</td>
<td>1.07</td>
</tr>
<tr>
<td>Friend’s Rating of Closeness</td>
<td>6.27</td>
<td>0.84</td>
</tr>
</tbody>
</table>

**Discussion**

The purpose of the present study was to examine the relationship between closeness of friendship and self-friend agreement on personality trait rating. The hypothesis that there would be a relationship between the participant’s ratings and the participant’s friend’s ratings of extraversion, agreeableness, conscientiousness was supported but not for the trait of openness. Results showed that the participant’s friend’s rating and the participant’s own self-reported corresponded well on extraversion, agreeableness, conscientiousness, and neuroticism, but not openness. This may be due to the fact that openness is an almost completely internal trait, in which another person may not be able to detect an individual experiencing something new. The willingness to experience something new is what defines openness, and this seems to be difficult to detect from the outside. Further research could explore observability of openness between two individuals. Extraversion and neuroticism have previously been reported to be the two most-easily detected traits, which is also what was concluded in the present study.
The hypothesis that there would be a relationship between the Big Five Inventory self-friend accuracy scores and closeness scores was partially supported. Closeness correlated with extraversion, agreeableness, conscientiousness, and openness, but not neuroticism.

The results of this study follow closely with past research. Extraversion is characterized by how outward a person is. Studies have found that extraversion is the most easily detected trait (Funder & Dobroth, 1987). In our study, extraversion had the highest correlation between the participant’s self-report and the participant’s friend’s rating. Another study involving first impressions amongst college freshmen also concluded that extraversion was the most accurately rated trait (Passini & Norman, 1966). Borkenau and Liebler (1992) assessed traits such as agreeableness are shown by one’s tendency to go along with others avoiding the feeling of conflict or a contradicting opinion. Perhaps the ability to judge agreement in others requires additional time and experiences with the other individual. This aligns with the present study, in that we found the closer the participant and the friend were as rated by the friend, the higher the rating of agreeableness by the friend. Accuracy on agreeableness requires closeness between the two individuals, which probably is why the closer the pair was rated by the friend, the higher the friend’s rating on agreeableness. All traits were accurately rated except for openness, which is an inward trait and therefore making it more difficult to accurately assess. Close friends also seem more likely to see their friends positively.

The present study was not without limitations. This study only assessed those in a relatively young age group (e.g., 18 - 24). Next, only a small area was assessed, a single community college in southern California. Finally, there is a lack of recent general research on the Big Five Inventory. Articles relevant to the present study are mostly over 20 years old, which could reflect outdated trends in former results.

This leaves room for future research, perhaps by examining older generations’ ability assess another individual’s personality. Furthermore, determining whether family members or close friends are better assessors of their participants could be explored. Studies could be done with a wider variety of ages, or perhaps strictly with middle-aged to older individuals to assess whether accurate personality judgements stay consistent across all ages.

References

https://www.apa.org/ethics/code/


