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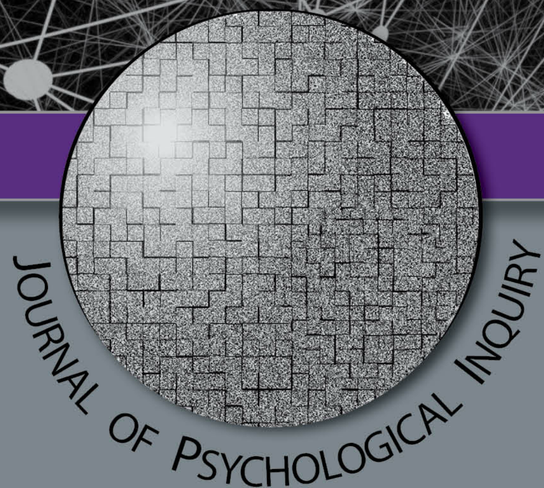

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From the Editor's Desk

As my last semester as copyeditor comes to a close, I have taken the time to reflect on how meaningful this work has been as a graduate assistant. The most rewarding aspect of being a copyeditor has been the exposure to such compelling research submissions. Undergraduate research does not always receive the credit it deserves in contributing to so many domains of psychology. This has only made my work as a copyeditor more enriching, as it is inspiring to see the hard work and dedication that undergraduate students have devoted to their research.

With this edition falling on the 30th anniversary of the *Journal of Psychological Inquiry's* founding, I must extend my gratitude to the managing editors who have maintained the success of the journal since 1996. Mark E. Ware, Susan R. Burns, Jenn Bonds-Raacke, John Raacke, and Ken Sobel have shown great care for the field of psychology and its undergraduate researchers by managing this journal for years.

My time as copyeditor has taught me that the *Journal of Psychological Inquiry* is unique in many ways, most notably due to the excellence of its managing editors of past and present. While there are other journals that publish undergraduate psychological research, such as the *Undergraduate Journal of Psychology, Modern Psychological Studies Journal,* and the *Undergraduate Journal Of Psychology At Berkley, JPI* stands out for solely focusing on undergraduate research. Further, *JPI* submissions are reviewed by established professionals in the field and academia who have years of experience.

The submissions included within this edition are perfect additions to the history of incredible research that has been published thus far in the *Journal of Psychological Inquiry*. This research shows great promise for not only how the journal will continue to grow in the future, but also how the undergraduate authors will flourish in the field of psychology. I look forward to seeing what the future of *JPI* will bring as a reader rather than a copyeditor.

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Elizabeth A. Dahl, Ph.D.,
Best Paper Award

SIGNALING INTELLECTUAL HUMILITY FACILITATES OPENNESS AMID IDEOLOGICAL CONFLICT

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Abstract – Previous research has demonstrated positive associations between the individual difference trait of intellectual humility and openness to information that contradicts one's beliefs. However, very little research has examined how perceptions of the intellectual humility of others might influence one's receptiveness to opposing perspectives. In this study we sought to examine whether signaling intellectual humility in advance of expressing a counterattitudinal viewpoint improves perceptions of the dissenting individual as well as openness to that viewpoint. To test this hypothesis, we first had participants read a counterattitudinal essay that was framed in either intellectually humble terms (IH signal condition) or intellectually arrogant terms (IA signal condition). Participants then completed a manipulation check measure that assessed the presumed essayist's level of intellectual humility, followed by a series of questions assessing participants' perceptions of the argument and essayist. Consistent with our hypothesis, we found that participants in the IH signal condition expressed more positive perceptions of the argument and essayist than participants in the IA signal condition. We also found that perceptions of the intellectual humility of the essayist fully mediated both main effect relationships. These findings demonstrate the potential utility of conveying at least the impression of intellectual humility to improve discourse around controversial issues.

Keywords: intellectual humility, intellectual virtues, openness to ideas, ideological conflict

Close-mindedness has the potential to stunt societal and individual progress by restricting the exploration of novel solutions and opportunities. In particular, the deleterious effects of close-mindedness have been observed in the social domain, with close-minded individuals displaying lower levels of prosocial behavior overall (Parisse et al., 2023). Furthermore, close-mindedness exacerbates many negative personality characteristics, such as psychopathy, dogmatism, egocentrism, and intellectual arrogance (Bak & Kutnic, 2021). Conversely, facilitating open-mindedness enables decision-making that is sensitive to a plurality of ideas, morals, and preferences. Therefore, it is reasonable to make efforts to enhance and promote openness, but how can this be achieved? There is now substantial evidence implicating a personality characteristic called intellectual humility (IH) as fundamental to that end (Porter & Schumann, 2017).

Intellectual Humility

IH is a personality characteristic that involves recognizing the limits of one's knowledge and the potential fallibility of one's beliefs (Leary et al., 2017). When measured as an individual difference variable, this trait has been shown to correlate positively with a range of personal and interpersonal advantages, including intellectual openness and curiosity (e.g., Kumrei-Mancuso & Newman, 2020; Leary et al., 2017; Porter & Schuman, 2018; Zmigrod et al., 2019), empathic concern for others (Krumrei-Mancuso, 2017; Krumrei-Mancuso, 2018), perspective-taking (Brienza et al., 2018; Grossmann et al., 2016; Kross & Grossmann, 2012), and seeking compromise (Grossmann et al., 2019; Peetz & Grossmann, 2021).

There is also evidence that IH is associated with enhanced cooperation and positive interactions between people. Studies indicate that IH positively predicts communication quality, such as the delivery of high-quality apologies (Ludwig et. al, 2021). Likewise, there is a positive correlation between IH and mature alterity, i.e., tolerating marginalized viewpoints and populaces

(Paine et al., 2021; Porter & Schumann, 2017). In addition, those who have higher levels of IH show lower levels of suspicion concerning their peers (Bowes et al., 2020). Similarly, this principle carries over into social contexts that involve power imbalances. In one study, higher levels of IH corresponded with heightened trust in religious leaders as well as intentions to repair relationships with such leaders in which a violation of trust has occurred (McElroy et al., 2014) and a recent review (Schumann et al., 2022) provided evidence that IH predicts better client relationships, client receptivity, and less biased information gathering in healthcare contexts.

Perceptions of Intellectual Humility

While there is now a sizable body of research examining the way intellectually humble individuals think and how they behave, there have been relatively few studies that measure how they are perceived by others and the subsequent consequences for interpersonal harmony and the free exchange of ideas. In one study (Haga & Olson, 2016), an actor made to sound intellectually humble was perceived more positively than an apparently intellectually arrogant actor. However, that study did not examine any downstream ramifications of those assessments and mostly included young children as participants, thus limiting its implications for real-world interpersonal scenarios.

The Current Study

In the current study, we sought to extend the present understanding of how intellectually humble individuals and their messages are perceived by testing whether signaling IH in advance of expressing a counterattitudinal viewpoint might improve perceptions of the dissenting individual as well as openness to the counterattitudinal viewpoint. We hypothesized that framing the counterattitudinal viewpoint in a way that signals high levels of IH would result in more positive perceptions of the person and greater acceptance of the viewpoint than when the same viewpoint was framed in intellectually arrogant terms.

Method

Participants

The participants (N = 88) included students enrolled in introductory-level psychology courses at a college of moderate size (approximate undergraduate enrollment of 20,000 students) located in the southeastern United States. 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 86 participants (26 males, 60 females) ranging in age from 18 to 44 (M = 22.29, SD = 6.57). Two participants' datasets were excluded from the analysis for failure to follow study instructions.

Measures & Procedure

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

In the online study, participants were first prompted to make up an anonymous 5-digit subject ID number and indicate their age, their preferred gender identification, and answer a few other demographic questions. Next, all participants underwent a self-threat induction (adapted from Leary et al., 2017), which was designed to threaten a core belief. Participants first responded to a binary, yes-no question that asked about their belief in God, which yielded two subgroups comprising those who either answered in the affirmative (N = 73) or in the negative (N = 13). These two subgroups were similar in terms of how they were affected by the subsequent manipulation (i.e., the subgroup variable did not moderate the relationship between the independent variable and either of the dependent variables).

Depending on their answer to the belief in God question, participants were then prompted to read one of two counter-attitudinal essays that were assigned in such a way so as to contradict their previously expressed belief. We varied the specific counter-attitudinal essay participants read, which represented our manipulation of the essayist's ostensible degree of IH, so that all of the participants were randomly assigned to read an essay that contradicted their belief accompanied by either an IH signal or an intellectually arrogant (IA) signal. In total this yielded four possible essays such that in the first (IH signal) condition there was an IH signal essay consistent with belief in God and an IH signal essay inconsistent with belief in God, and in the second (IA signal) condition there was an IA signal essay consistent with belief in God, and an IA signal essay inconsistent with belief in God. The wording, content, and length of the essays remained relatively constant, but one type of essay conveyed the message in a way that indicated an open-minded perspective on the issue (IH signal condition), whereas the other type of essay framed the issue in more certain, close-minded terms (IA signal condition).

Table 1
Descriptive Statistics for Main Study Variables by Study Subgroup

		Belief in God					
		Yes			No		
Variable	Signal	*N*	*M*	*SD*	*N*	*M*	*SD*
1. IHS	IH	42	21.93	4.15	6	22.83	3.37
	IA	31	15.74	6.89	7	12.71	6.21
2. Validity	IH	42	3.86	1.15	6	3.92	1.89
	IA	31	3.09	1.58	7	2.54	1.05
3. Personality	IH	42	4.36	1.05	6	4.24	.98
	IA	31	3.41	1.15	7	3.64	.50

Note. *M* = Mean; *SD* = Standard Deviation; IHS = Intellectual Humility Scale.

Once participants read the essay, they then completed a measure of IH called the Intellectual Humility Scale (IHS; Leary et al., 2017), which served as both a manipulation check and potential mediator variable. This questionnaire comprised six items that used a response scale of 1 (disagree completely) to 5 (agree completely). Total scores ranged from a minimum of 6 to a maximum of 30. The wording of the items was slightly revised so the intended target of each question was the person who ostensibly voiced the opposing viewpoint (e.g., "The essayist recognizes that his or her beliefs and attitudes may be wrong"). This scale achieved adequate internal consistency reliability (α = .72).

After responding to the IHS, participants completed a battery of 13 questions tapping into their perceptions of the essayist (e.g., "The essayist is informed," "The essayist is likeable") and the counterattitudinal argument (e.g., "The argument presented in the essay was logical," "The argument presented in the essay was factually correct"). Participants responded on a scale from 1 (disagree completely) to 7 (agree completely). The mean of the nine items measuring perceptions of the essayist comprised a separate variable (Personality) from the mean of the four items that measured perceptions of the argument (Validity). No items were reverse-scored in either measure. On the final page of the study, participants clicked on a link that redirected them to a separate webpage, where they entered their name and thereby received extra credit for their participation.

Results

We first computed summary variables for the IHS and each of our dependent variables, Validity (i.e., perceptions of the argument) and Personality (i.e., perceptions of the essayist) by summing participants' responses to the IH items and averaging participants' responses to the Validity and Personality items. Our independent variable (Signal) was numerically coded in the dataset as either the IH signal condition (coded as 1) or the IA signal condition (coded as 2). See Table 1 for relevant descriptive statistics of the major study variables by study subgroup.

Mediational Analyses

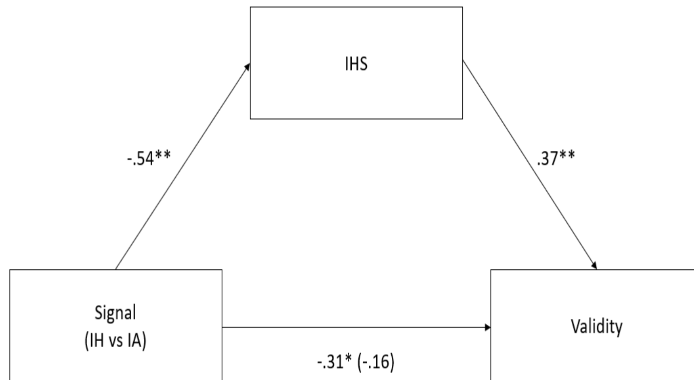
Our broad mediational hypothesis was that perceptions of IH would mediate the relationship between Signal and each of our dependent variables, Validity and Personality. To test this hypothesis, we conducted a series of regression analyses in line with the procedure described by Baron & Kenny (1986). We performed this procedure twice using Signal as the predictor variable and IH as the mediator in both analyses, and with Validity as the dependent measure in the first analysis and Personality as the dependent measure in the second analysis.

Analyses involving perceptions of the argument.

In Step 1 of the mediation model that included Signal, IHS, and Validity, the regression of IHS on Signal was significant, β = -.54, $t(84)$ = -5.82, p < .001, indicating that perceptions of IH differed depending on value of Signal condition. Step 2 showed that the regression of Validity on IHS was also significant, β = .37, $t(84)$ = 3.64, p < .001, indicating that perceptions of IH predicted perceptions of the counterattitudinal argument. Step 3 of the mediation process showed that Signal was a significant predictor of Validity, β = -.31, $t(84)$ = -2.98, p < .01, indicating that perceptions of the counterattitudinal argument differed depending on the value of Signal condition. Finally, Step 4 of the analysis revealed that, controlling for IHS, Signal was no longer a significant predictor of Validity, β = -.16, $t(83)$ = -1.30, p = .20, demonstrating that perceptions of IH mediated the

Figure 1

Model Depicting Full Mediation of Perceptions of Intellectual Humility on the Relationship between Signal Condition and Perceptions of the Argument



Note. All figures represent standardized beta coefficients. IHS = Perceptions of Intellectual Humility. *p<.01, **p<.001.

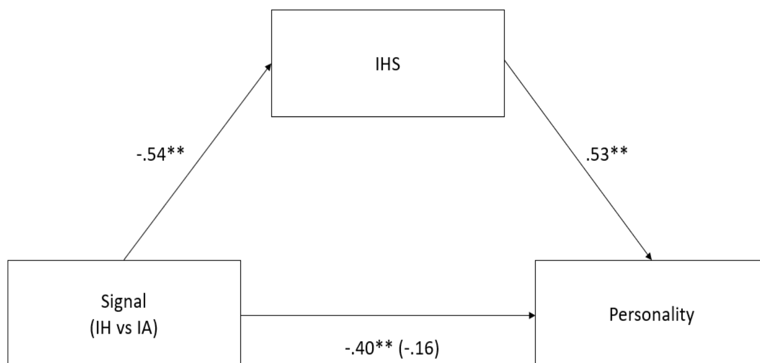
relationship between Signal condition and perceptions of the counterattitudinal argument. We then conducted a Sobel test, which confirmed full mediation in the model (z = -3.09, p < .01). See Figure 1 for a visual depiction of these results.

Analyses involving perceptions of the essayist.

In Step 1 of the mediation model that included Signal, IHS, and Personality, the regression of IHS on Signal was significant, β = -.54, t(84) = -5.82, p < .001, indicating that perceptions of IH differed depending on value of Signal condition. Step 2 showed that the regression of Personality on IHS was also significant, β = .53, t(84) = 5.74, p < .001, indicating that perceptions of IH predicted perceptions of the essayist. Step 3 of the mediation process showed that Signal was a significant predictor of Personality, β = -.40, t(84) = -3.94, p < .001, indicating that perceptions of the essayist differed depending on the value of Signal condition. Finally, Step 4 of the analysis revealed that, controlling for IHS, Signal was no longer a significant predictor of Personality, β = -.16, t(83) = -1.43, p = .16, demonstrating that perceptions of IH mediated the relationship between Signal condition and perceptions of the essayist. We then conducted a Sobel test, which confirmed full mediation in the model (z = -4.09, p < .01). See Figure 2 for a visual depiction of these results.

Figure 2

Model Depicting Full Mediation of Perceptions of Intellectual Humility on the Relationship between Signal Condition and Perceptions of the Essayist



Note. All figures represent standardized beta coefficients. IHS = Perceptions of Intellectual Humility. **p<.001

Discussion

Our findings confirmed our hypotheses, that signaling IH would lead to greater openness towards the opposing essayist and viewpoint and that perceptions of the IH of the essayist would mediate those relationships. These results directly complement and extend the work of Haga and Olson (2016), who conducted a similar study to ours, but with a mostly younger sample of 4–11-year-olds and without measuring participants' perceptions of an argument, which renders their findings less relevant to the question of how perceptions of IH might influence discussions around controversial issues. Therefore, our findings represent a useful extension of their work.

Our findings also complement the existing literature examining a variable called conversational receptiveness, which refers to the use of language to express one's readiness to thoughtfully engage with opposing views (Yeomans et al., 2020). As with our study, the research that exists regarding this variable has examined the consequences of being perceived in a particular way with respect to conversational receptiveness, with findings similarly indicating that perceptions of conversational receptiveness improve both perceptions of the conversationally receptive person and the persuasiveness of his or her message (Minson & Chen, 2022; Tulan et al., 2024; Yeomans et al., 2020). Given these conceptual and empirical similarities, future studies should aim to disentangle perceptions of IH from conversational receptiveness in order to avoid redundancy and confusion in the literature.

There were several limitations involved with our study. One limitation is that we only tested the observed effect in connection with one issue (i.e., belief in God), which potentially undermines the generalizability of our findings to other issues. Future research should incorporate a diverse range of issues in order to ensure that the findings are broadly relevant. A second clear limitation is that our study procedure lacks ecological validity – participants knew that they were not interacting with a live person, so it remains unresolved whether the results we obtained would generalize to scenarios involving living people in real-time interactions. Therefore, future studies on this topic should incorporate greater realism into their study protocols to maximize applicability to everyday situations. Despite these limitations, this study succeeds in expanding the current understanding of IH by demonstrating the potential utility of conveying IH – or at least the impression of it – to improve discourse around controversial topics.

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Author Note

This research was conducted with IRB approval under the direction of Ted V. Cascio, Ph.D., Professor of Psychology at Palm Beach State College. All guidelines of the APA regarding informed consent and ethical treatment of participants were followed. In addition, we would like to thank Dr. Cascio for his editorial feedback on multiple drafts of this manuscript.

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Perceptions of intimate partner violence: Effects of gender and violence type

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Abstract – Intimate partner violence (IPV) can include acts of physical aggression, sexual coercion, and psychological abuse (World Health Organization, 2022). However, exactly how to define IPV has changed over time, due to cultural shifts and changing gender norms (Barocas et al., 2016). Psychological forms of abuse are the most abstract and therefore most difficult to concretely define. Perceptions of relationship violence may also be affected by aspects of the couple experiencing conflict. This online study recruited participants from a small Midwestern college (n = 294) and a second sample designed to represent national U.S. demographics (n = 206). Participants read 11 fictitious vignettes describing physical, sexual, and psychological IPV, then rated how much each scenario "counted" as abuse. As predicted, psychological violence was perceived as significantly less abusive than physical or sexual violence. Interestingly, comparisons of subtypes of psychological violence revealed that intimidation, coercion, and threats were perceived as the most abusive, whereas isolating a romantic partner was perceived as the least abusive. Overall, women were more likely to say the vignettes were abusive, compared to men; and the college sample was more likely to say the vignettes were abusive, compared to the representative U.S. sample. Surprisingly, there were no main effects of perpetrator sex or of sexual orientation when types of fictitious couple were compared. Implications are discussed.

Keywords: Intimate partner violence, domestic violence, psychological abuse, partner intimidation

Intimate partner violence (IPV) is an issue our society faces in devastating amounts (Leemis et al., 2022). The National Intimate Partner and Sexual Violence Survey in the United States estimated that about 47% of women and 44% of men experience physical violence, sexual violence, and/or stalking at some point in their life (Leemis et al., 2022). Psychological aggression was even higher: about 49% of women and 53% of men within their lifetime.

While IPV is far too common, it has been a difficult concept to define and measure. Changes have occurred regarding terminology and laws, as well as public perceptions among researchers, service providers, advocates, policymakers, the public health system, the criminal justice system, and couple members themselves (Barocas et al., 2016). For example, until relatively recently terms such as "date rape" and "marital rape" did not exist, and the criminal justice system primarily focused on aggression outside of one's own family. Contributing factors to the definition of IPV include the source, location, the sexual and gender identity of the victim, and more (Dagenbrink et al., 2023). The purpose of this study was to further investigate the subjective nature of perceptions of IPV. Specifically, we focused on whether people would vary in whether they believed specific behaviors "counted" as IPV and deserved relevant legal action depending on two major factors: (1) type of abuse – physical, sexual, or psychological – and (2) the gender and sexuality of the relationship partners involved.

Defining Intimate Partner Violence

The World Health Organization (2022) defines IPV as "acts of physical aggression, sexual coercion, psychological abuse and controlling behaviors" from a current or former partner (see also Leemis et al., 2022). Physical violence is the use of physical force, such as slapping, beating, or kicking; it inflicts pain, injury, or physical suffering (García-Moreno et al., 2005). Sexual violence could include any sexual contact without consent, such as forcing a partner to have sex, degrading or humiliating the partner during sex, or insisting/forcing sex without protection (García-Moreno et al., 2005; World Health Organization, 2016). Finally, psychological violence is a broad area that can cover many different things, including coercion and threats, intimidation,

emotional abuse, isolation, minimizing, denying, victim blaming, using children against each other, power plays, and economic abuse (Ali et al., 2016; Pence & Paymar, 1993).

While measures have been developed and modified over time that define psychological violence, it is difficult to know whether any given action will be perceived as "abuse" by the couple members experiencing it themselves or by people witnessing the behaviors (Follingstad & Rogers, 2014). Psychological violence is more abstract and subjective, leading to the larger context of the couple's history, culture, etc. needing to be taken into account (Goodfriend & Arriaga, 2018). Therefore, "psychological abuse" is a large and broad category, with different forms associated with different interpretations and impacts on the couple members involved. For example, Follingstad and Rogers (2014) found that public humiliation and purposeful insults regarding a partner's sexuality led to the worst negative emotional impacts on victims.

Studies have confirmed that perceptions of physical, sexual, and psychological abuse are subjective and malleable. For example, one study found that 72% of women victims described psychological violence to be more harmful when compared to physical violence (Follingstad et al., 1990). However, another study found that outside observers described mild forms of physical violence to be more harmful than any form of psychological violence (Capezza & Arriaga, 2008). One purpose of the current study was to provide further information on perceptions of psychological violence, in comparison to physical and sexual. Further, we investigated perceptions of different forms of psychological violence (e.g. isolation versus intimidation) in comparison to each other.

Gender and IPV

Defining IPV is further complicated by potential biases involving institutional and cultural sexism and heterosexism. As mentioned above, until relatively recently, terms such as wife rape, date rape, wife beating, and courtship violence did not exist; in addition, it was once legal for husbands to beat their wives within certain parameters in the United States (Muehlenhard & Kimes, 1999). It wasn't until the year 1975 that South Dakota and Nebraska became the first states to acknowledge, define, and outlaw marital rape (Buckner, 2025). Laws such as these generally hurt women more than men, providing both legal precedent and justification for social norms. Many states combine IPV and family violence together under the broad term "domestic violence" (Barocas et al., 2016). It is from this broader view that the criminal justice system will look at a case, often resulting in the use of a simple formula that disregards the very complex social problem and ignores types of abuse that are not purely and exclusively physical (e.g., sexual abuse or emotional abuse).

When it comes to IPV, the prototypical case is a man abusing his wife or girlfriend. This is also the type of relationship that receives the most attention by researchers (Scott-Storey, 2023). One recent study collected data from 40,357 women (Barbier et al., 2022). While this study was in Europe, overall IPV rates were similar to those in the U.S.: About half (51.7%) reported experiencing some form of IPV within their lifetime. When the study broke forms of IPV down further, 20% of the women reported experiencing physical IPV, 8.4% reported sexual IPV, and 48.5% reported psychological IPV. Importantly, it is possible to have experienced one, two, or all three of the different categories within a lifetime.

Stereotypes can accompany and affect perceptions of IPV (Bates et al., 2019). For example, as a grand overview, within society men are often portrayed as perpetrators of aggression and as the "evil villains", while women are portrayed as the "pure victims" (Loseke, 2001). Battered women are supposed to be helpless, vulnerable, ashamed, weak, passive, dependent, unassertive, and depressed (Esqueda & Harrison, 2005). Women are perceived as fragile and not able to protect themselves – a form of "benevolent sexism" – but if they are aggressive, they are perceived as unconventional, wicked, and severe – a form of "hostile sexism" (Glick & Fiske, 2001). Sometimes, victim blaming can occur when perpetrators argue that women "provoked" men to assault (Esqueda & Harrison, 2005). Similarly, if women in abusive relationships retaliate by fighting back or simply by being angry, these responses can be perceived as "aggressive" and as unacceptable by some observers (Jenkins & Davidson, 1990).

Can men be victims of IPV? Absolutely yes – although far fewer psychological studies explore this social problem (Barocas et al., 2016; Dagenbrink et al., 2023; Scott-Storey et al., 2023). One key issue is estimating rates of male victimization, a problem for many reasons. For example, many commonly used IPV self-report scales were designed for women victims (e.g., with gender-based pronouns) and may not be accurate when examining other genders (Scott-Storey et al., 2023). Men may not interpret the questions in the same way as women, and if they do experience IPV they may be much less likely or willing to report it due to the increased likelihood of social stigma, shame, and embarrassment (Scott-Storey et al., 2023). As society has built up the "ideal" victim to be defenseless, blameless, and feminine,

it can push men away from getting help due to a threat of emasculation (Øverlien, 2023).

Another relevant issue is whether men perceive aggression in the same way as women. For example, men may choose not to report violence or aggression simply because they do not perceive it to be at a threshold where it "counts" as abusive behavior. One study found that 72% of men who experienced behaviors from their partners that the researchers identified as IPV did not report it to anyone because they saw the acts as trivial (Currie, 1998). Physical violence in particular is usually not a tactic that is seen as effective by men when it comes from female partners; usually this is due to the men's bigger body size and strength in comparison (Scott-Storey et al., 2023). Men often describe feeling in control of their partner's physical aggression and that they have the power to stop it. Despite these important concerns, men are the targets of IPV. An important study from Germany randomly sampled households throughout the country (Jud et al., 2023). A nationally representative sample of adult men reported that 50.8% of them had been victimized in some way by female partners in their lifetime. Psychological IPV was reported as the most prevalent (in 48% of the sample), followed by physical (in 10.8%) and sexual violence (in 5.5%). Some men reported experiencing multiple forms of abuse.

While some men may discount physical IPV and not report it for various reasons, it is less clear whether there are gender differences in perceptions of other forms of IPV, such as psychological violence (Øverlien, 2023). Because of stereotypes about relationship violence being a problem with male perpetrators and female victims, men who are targeted by their partners may not label what happens to them as "abuse", violence, or aggression, especially when the IPV is psychological, emotional, or sexual (Scott-Storey et al., 2022). Confusion and anxiety about whether their experiences "count" as abuse can further add to men's feelings of shame, loneliness, and depression (Macassa et al., 2025).

Same-Sex Relationships

LGBTQ+ individuals experience a lifetime prevalence of IPV at similar, if not higher, frequencies than the general population (Brown, 2008; Ibranhim, 2019). While LGBTQ+ couples can experience all forms of IPV, psychological violence may be the most common (following the pattern for heterosexual couples; Brown, 2008; Øverlien, 2023). Unfortunately, prejudice such as homophobia or transphobia can contribute to unique forms of abuse, such as threatened outing of victims to friends, family, or employers without one's consent (Brown, 2008; Peterman & Dixon, 2003). Unique legal issues may also arise. Data from 2000-2009 in the U.S. on over two million cases of IPV revealed that same-sex couples reporting IPV were likely to get arrested together, compared to only one person being arrested when a heterosexual couple reported the same crime (Hirschel & McCormack, 2021). This pattern was not affected by the seriousness of the case (Weiss et al., 2018). Same-sex couples may fear this kind of discrimination and prejudice, possibly making them less likely to report cases of IPV to the police (Whitehead et al., 2021).

When you split same-sex relationships by gender, patterns of discrimination vary based on the intersectionality of both sexism and homophobia (Crenshaw, 1989). One study showed that three out of five gay, bisexual, and queer men reported experiencing physical, verbal, or emotional abuse in an intimate relationship at some point within their lifetime (Salter et al., 2021). Another study of gay and bisexual men revealed that 65% described experiences of bidirectional IPV—meaning they admitted to being, at times, both the victim and the perpetrator (Stults et al., 2022). Qualitative data indicate a normalization of violence between men, so situations of mutual physical violence are sometimes brushed off or minimized (Salter et al., 2021). In a survey of 1,575 sexual minority men, all reported experiencing homophobia within their lifetime. Of these participants, there was a positive correlation between the likelihood of enacting physical violence and self-reported levels of homophobic discrimination (Finneran & Stephenson, 2014).

Gay and bisexual women may have both similar and different issues. Many worry about receiving heterosexist responses from the outside community if they report IPV (e.g., from law enforcement), as well as concerns about adding to the stigma of being in the LGBTQ+ community or breaking the idea of a "lesbian utopia" (Harden et al., 2022). Stereotypes of women are passive and gentle, whereas stereotypes of men are aggressive and angry, so IPV by a woman perpetrator does not fit the framework laid out by society, as men are the only ones portrayed as violent according to the culture's gender norms and roles (Loseke, 2001). These perceptions, when added to general homophobia, may combine to cause particularly negative reactions to IPV in same-sex couples (Chakravarthi, 2024; Renkin & Trofimov, 2023).

At the same time, perceptions of IPV in same-sex couples might be minimized because of cultural expectations. Because the exemplar of "domestic abuse" is a man abusing a woman, and because men are often larger and stronger, physical violence between two people of the same gender might be perceived as less severe or dangerous. There are also stereotypes of gay men being

relatively weak, physically, and they are often portrayed in humorous or supportive "sidekick" roles, which may diminish the perception that they are capable of either physical or psychological abuse (van der Meer, 2003). Lesbians are often sexualized by the dominant heteronormative culture, potentially skewing perceptions of tension in their relationships in very different ways that dehumanize them (Szymanski & Henrichs-Beck, 2014).

The current study hoped to add to the literature regarding perceptions of how these forms of prejudice affect observers' judgments.

Hypotheses

The current study investigated perceptions of IPV by asking participants to read vignettes about aggressive behavior between fictitious married partners. Each participant read multiple scenarios that varied the type of behavior described, so that perceptions of physical, sexual, and psychological violence could be compared. In addition, each participant was randomly assigned to one of four conditions (a 2 x 2 factorial design). The conditions varied the gender of the perpetrator and of the victim in the couple. Finally, by collecting demographic information from the participants, we could also test for different perceptions based on the self-reported gender identity of the participants themselves. We had four hypotheses, based on the research cited above.

H1: Vignettes describing psychological violence will be least likely to be perceived as "counting" as IPV, compared to sexual and physical violence. As a research question, we also compared perceptions of the different forms of psychological violence, to see if they varied regarding how much they "count" as IPV, but no hypotheses were specifically formed for this secondary analysis.

H2: Across all vignettes, scores for what "counts" as IPV will be higher for women participants, compared to men participants.

H3: When the perpetrators in the vignettes are men, participants will perceive that the actions "count" more than when the perpetrators are women.

H4: When the couple is heterosexual, participants will perceive that the actions "count" more than when the couple is same sex.

Method

Participants

We gathered information from two populations. The sample first was recruited through Connect CloudResearch, stratified specifically to reflect demographics from across the country. Initially we recruited 250 people, but we removed 43 of them because they either failed the attention check (see below; *n* = 11) or rushed through the survey (indicated by their timestamp being five minutes or less; *n* = 32). The second sample was recruited from Buena Vista University, a small, Midwestern, private liberal arts college with traditional-aged students. Similarly, this initial sample was 397 people, but we removed 10 for failing the attention check, 44 for rushing, and another 50 for both. This left us with a total of 500 participants: 206 from the general U.S. population and 294 college students.

Demographics of the overall sample, as well as broken down by general population and college students, are in Table 1. Overall, they had a mean age of 31.81 (*SD* = 16.74) and there were 221 men (44%), 258 (52%) women, and 21 people of other genders or who chose not to report gender. They were mostly heterosexual (*n* = 421, 84%), with some bi- or pansexual (*n* = 42, 8%) and the remaining other sexual orientations. In terms of race and ethnicity, overall, they were 75% White, 11% Hispanic/Latinx, 8% Black or African American, 3% Asian or Asian American, and 2% other, but these

Table 1
Demographic Information

	Overall	USA	BVU
Sample Size	500	206	294
Age	31.81 (16.74)	49.91 (15.62)	20.58 (4.95)
Gender			
Men	221 (44%)	105 (51%)	116 (40%)
Women	258 (52%)	96 (47%)	162 (55%)
Other / Did not report	21 (4%)	5 (<1%)	16 (5%)
Sexual Orientation			
Heterosexual	421 (84%)	184 (89%)	237 (81%)
Bi- and Pansexual	42 (8%)	12 (6%)	30 (10%)
Gay and Lesbian	12 (2%)	4 (2%)	8 (3%)
Other	25 (5%)	6 (3%)	19 (6%)
Race/Ethnicity			
White	378 (75%)	130 (63%)	248 (84%)
Hispanic / Latinx	56 (11%)	27 (13%)	29 (10%)
Black / African American	40 (8%)	32 (16%)	8 (3%)
Asian / Asian American	13 (3%)	10 (5%)	3 (<1%)
Other	12 (2%)	6 (3%)	6 (2%)

Note. Numbers in parentheses indicate the standard deviation for age and percentage for all other variables.

breakdowns varied more by subsample (again, see Table 1).

Independent Variables

Between-participants: Gender and relationship type.

Participants read instructions explaining that they would see a series of vignettes about a fictional married couple having conflict in their relationship and be asked to make two judgments after each scenario. We randomly assigned each participant into one of four conditions (a factorial design) based on the gender of the perpetrator and the victim, which also resulted in heterosexual versus same-sex relationship couples. Because the characters' genders changed, their pronouns and names also changed. The names (Trevor, Garrett, Emily, and Liz) were chosen from two websites providing common White names (Cheverere, 2015; Mather; 2024). White names were chosen to avoid adding potential additional biases between or among vignettes (although see a note on this in the Discussion). In all other ways, the vignettes were identical across conditions.

Within-participants: IPV vignettes.

In all four conditions, participants read a total of eleven vignettes written by the authors for this study and presented in random order (see Appendix). They represent four categories. Participants read eight vignettes based on forms of psychological abuse, identified by the "Power & Control Wheel" (Pence & Paymar, 1993). The Wheel is a popular resource used by advocates in counseling, criminal justice, and social work to help survivors understand and label the types of psychological and emotional abuse they may have experienced (Follingstad et al., 2005; Follingstad & Rogers, 2014; Pence & Paymar, 1993). The eight types of psychological abuse noted in the Wheel and used in this study are: (1) intimidation; (2) emotional abuse; (3) isolation; (4) minimizing, denying, and blaming; (5) using children; (6) male and/or gender privilege; (7) economic abuse; and (8) coercion and threats. While the eight types of psychological abuse from the Wheel were the template for the vignettes in this study, the specific details provided in those vignettes were taken from self-report scales measuring psychological abuse from previous psychological studies as well (Follingstad et al., 2005; Follingstad & Rogers, 2014). In addition to the eight vignettes on psychological violence, participants read one describing physical abuse and one describing sexual abuse, both also based on previous IPV research (Bagwell-Gray, 2019; Miller, 2010). Finally, they read one presenting a non-aggressive conflict which served as a baseline, control scenario. Importantly, the 11 vignettes were presented in random order for each participant.

Dependent Variable: Perceptions of IPV

After reading each vignette, participants responded to two questions: (1) how much does this scenario "count" as abuse, and (2) do you think legal action is deserved in this scenario? For both questions, participants moved a sliding scale from 0 (labeled "not at all") to 100 (labeled "definitely").

Attention Check

To monitor the quality of the data, we also included a question to see if the participants were paying attention. This item was inserted randomly into the vignettes and asked them to move the two slider bars on the screen to anywhere between 50 and 60 (the possible range was from 0 to 100).

Procedure

As noted earlier, two samples were recruited. The first was a nationally representative sample using the company Connect CloudResearch, which paid participants $2.00 each. For the second sample, college students were approached via email or through classroom visits and were asked to volunteer or were offered extra credit. Anyone willing received the online survey link. Students wanting extra credit were taken to a second survey at the end of the first to record their name and class information, so their anonymity was preserved.

After being recruited, participants from either sample followed the provided link to the survey hosted by PsyToolkit. They read a consent form and clicked "yes" to indicate they were at least 18 years old and willing to participate. They completed demographics questions, then read and respond to the 11 vignettes and attention check (in random order). They could skip any vignettes they found disturbing without penalty. At the end, they read a debriefing screen that provided information about the study's purpose, contact information for the researchers, and either local or national resources for IPV (depending on the sample) in case participation caused distress. This study was approved by the hosting institution's IRB.

Results

We conducted an analysis on how many and which vignettes were skipped for each sample. Overall, there were 11 scenarios with two questions each (total of 22 questions making up the dependent variable), and a participant could skip either or both question for any given vignette. The 206 participants in the general U.S. sample skipped 2.1% of the questions and the 294 college students skipped 9.1% of the questions. However, participants in both groups tended to only skip answering

the second question for each scenario, indicating that they did read each vignette and provide some response regarding their perception. When both questions were skipped (which occurred less than 1% of the time in the general U.S. sample and 1.8% of the time in the college sample), the most commonly skipped scenario was the non-aggressive control vignette.

Each hypothesis was tested twice. The most direct question measuring participants' perceptions of the vignettes was the first response to each, asking how much it "counted" as abuse. However, we also ran analyses combining answers to this question with the second question for each vignette, regarding whether legal action was deserved. For all 11 vignettes, responses to the two questions were correlated at $p < .001$, and the pattern of results with just one question was identical to the pattern we found when we combined the questions. Therefore, only the second strategy (with the combined questions) is presented here. We believe the combined, composite variable is a reasonable measure of participants' perceptions of whether each vignette counts as "abuse", taking into account the specific nature of the behaviors and how serious or severe the behaviors are, and avoiding statistical issues that occur when single-item dependent variables are used in survey research (Fuchs & Diamantopoulos, 2009).

Hypothesis 1

Hypothesis 1 expected participants to be least likely to perceive psychological forms of violence as abuse, compared to sexual and physical violence. First, we created a composite variable ($\alpha = .90$) based on the mean of participants' responses across all eight forms of psychological violence. This composite was compared to the single-item responses to the vignettes regarding physical and sexual violence in a repeated-measures analysis of variance. The model also included the control vignette, as a manipulation check.

Means and SDs for each sample are in Table 2. A repeated-measures ANOVA was significant for both participant samples. Both the general population group [$F(3, 205) = 877.24, p < .001$] and the student group [$F(3, 293) = 1383.65, p < .001$] perceived the three types of vignette differently. Planned comparisons revealed that they perceived the vignette describing physical violence to "count" the most [$M_{US} = 96.13$, $SD = 10.26$ and $M_{Student} = 95.38$, $SD = 12.82$]. Sexual violence was in the middle [$M_{US} = 54.56$, $SD = 31.20$ and $M_{Student} = 76.25$, $SD = 26.14$ for students]. As expected, they perceived vignettes describing psychological violence as the least likely to "count" [$M_{US} = 43.31$, $SD = 18.11$ and $M_{Student} = 49.62$, $SD = 17.67$]. Confirming that participants understood directions and were paying attention, they scored the control vignettes as the least likely to count as abuse [$M_{US} = 6.03$, $SD = 12.81$ and $M_{Student} = 7.89$, $SD = 13.13$]. For all the comparisons, ps < .001. Therefore, for both participant samples, Hypothesis 1 was confirmed.

Table 2
Means and SDs for Hypothesis 1

	USA Mean (SD)	BVU Mean (SD)
Type of violence		
Control vignette	6.03 (12.81)	7.89 (13.13)
All psychological abuse	43.31 (18.11)	49.62 (17.67)
Sexual abuse	54.56 (31.20)	76.24 (26.14)
Physical abuse	96.13 (10.26)	95.38 (12.82)

Exploratory analyses also tested whether participants perceived specific forms of psychological abuse differently (see Table 3). These post-hoc comparisons combined across the two samples and revealed that participants viewed the vignette describing intimidation to be the most abusive ($M = 77.45$, $SD = 22.61$) followed by coercion and threats ($M = 60.81$, $SD = 24.01$). These two forms of psychological violence were significantly different from each other, $F(1, 496) = 28.06$, $p < .001$. Threats were also perceived as significantly more serious than the next highest form of psychological abuse, gender privilege [$M = 45.15$, $SD = 24.75$, $F(1, 492) = 17.22$, $p < .001$]. After that, perceptions of different forms of abuse were more similar to each other, with isolation perceived as the least serious and abusive ($M = 30.42$, $SD = 25.12$).

Table 3
Means and SDs for Types of Abuse

Types of Abuse	*Mean*	*Standard Deviation*
Physical	95.69	11.83
Sexual	67.40	30.23
Psychological		
Intimidation	77.45	22.61
Coercion & Threats	59.81	24.01
Gender Privilege	45.15	24.75
Economic Abuse	44.67	26.83
Emotional	42.93	22.47
Using Children	41.60	25.88
Minimization	32.54	23.19
Isolation	30.42	25.12

Testing Hypotheses 2-4

For the remaining hypotheses, we created a composite variable ($\alpha = .91$) by finding the mean response for all 10 vignettes (i.e., all except the control scenario – so combining the perceptions of physical, sexual, and psychological violence). Then, we conducted a series of two-way analyses of variance. Each tested a main effect of participant sample (general population vs student). Hypothesis 2 also tested for a main effect of participant sex, Hypothesis 3 tested for a main effect of perpetrator sex within the vignettes, and Hypothesis 4

tested for a main effect of relationship type (heterosexual vs. same-sex couples). For each hypothesis, we also tested for an interaction effect.

None of the interactions were significant (all *p*s > .46). Across all three hypotheses, we found a consistent main effect of sample where the college students (*M* = 56.84, *SD* = 15.91) rated the vignettes as being more abusive than the general U.S. sample did (*M* = 49.44, *SD* = 16.53); all *p*s < .001. However, the critical analysis was the main effect relevant to each hypothesis.

As expected for Hypothesis 2, women perceived the vignettes to be more serious (*M* = 56.79, *SD* = 15.28) than the men did (*M* = 50.18, *SD* = 17.31), $F(1, 475) = 16.73$, $p < .001$. Therefore, Hypothesis 2 was confirmed.

However, the hypothesized main effect of perpetrator gender was not significant. Participants perceived violence from a male perpetrator (*M* = 54.28, *SD* = 16.65) to be equally as abusive as from a female perpetrator (*M* = 54.26, *SD* = 16.70), $F(1, 496) = 0.01$, $p = .928$. Therefore, Hypothesis 3 was not supported.

Lastly, for Hypothesis 4, reading about violence in a heterosexual couple (*M* = 54.86, *SD* = 16.87) versus a same-sex couple (*M* = 53.63, *SD* = 15.93) had no significant effect on perceptions, $F(1, 496) = 0.88$, $p = .349$. Therefore, Hypothesis 4 was not supported.

Discussion

We found several things of interest. First, as expected, physical and sexual violence within a fictitious romantic relationship were perceived as more abusive than various forms of psychological violence. This result aligns with previous work (Capezza & Arriaga, 2008; Sikström et al., 2021; Wilson & Smirles, 2020), which has consistently found that psychological aggression from one relationship partner toward another is perceived as not particularly serious or abusive, relatively speaking. The pattern revealed by Hypothesis 1 further highlights the subjective nature of psychological forms of intimate partner violence, such as gaslighting, threats, and isolating someone from friends and family members. At least some participants do not perceive these behaviors as abusive.

That said, a benefit of this study is that it went beyond simply comparing overall types of abuse (i.e., physical, sexual, and psychological) by also comparing participants' perceptions of specific forms of psychological violence. When this level of detail was analyzed, there were two vignettes that participants perceived to be the "most" abusive: (1) use of intimidation and (2) coercion and threats. The form of psychological abuse perceived as least serious by our participants was isolating someone. Minimization, gender privilege, using children, emotional abuse, and economic abuse were scored in the middle. There are several possible reasons and implications for these differences. One may be that because definitions of IPV are unclear (Barocas et al., 2016), observers of it are unsure how to label particular behaviors and subtypes, and are also not sure how seriously different kinds of psychological IPV may affect victims (Dokkedahl et al., 2022). Another possibility, however, is that participants' perceptions were influenced by how much reading the vignettes affected their own emotional state. For example, perhaps the vignette about isolation was not particularly evocative, compared to the one about intimidation. This possibility leads to the idea that more research should be done on differing potential effects on witnesses of IPV (e.g., friends and family members) in accordance with certain subtypes of psychological abuse. Researchers in the field of relationships who are studying IPV should also include sexual and psychological forms of aggression in their investigations, so knowledge about this topic continues to evolve, definitions continue to be clarified, and laws continue to be improved.

The results from Hypothesis 1 are also possibly an artifact of the wording of the specific vignettes used. It is possible that the two vignettes written for intimidation and coercion/threats happened to be particularly emotional or have other aspects in them that participants responded to, not due to the type of IPV but because of the idiosyncratic nature of the vignette itself. For example, the intimidation vignette included the perpetrator kicking the family dog. Many people perceive pets as part of the family (Applebaum et al., 2021; Bouma et al., 2022), so this action may have elicited an especially high level of compassion or anger. It is also possible that participants perceived that action to be indicative of some kind of mental health issue with the perpetrator, as animal abuse is associated with some disorders (e.g., antisocial personality disorder; Atere et al., 2023; Girotra, 2021).

It is still interesting that the intimidation vignette stood out, perceived as significantly more abusive than sexual abuse. While this finding may be due to wording in the vignettes, it is also possible that different subtypes of psychological violence or aggression are organized into a hierarchy in people's minds, with increasing levels of "abuse." Intimidation may be highly ranked because participants believe it easily transitions into physical abuse, further reinforcing fear and anxiety (Daw et al., 2023).

Hypothesis 2's results confirmed that women, on average, perceived the vignettes overall to "count" more as IPV than men did. Similar results can be found in a different study that revealed women perceived vignettes

of IPV to be less "normal" than men, implying that women infer IPV to be more alarming (Kuijpers et al., 2021). A third study found that women are less likely to say that IPV victims are responsible for the abuse (Sylaska & Walters, 2014). This general pattern may be due to women often showing higher empathy than men (Pang et al., 2023). Regardless of the reason for the gender difference, there are important implications. Considering that men currently still make up the vast majority of U.S. government positions (Rutgers, 2024; Statista Research Department, 2023), men's perspectives are primarily responsible for making decisions about how laws and resources are allocated to survivors. Education and intervention programs might need to take gender into account, and increasing the number of women in governmental positions, on juries, or serving in the criminal justice system may benefit survivors in a variety of ways.

Hypotheses 3 and 4 were not supported. In short, we found no evidence that the perpetrator's gender or the sexuality of the couple in the vignettes influenced perceptions of IPV. This lack of support for the hypotheses is important and surprising, as it indicates that sexism and homophobia may not be factors when it comes to judging whether behaviors "count" as abuse. This finding goes against some previous work (e.g., Crenshaw, 1989; Hammock et al., 2016; Loseke, 2001; Sylaska & Walters, 2014; Whitehead et al., 2021) but may be due to changes in the culture, with sexism and homophobia decreasing over time (Glick et al., 2015; Gomes et al., 2021). The implications are important for contexts such as criminal and civil cases, in which possible prejudices that might have affected decisions in the past may no longer be in effect or at least might be decreasing. However, because the current study's findings go against many other studies on this topic, more research is needed.

Hypotheses 2, 3, and 4 all revealed a common pattern that the student sample perceived the vignettes to "count" as IPV more, compared to the sample reflecting the general U.S. population. This finding could reflect the fact that university students today are regularly exposed to consistent programming regarding anti-violence and healthy relationships (Branch et al., 2013). Many colleges now use bystander models to train students on how to intervene and help in cases of IPV; any such programing or training may have affected how they viewed the vignettes (Branch et al., 2013; Ermer et al., 2017). Another possibility is that the university sample was younger than the U.S. sample, reflecting generational differences. Because concepts like "abuse" and "intimate violence" are social constructs with changing definitions (Barocas et al., 2016), perceptions of what "counts" as abuse may shift with time (Gangal et al., 2024; Müller, 2024). This possibility also warrants additional research.

Further work should clarify whether it is simply being in college or whether it is a generational (or age) effect that is associated with participants' different perceptions of IPV. It is also important to consider the relevant implications. If attending college or being younger changes views of social constructs such as IPV, makes people more empathetic, or is correlated with decreased victim blaming, perhaps increased education programs for older adults could change laws and community responses in ways that benefit survivors. This kind of community education might reduce IPV rates, potentially by increasing bystander intervention (Schucan Bird et al., 2023). Education programs can also increase survivor safety and improve overall social support (Rivas et al., 2015; Sullivan, 2021).

Limitations and Future Research

We have already noted several limitations and possible avenues for additional investigation. Several issues may have been caused by the idiosyncratic nature of the vignettes. It is hard to know for certain if the perceptions of each type of abuse are truly because of the nature of the abuse as intended, or because of the specific wording; therefore, it is unclear whether the results found here would generalize to different scenarios. Future research should test this with different examples, words, and phrases describing the various forms of psychological abuse, as well as physical and sexual abuse.

Another vignette limitation is the fact that psychological abuse was represented with eight vignettes, whereas physical and sexual abuse each only had one vignette. In future research it would be beneficial if the researchers used multiple vignettes for each type of abuse. If this were done, additional kinds of analysis could also be conducted, such as factor analyses on whether types of psychological abuse cluster together in systematic ways among different types of participants (e.g., survivors, perpetrators, and witnesses). Recruiting different samples would also allow for testing whether perpetrators and survivors have different perceptions from each other, and from a general sample.

Future research could also write the vignettes from a first-person perspective, have the participants listen to the vignettes instead of read them, or have them observe the scenarios enacted by confederates. For example, one study found that perceiving virtual reality IPV scenarios from a first-person perspective (in contrast to a witness perspective) resulted in participants who believed the events were more real and threatening; participants also experienced greater levels of fear,

helplessness, and vulnerability (Gonzalez-Liencres et al., 2020). Anything that helps people with perspective-taking may increase empathy with victims and survivors, and subsequently decrease victim blaming.

Another limitation to our study was the elimination of a large portion of our sample from analysis and results. One hundred and four participants were excluded from the student sample and 44 participants were excluded from the U.S. representative sample (about 23% of the original total). The large exclusion of students may have been due to timing. The survey was offered during the last two weeks of the semester, so participants may have rushed or not paid attention due to the stress of final exams (Deviantony et al., 2025). Attention may be better if the survey were offered in a less stressful time of the academic year.

Our hypotheses only tested for differences in perceptions of fictional vignettes based on the nature of the vignettes themselves (gender of the characters and type of relationship) and on participant gender and population (college or national sample). It is a limitation that we did not ask for additional information which may influence how people think about couple conflict. For example, past work has found that IPV patterns and perceptions vary systematically with changes in socioeconomic status, cultural values, personal stress levels, and more (for a review, see Capaldi et al., 2012). It would also be worthwhile to include questions regarding whether participants had personally experienced childhood or adult IPV in any of the specific types covered by the vignettes. While it is possible this kind of previous incident could potentially sensitize one to violence (which would raise scores of whether behaviors "count" as abuse), most research indicates that previous experience normalizes violence (which would lower scores), unfortunately contributing to repeated patterns of abuse across relationships and from parents to children (Meinck et al., 2025; Rokach & MacFarlane, 2021).

Lastly, our vignettes for the same-sex and heterosexual fictitious couples were identical except for a change of names and pronouns. Additional vignettes could be added that are specific to various couple types (e.g., a fear of being outed by one's partner if they are in a same-sex couple; Peterman & Dixon, 2003; fear of being emasculated or not believed for male victims; Scott-Storey et al., 2023). Vignettes could also vary by simply changing the names of the characters. We chose to use common White names to avoid intersectionality biases, but implicit racism could be an interesting avenue for future research, as some research indicates that race does affect perceptions of IPV (e.g., Rubenstein, 2016). The current research assumed types of violence would be performed in the same way amongst all types of couples, so the addition of specified vignettes for different types of couples may add interesting nuances to marginalized intimate relationships.

Conclusion

Psychological violence overall is likely to be minimized or discounted by participants—but specific forms of psychological violence vary greatly. Specifically, participants judged intimidation, coercion, and threats to be quite abusive, compared to some other forms of psychological violence. College students and women are also, overall, more likely to judge IPV as abusive, compared to other types of individuals, which has important implications for legal, psychological, and political policies. The complicated nature of different forms of IPV and how they are perceived points to how more research is needed on this important topic.

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Appendix: Example for "Trevor and Liz" Condition

Instructions

We're going to ask you to read scenarios about a fictional heterosexual couple named Trevor and Liz. Pretend they have been married for 10 years and that they have a seven-year-old child together. Each scenario is going to describe a conflict, and the specific behaviors the couple displays in each will vary. You're going to read a total of 11 scenarios, and the computer will randomly choose the order that you see them in. After you read each one, we'll ask you to rate how much you think the behavior of one person in the couple toward the other "counts" as abuse. We'll also ask if you think legal action should be taken. Because the scenarios are in a random order, try not to let your opinion of each carry over onto the next one.

Physical Abuse

Liz was cleaning the kitchen and accidentally broke a stack of plates. Trevor came into the room and became angry. He slapped Liz, grabbed her head, and forced her to look at the broken pieces of dishes. He yelled at her, then pushed her into the broken glass. While she was on the floor, he kicked her in the ribs and stomach. Liz's injuries were severe enough that she felt the need to go to the emergency room.

Sexual Abuse

Trevor woke up and noticed that Liz was still asleep. He started to touch her until she woke up. When she pushed him away, he continued to touch her. Liz asked him to stop, but Trevor said that Liz didn't have enough sex with him. Liz said that was because Trevor didn't like having conversations about Liz's preferences, and that Trevor always just wanted to do what made him happy in bed. That just made Trevor mad, and he continued to push for the sexual activities that he preferred until Liz eventually gave in. After they were done Liz tried to get up to go to the bathroom, but Trevor grabbed Liz and made her kiss and hug him until he fell asleep.

Non-Abusive (Control Vignette)

Liz was helping with a charity event on Friday and Trevor was supposed to attend. On Friday morning, an old friend of Trevor's from out of town called and said they were in town just for that day. Trevor, excited to see his friend, went out for drinks instead of going to the charity event. When Liz called to ask why he wasn't there, Trevor said that he forgot, explained about the friend, and apologized but said that he really didn't want to give up time with the friend to go to the event.

Psychological Abuse Vignettes

Coercion and Threats

One morning Trevor came into the kitchen while Liz prepared breakfast. He was upset that their child wasn't ready for school yet and that he was running late for work. Trevor swore at Liz and threatened her. He told Liz that if this happened one more time, he would "kick her ass" and "teach her how to be a mom." When Liz started to cry, Trevor said, "Maybe I should kill myself, it'd probably make your life better as all your problems would go away."

Economic Abuse

Liz currently does not have a job. She has tried to get one in the past, but Trevor insisted that she didn't need one, and instead should clean and improve the home and take care of their child. Liz, however, was given a debit card, which is what she uses for expenses. Trevor gives her an allowance per week on the debit card, which he controls based on whether he likes Liz's behavior that week. Only he has access to the account. This week, for example, he gave her no budget because he wasn't satisfied with how well she cleaned his car.

Emotional Abuse

Trevor and Liz go out to dinner to meet friends. On the way, Trevor tells Liz that she isn't as attractive as when they started dating and he points out other women who are more attractive. When they arrive at the restaurant, he tells their friends that Liz is "dumb, fat, and ugly." During the meal, Trevor told a story about Liz being a bad parent and encouraged their friends to laugh at Liz. When Liz wanted to go home after dinner, Trevor insisted they go out for additional drinks for several hours and made her drive them around so that he could continue to have fun. He told her that she needed to have more fun and stop being "boring" and "uptight."

Intimidation

Liz ran into some friends and got home later than expected. Trevor was upset that dinner was late. He started screaming at Liz, then went through the house pushing items onto the floor and throwing Liz's favorite objects against the wall. He stomped aggressively at her, threw a cup past her head—making it shatter against the wall—and kicked the family dog.

Isolation

It was a Saturday night and Liz wanted to go out to the bar with her friends. Trevor said he wanted Liz to stay home with him instead. When Liz insisted on going out, Trevor accused Liz of cheating on him. Liz denied that and went out with her friends. Every half hour or so, Trevor texted or called her asking her where she was and who she was

with. He sent his friend to check up on her and report back to him if she was where she said she was going to be. When she got home later that night and went to bed Trevor decided to go through Liz's phone and look for anything suspicious.

Male/Gender Privilege

Trevor came home from work angry. He saw that the dishes weren't done, and that Liz was watching a movie. He changed the channel to his favorite show and told Liz to "do her chores" before she would be "allowed" to have dinner that night. When she got ready to go out, he told her to change clothes because he didn't like the outfit that she picked out to wear. She asked to go to a new restaurant, but Trevor said they were going to his favorite bar instead. When they got there, Trevor ordered for both of them because he told Liz she needed to lose weight and didn't "deserve" dessert.

Manipulation of Children

Earlier in the day, Trevor was playing video games and Liz was in the kitchen. Trevor didn't want to interrupt his games, so he used their child to deliver messages to Liz. He also told their child that it was Liz's fault that they would have to cancel their family vacation for the upcoming summer because she spent their money on "useless things for herself." When Liz later confronted Trevor about his behavior that night, he told her that if she didn't like it, she could try to divorce him, but that he would get custody of their child if she ever left him.

Minimizing, Denying, and Blaming

When Liz reminded Trevor of his promise to go to the school play that evening that their child was performing in, Trevor was very sarcastic about it. He said that their kid was going to have many plays and that Liz was "crazy" for making a big deal of him missing this one. Trevor angrily continued by saying Liz "always makes a big deal out of nothing" and "will make stuff up" or "exaggerate everything." Trevor then went on to list everything that Liz does wrong in the relationship, saying she is the only reason their relationship has problems.

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How experiential and demographic factors predict levels of mental health literacy

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Abstract – This study investigated demographic and experiential predictors of mental health literacy (i.e., an individual's knowledge and understanding of mental health disorders). 125 participants completed a survey that utilized two mental health literacy assessments: the Mental Health Literacy Scale and five diagnostic case vignettes. Women and transgender and gender non-conforming individuals had higher Mental Health Literacy Scale scores than men, and older age was associated with lower mental health literacy. Personal experience (scored yes or no) and contact with others with mental health problems were both associated with higher scores on the Mental Health Literacy Scale. No demographic factors predicted vignette scores; however, having personal experience with mental illness and higher levels of education were associated with higher scores on the vignettes. Socioeconomic status and location were not associated with either scale. This study highlights the complex relationships between demographic and experiential factors and emphasizes the importance of mental health education and outreach in populations with less mental health literacy.

Keywords: mental health literacy, mental health education, personal experience, demographic predictors

Despite the growing awareness of mental illness and topics surrounding mental health, many individuals still struggle to recognize mental illness symptoms and seek resources for mental health treatment. This gap in knowledge can have detrimental consequences and limit access to mental health care and reduce the effectiveness of outreach and education. Similar to "health literacy" which is the ability to access, understand, and use information to better health outcomes, "mental health literacy" (MHL) is a newer idea that describes the capacity to address, identify, and discuss the effects of mental illness (Furnham & Swami, 2018; Jorm et al., 1997). Research demonstrates that health literacy may result in better general physical health outcomes, so a similar outcome with MHL's effects on mental health may be plausible for MHL (Furnham, 1994). For example, some research shows that those with low MHL may be at risk for symptoms of depression and anxiety (Huang et al., 2021). Higher MHL also is linked with positive traits, including better coping abilities, more positive attitudes, and increased social and interpersonal skills (Winding et al., 2023). MHL levels vary, however, and it is crucial to discuss the experiential and demographic influences that contribute to mental health knowledge and access to resources (Furnham & Swami, 2018). Identifying these influences can help us to examine where the largest gaps in MHL are. This, in turn, can help improve mental health education efforts and extend outreach to areas that need it.

Although MHL is important, the predictors of MHL are less understood. Understanding these relationships is crucial in improving mental health outreach and decreasing stigma. Research has identified several predictors of MHL including age, gender, and experience with mental health (these studies are further discussed in the following sections). These factors can be broadly categorized into demographic factors and experiential factors. However, research has not yet explored the unique contributions of these different types of factors to MHL. Thus, in the current study, I evaluated the unique contribution of factors that were experiential, or "changeable," and demographic, which are more "fixed." The demographic factors included age, gender, socioeconomic status, and whether or not the participant grew up in a rural or urban location. I also measured factors related to experience with mental health, such as level of education, amount of personal experience with mental health struggles, and contact with others with a mental health problem (measured with a level of contact scale). Overall, this study aimed to compare predictors of MHL in hopes of increasing overall awareness of MHL

and determining which factors might need more attention and mental health awareness outreach.

Research on MHL

MHL is a crucial aspect of public health because it describes how individuals perceive and address mental health issues (Furnham & Swami, 2018). It encompasses more knowledge than simple awareness of mental health, as it involves recognition of symptoms, understanding potential treatment methods, and acknowledging potential resource options. MHL has been evaluated in numerous ways, including using the Mental Health Literacy Scale (MHLS; Lee et al., 2020; O'Connor & Casey, 2015; Zhang et al., 2023) and vignettes (Aluh et al., 2019; Jorm et al., 1997; Vovou et al., 2020). The MHLS is a previously validated self-report questionnaire that measures the understanding of mental illness directly, along with attitudes towards it and confidence of each individual in their knowledge on mental health (O'Connor & Casey, 2015). On the other hand, the vignettes assess knowledge based on responses to and diagnoses of case vignettes that are depicted to have symptoms of mental health disorders (Vovou et al., 2020). This allows researchers to examine the abilities of participants to accurately diagnose mental illness, which provides a different kind of insight into MHL as it is not based on self-report questionnaire responses. These measurements of MHL involve different evaluations and provide insight utilizing self-report and also symptom recognition skills to depict MHL. By analyzing MHL with both measurements, I hoped to understand the relationship between self-report based MHLS scores and actual recognition scores and if each of these was associated with different MHL predictors.

Demographic Factors

Several demographic characteristics have been shown to relate to MHL. Specifically, I examined: gender, age, location (regarding rural vs. urban), and socioeconomic status. Understanding each of these factors and their relationship to MHL is crucial in determining which may be potential predictors.

Gender

Previous research indicates that women have higher MHL than men (Burns & Rapee, 2006; Gorczynski et al., 2017; Reavley et al., 2012; Simões de Almeida et al., 2023), potentially due to men associating shame with seeking mental health resources (McKenzie et al., 2018). It's also important to examine where non-binary participants might fall in a study measuring MHL. In existing research on MHL, non-binary and transgender individuals are grouped together, presumably due to lack of participants identifying as either of these. For example, one study had only one participant who did not identify as a man or woman out of 380 total participants (Gorczynski et al., 2017). Another had seven out of 928 participants identify as "other," and the study found this group had the same MHL as the women (Simões et al., 2023). Although no research separately compares non-binary and transgender MHL, these groups are more likely to have personal experiences with mental health issues (Fiani, 2018; Pinna et al., 2022) and previous mental health problems are associated with higher MHL (Gorcyznski et al., 2017).

Age

Research on MHL and age is conflicting, but some studies suggest that MHL increases and stigma decreases with age (Bradbury, 2020; Mackenzie et al., 2019; Reavley et al., 2012; Simões de Almeida et al., 2023). For example, younger individuals (ages 20-59) exhibit more stigma and are less likely to seek help (Simões de Almeida et al., 2023), while older adults show more positive attitudes toward seeking help (Mackenzie et al., 2019). In the 18-24 age range, older participants were more likely to correctly diagnose a mental health vignette (Reavley et al., 2012). However, older adults (65+) may have lower MHL due to isolation, generational stigma differences, and/or cognitive decline (Department of Health, 2010; Farrer et al., 2008; Geboers, 2018; Simões de Almeida et al., 2023). Thus, while MHL generally increases with age, this trend may not hold true for elderly populations.

Rural vs Urban Location

Research suggests that those who live in urban areas have more MHL and are more likely to seek professional mental health services than those living in rural areas (Griffiths et al., 2009; Zhang et al., 2023). This may be because urban areas usually have a higher concentration of mental health professionals and healthcare options, along with overall access to resources (Cheesmond et al., 2019; Morales et al., 2020; Stewart et al., 2015). The combination of these factors emphasizes the importance of outreach efforts in rural communities lacking in mental healthcare.

Socioeconomic Status (SES)

Direct correlational research between socioeconomic status and MHL is minimal, however, there is a wide variety of research on health literacy in general and different variables that contribute to MHL, such as stigma and attitude, and their correlations with socioeconomic status. For example, lower socioeconomic status has been linked to reduced general health literacy potentially due to inadequate health resources (Svendsen et al., 2020). Higher socioeconomic status is associated

with better MHL; one study found that subjective socioeconomic status, or an individual's perception of their own social class, was positively correlated with MHL (Zhang et al., 2023). Similarly, research has found that those with lower actual socioeconomic status have higher stigma of mental health care (Eisenberg et al., 2009; Golberstein et al., 2008) and more negative attitudes towards those with mental illness (Department of Health, 2010). On the other hand, research in the United States showed individuals with higher socioeconomic status were more inclined to express wishes to avoid individuals showing symptoms of mental illness (Martin et al., 2000). Thus, more research is needed in this area to determine the exact relationship between socioeconomic status and MHL.

Experiential Factors

In addition to demographic factors, multiple experiential factors have also shown to relate to MHL. Experiential factors are in relation to how much experience a person may have with mental illness or exposure to the mental health field. Previous exposure to ideas and topics within mental health, whether personal, educational, or experiential, tends to increase knowledge of mental health disorders and, furthermore, recognition of symptoms (Gorczynski et al., 2017; Lauber et al., 2003; Lauber et al., 2005; Reavley et al., 2012; Simões de Almeida et al., 2023).

Personal Experience

Personal experience with mental health treatment has been shown to increase recognition of mental health symptoms in others (Lauber et al., 2005). Those who have personally experienced mental illness in general have higher MHL than those who do not (Gorczynski et al., 2017). This may be because of direct exposure or experience with symptoms and diagnoses, treatment planning, and interactions with counselors and/or other patients with mental illness in a treatment setting. Engaging in therapy or other mental health treatment could also have an impact as it can lead to greater understanding of one's own symptoms and diagnoses along with treatment options.

General Contact with Others with Mental Health Problems

Aside from personal experience with mental illness, those with more general contact with others who have a mental health diagnosis also have more MHL (Lauber et al., 2003; Lauber et al., 2005; Simões de Almeida et al., 2023). Research suggests that contact with individuals with mental illness tends to increase rates of recognition amongst most people, meaning they are more likely to understand which symptoms may be associated with certain diagnoses (Lauber et al., 2003). Likewise, mental health professionals, who have high levels of contact with individuals with mental illness, show higher MHL rates than the general public (Jorm et al., 1997). Contact is a major factor related to MHL, likely because exposure to the symptoms that others may be experiencing provides insight to individuals on how certain mental illnesses may manifest in others.

Level of Education

Education, especially in the health and social sciences fields, seems to play a role in shaping an individual's mental health knowledge. For example, a higher level of MHL was seen in health professionals (Reavley et al., 2012; Simões de Almeida et al., 2023), with those in medicine and psychology demonstrating the most knowledge (Bose et al., 2020; Lauber et al., 2005). Many of these careers involve education on various health topics, which may be the reason individuals in these careers seem to have more MHL. However, even outside of these specific fields, higher education levels have been associated with recognition of a depression vignette (Reavley et al., 2012). This may be because higher education may involve more opportunities for increasing knowledge on mental health (Lee et al., 2020).

Study Goals

Overall, there are a number of factors that may relate to MHL. The current study distinguishes itself from existing literature by systematically evaluating both demographic and experiential factors related to MHL, evaluating both the MHLS and case vignettes for a comprehensive assessment of measurement effectiveness, and including non-binary and transgender individuals to better understand their unique experiences with MHL.

Hypotheses

I hypothesized that experiential factors and demographic factors would both relate to MHL. The specific hypotheses I had in relation to demographic and experiential factors based on the literature review above were as follows. I predicted that MHL would be higher in:

Demographic Factors

1) Women,
2) Participants who are not cisgender,
3) Older participants,
4) Participants from lower SES,
5) Those from rural areas

Experiential Factors

6) Those with personal experience with mental health struggles,

7) Those with higher general contact with those with mental health issues, and
8) Participants with higher education levels.

Additionally, I hypothesized that experiential factors would have a stronger association with MHL than demographic factors, as experiential factors tend to be more personal and experience-related, which encourages additional knowledge in the field (H9).

Methods

This study was a survey study open to anyone over the age of 18 regardless of gender, experience, etc. To obtain a representative sample that included nonbinary participants, several different recruitment procedures were used including campus advertising through campus-wide emails along with utilization of personal social media, specifically Instagram and Facebook. In each of these, a brief description of the survey was given and consent guidelines were presented along with a direct link to the survey. In order to reach more non-binary individuals, I also identified individuals working with non-binary populations and shared the survey information with these individuals to post.

Participants

A total of 125 individuals participated in this study, including 23 who identified as men, 95 as women, 1 as a transgender woman, 4 as non-binary, 1 individual who preferred not to say, and 1 individual who did not respond. Because of the small sample size of transgender and non-binary individuals, the participants were categorized together as transgender and gender non-conforming (TGNC). The average age of participants was 34.0 (*SD* = 14.7) and most participants (65.6%) were not currently enrolled in college at the time of the study. Twenty-eight participants (22.4%) had less than a high school diploma or a high school diploma or equivalent, 55 participants (44.0%) had some college or an associate's degree, 29 (23.2%) had a bachelor's degree, and 13 (10.4%) had a master's or doctorate degree.

Materials

MHL

In this study, I compared two forms of measurement used to determine MHL levels. The first MHL measurement was determined using a set of five case vignettes, one describing a healthy person and four others with symptoms of mental health diagnoses (ADHD, autism, schizophrenia, and bipolar disorder) based on DSM-5 characteristics (Vovou et al., 2020). Participants were shown all five vignettes and asked if the person had a mental health diagnosis. Those who answered "yes" or "maybe" were asked what the diagnosis might be and their confidence level in diagnosing the case vignette. Before analyzing responses, participants' short answer diagnosis responses were coded to more accurately compare them with the following criteria:

1) Fully correct answers were given one point. These responses provided a clear and accurate diagnosis that matched the correct vignette response. For the healthy vignette, those who responded with no diagnosis, those who explained that it could be situational, and those who mentioned that he is experiencing normal emotions or could use further testing were all scored correctly. For the other vignettes, responses were only fully correct if the response mentioned the correct diagnosis, regardless of whether an explanation was provided. Some responses with outdated labels for diagnoses or more specific diagnoses than required were also scored as correct. For example, responses of Asperger's and ASD for autism, responses of attention deficit disorder (ADD) for ADHD, responses of schizoaffective disorder, specific types of schizophrenia (ex: paranoid), and schizotypal personality disorder, and finally responses of specific types of bipolar disorder, manic depressive disorder, and bipolar disorder with mania were all coded as correct. Fully correct scores involved a diagnosis that was either the exact diagnosis for the vignette or another name for the same diagnosis.
2) Responses that were partially correct were given half of a point. Responses with multiple diagnoses containing the correct diagnosis along with other incorrect diagnoses were given partial credit. For the healthy vignette, those who mentioned mental health symptoms (ex: loneliness, stress, depressive symptoms, etc.) scored half correct as they mention symptoms but do not directly state a diagnosis, which would be fully incorrect. Other partially correct responses included those mentioning mania for the bipolar vignette without also discussing depression or including an actual diagnosis. These responses indicate partial understanding but not full understanding of the vignette's diagnosis.
3) Fully incorrect responses were responses that did not meet any criteria above. Similarly, those who marked that there was a diagnosis but did not provide a short answer response were given no points. Aside from the healthy

vignette, responses of only symptoms were not given credit as these are not diagnoses.

Given the scores of 0, 0.5, and 1 for each of the 5 vignettes, the minimum overall score possibility was 0 with a maximum score of 5, allowing for scores in between 0.5, 1.5, etc. Following this portion, all participants were then asked whether or not the person should ask for help. Those who answered that the person does not have a mental health diagnosis skipped the questions regarding diagnosis and confidence.

The second measure of MHL was the Mental Health Literacy Scale (MHLS), which is a 35-question survey that examines a person's understanding of and familiarity with mental health (O'Connor & Casey, 2015). Participants were asked to rate different questions on a scale. Some items used Likert-scale responses with a range of very unlikely or unhelpful (scored 1) to very likely/helpful (scored 4). For other items, the scale ranged from strongly disagree/definitely unwilling (scored 1) to strongly agree/definitely willing (scored 5). Several items were reverse scored. After reverse scoring, a total score was produced by summing all items with a minimum score of 35 and a maximum score of 160. Each survey participant was asked to answer all 35 questions. The MHLS has been studied in the past and is deemed to be a reliable and valid method used to determine MHL scores (ElKhalil, 2024). Internal consistency for the current study was good, Cronbach's $\alpha = .89$.

Demographic Factors

To measure demographic factors, I began by asking participants to state their age in years and their gender identity, with options of woman, man, trans woman, trans man, non-binary, none of these describe my gender, and prefer not to say.

To measure socioeconomic status effectively amongst a wide span of different ages, I used the MacArthur Scale, which is a measure of subjective social status (Adler et al., 2000). Socioeconomic status is usually measured with income, however, some participants may not know their current income or may be an adult but still dependent on their family income. Using this scale allowed college students to describe their socioeconomic status more accurately, whether they are dependent on their parent(s) or independent. The MacArthur Scale uses a ladder model and involves two ladders, with participants marking the lowest rung of the ladder as 1, and the highest rung as 10. This allowed us to see how people perceive their socioeconomic status compared to others in the US (in the first ladder) and also gain a sense of how they feel they fit into their community (in the second ladder). I modified the instructions minimally in order for them to generalize to individuals and their family. Scores of 1 were scored as 1, scores of 2 were scored as 2, and so on. Research shows that using this subjective scale can sometimes show more accuracy in predicting socioeconomic status than objective scales (Singh-Manoux et al., 2000).

Location (rural/urban) was evaluated using the following question: "Please select the category that best describes the number of people who lived in the community where you grew up: more than 50,000 people, 10,000-49,999 people, 2,500-9,999 people, and less than 2,500 people." Previous studies have used this method as an effective way to determine which of these environments a person grew up in: urban (>50,000 people), large rural (10,000-49,999 people), small rural (2,500-9,999 people), and isolated rural (less than 2,500 people; Onega et al., 2019).

Experiential Factors

The Level of Contact Report Scale, created by Holmes et al. (1999) and later revised by Bose et al. (2020), was used as a measure of the level of contact individuals have with mental illness from an outside perspective (Bose et al., 2020). The Level of Contact Report Scale asks individuals to place a check by various statements that apply to them to gauge encounters with others with mental illness. Statements that demonstrate less contact, such as "I have never observed a person I am aware who had a severe mental illness" have lower experience scores than statements that represent higher contact, such as "I have observed a patient I am aware who had severe mental illness" (Bose et al., 2020). As each item increases in level of contact, so does its corresponding score. A higher score represents more overall contact and experience with others with mental illness, so the selected response with the highest corresponding score was used to determine experience score. The highest possible score was a 12 given the 12 statements. For example, if a participant selected options 1, 3, and 4, a score of 4 would be given.

Because the Level of Contact Report Scale above does not discuss personal experience with mental health problems, I also included a measure of personal experience based on Lauber et al. (2005). Specifically, participants were asked: "Do you have personal experience with mental illness?" and were able to respond yes (coded as a 1) or no (coded as a 0).

Educational status was evaluated by asking participants whether they were currently enrolled as a student at a college or university. Additionally participants were given a drop-down menu to select the highest level of education they had obtained (less than a high school diploma, high school diploma or equivalent, some college, associate's degree, bachelor's degree,

master's degree, doctorate, or other). Degree type was later collapsed into four categories rather than seven; those with less than a high school diploma and those with a high school diploma or equivalent were grouped into the first category of education, followed by some college and an associate's degree in the second category, then a bachelor's degree for the third category, and master's and doctorate as the fourth.

To ensure participants were attentive while completing the survey, an attention check was included. Specifically, midway through the survey, participants were instructed to select "Disagree" for a particular question. A total of 12 individuals failed this attention check. All analyses were conducted both with and without these 12 individuals. The results remained consistent regardless of their inclusion, except where specifically noted, so the individuals were included in the results reported below.

Results

Overall MHL

On average, participants scored 2.82 for Vignette Score Total and 133 for MHLS Sum Score (see Table 1 for correlations). The Vignette Score Total and MHLS Sum were significantly correlated such that higher Vignette Score Total was associated with higher MHLS Sum, $r = .40$, $p < .001$. This represents a medium effect (16% of the variability in Vignette Score Total was accounted for by the variability in MHLS Sum).

Demographic Factors

Gender

To examine MHL differences between men and women based on their MHLS sum and vignette score, I conducted an Independent Samples T-test. Results revealed that there were no significant differences between the women and men in their vignette scores ($M_{vignette} = 2.86$, $SD = 1.18$, $M_{vignette} = 2.57$, $SD = 1.27$). However, results of a Welch's two-sample t-test revealed that women ($M_{MHLS} = 135.01$, $SD = 12.050$) had significantly higher MHL sum scores than men ($M_{MHLS} = 122.70$, $SD = 14.66$), $t(29.59) = 3.73$, $p < .001$, $d = 0.92$. This represents a large effect.

To evaluate differences between non-binary/transgender participants and men and women, I ran two one-way ANOVAS. The analysis revealed no statistically significant differences among the three groups for the vignette, $F(2, 120) = 1.67$, $p = 0.193$, $\eta^2 = 0.03$. However, the results of the one-way ANOVA analysis showed a statistically significant difference in MHLS based on gender, $F(2, 120) = 10.69$, $p < .001$, $\eta^2 = 0.15$. Tukey's post-hoc tests revealed that both non-binary/transgender individuals and women scored statistically significantly higher than men on MHL (see Figure 1). However, it is important to note that due to the small sample of TGNC participants, the margin of error for this group was large, so these results should be interpreted with caution.

Table 1

Correlations Between Major Study Variables

	Vignette Score Total	MHLS Sum	What is your age? (in years)	MacArthur Scale 1	MacArthur Scale 2	Experience with Mental Health
Vignette Score Total	—					
MHLS Sum	0.40***	—				
Age	-0.04	-0.19*	—			
MacArthur Scale 1	0.04	-0.06	0.15	—		
MacArthur Scale 2	0.06	-0.06	0.20*	0.62***	—	
General Contact	0.08	0.21*	-0.09	0.08	0.04	—
Mean(SD)	2.82 (1.19)	132.67 (13.78)	34.03 (14.69)	5.70 (1.52)	5.57 (1.77)	10.09 (2.44)

Note. * p < .05, ** p < .01, *** p < .001
MacArthur Scale 1 compares to US, MacArthur Scale 2 compares to community

Age

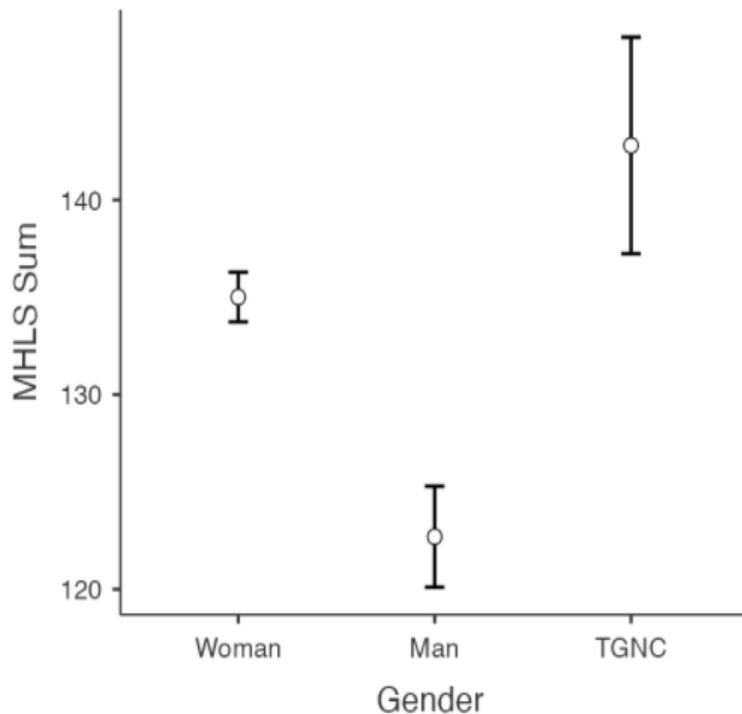
To evaluate the association between MHL and age, I ran a series of correlations. There was no correlation between Vignette Score Total and age, $r = -.04$, $p = .715$. Age and MHLS were significantly correlated such that higher age was associated with lower MHLS Sum scores, $r = -.19$, $p = .05$. This represents a small effect (3.61% of the variability in age was accounted for by the variability in MHLS sum scores).

Socioeconomic Status (SES)

To examine associations between

Figure 1

Differences in Mental Health Literacy Scores for Women, Men, and Transgender and Gender Non-conforming (TGNC) Individuals



Note. Error bars represent the standard error of the mean

socioeconomic status and MHL, I ran a series of correlations. There was no significant correlation between socioeconomic status variables (MacArthur Scale responses) and Vignette Score Totals or MHLS sum scores (see Table 1).

Rural vs. Urban Location

In order to examine differences in location and MHL scores, I conducted two one-way ANOVA analyses. The results of the one-way ANOVA analysis showed that there was no significant difference between hometown population size in Vignette Score Total, $F(3, 121) = 1.03$, $p = .382$, $\eta^2 = .02$. The second ANOVA showed that there was no significant difference in MHLS sum scores between hometown population size groups, $F(3, 121) = 1.34$, $p = .265$, $\eta^2 = .03$.

Experiential Factors

Personal Experience

In order to examine MHL differences between those with personal experience with mental health issues and those without personal experience, I conducted an Independent Samples T-test. Results revealed that those with personal experience with mental health issues had significantly higher vignette score total scores ($M_{vignette} = 2.93$, $SD = 1.17$) than those with no personal experience with mental health issues ($M_{vignette} = 2.31$, $SD = 1.18$), $t(123) = 2.20$, $p = .030$, $d = 0.53$.[1] This was a medium effect. The results also revealed that those with personal experience with mental health issues had significantly higher MHLS sum scores ($M_{MHLS} = 134.62$, $SD = 12.74$) than those with no personal experience with mental health issues ($M_{MHLS} = 123.05$, $SD = 14.99$), $t\,(123) = 3.68$, $p < .001$, $d = 0.88$. This was a large effect.

General Contact with Others with a Mental Health Problem

In order to evaluate correlations between MHL and experience with mental health issues in others, I ran a series of correlations. There was no correlation between Vignette Score Total and level of contact/experience with mental health, $r = 0.08$, $p = .398$. Contact with others with mental health issues and MHLS were significantly correlated, such that more contact was associated with higher MHLS Sum scores, $r = .21$, $p = .017$. This represents a large effect; 4.41% of the variability was accounted for by the variability in MHLS Sum.

Education

The results of the one-way ANOVA analysis showed a statistically significant difference in Vignette Score Total based on education level $F(3, 121) = 3.28$, $p = 0.023$, $\eta^2 = 0.08$. Tukey's post-hoc tests revealed that those with a high school degree or less scored lower on MHL than those with some college, a bachelor's degree, or a higher degree. The results of the one-way ANOVA analysis did not show a statistically significant difference in MHLS based on education level.

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[1]The association was only marginally statistically significant when excluding those who failed the attention check, *$t(111) = 1.84$, $p = .068$, $d = .48$*

Table 2

Summary of Multiple Regression Predicting MHLS

Variable	*B*	*SE B*	*β*
Intercept			
Gender[a]			
Man - Woman	-8.21	3.16	-0.64*
TGNC - Woman	5.01	5.50	0.39
Age	-0.19	0.08	-0.22*
Personal Experience (yes-no)[b]	9.95	3.51	0.77*
General Contact	0.93	0.50	0.17

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

Note. TGNC stands for Transgender and Gender Non-conforming

[a] Women served as the reference group

[b] No served as the reference group

Overall Analysis

In order to evaluate the strength of different factors in predicting MHL, I ran two linear regression analyses evaluating the predictors that were significant in the bivariate analysis: gender, age, personal experience, and general contact with mental health.

The analysis for vignette score was not statistically significant, $F(5, 95) = 0.65$, $p = .662$, $R^2 = .03$. The analysis for MHLS sum score was statistically significant, $F(5, 95) = 6.65$, $p < .001$, $R^2 = .26$. This was a large effect, explaining 26% of the variability in MHLS sum scores. Gender, age, and personal experience with mental health were all significant predictors ($p < .018$). General contact with mental health was positively associated with MHLS scores, but did not reach statistical significance ($p = .068$). Overall, personal experience was the strongest predictor (β = .77), followed by age (β = -.22). See Table 2 for results.

Discussion

Based on the results of this study, there are several associations between experiential and demographic factors and MHL. I expected experiential factors to have more of an impact on MHL than demographic factors. This was partially correct, as in the overall analysis, personal experience with mental health was the strongest predictor followed by age and gender. While direct experience is the strongest factor, the other experiential factors were not significant.

In regard to associations with specific demographic factors, I hypothesized that women would have higher MHL scores than men, which was supported by the MHLS sum score analysis although not in the vignettes. This is similar to previous findings that women usually tend to have more MHL than men (Burns & Rapee, 2006; Reavley et al., 2012; Simões et al., 2023). One potential explanation for this finding is that men tend to associate more stigma with mental health issues and experience more shame with seeking mental health resources (McKenzie et al., 2018). Similarly, I hypothesized that non-binary and transgender individuals would have higher MHL than both women and men given their higher likelihood to experience mental illness (Fiani, 2018). This hypothesis was not supported; transgender and gender non-conforming individuals did have higher MHLS sum scores than men but not women. In a previous study, participants who identified as "other" were found to have similar MHL as women (Simões et al., 2023), which concurs with the current finding. However, it is important to note the very small sample of transgender and non-binary individuals in comparison to those who identify as men and women in this study as well as in previous studies. Because of the small sample size, transgender and non-binary individuals were grouped into a category together, labeled TGNC, or transgender and gender non-conforming. Thus, it was impossible to evaluate specific differences based on gender identity.

Age was another significant demographic predictor. I hypothesized that MHL would be higher for older individuals, however, results showed that MHLS Sum scores were actually lower in older individuals. Previous research has been mixed. In general, research shows that MHL increases with age (Bradbury, 2020; Reavley et al., 2012; Simões et al., 2023). However, in more elderly populations (65+) this trend reverses, and we actually see a decrease. Although there were a wide variety of ages in the present study, there were a few older outliers who may have had an effect on the significance of the correlation. When the analysis was run including only those aged under the age of 65, the correlation was no longer significant. This suggests that the correlation may have been driven by older individuals, indicating a need for further exploration.

A lack of resources in certain areas may potentially result in a lack of health education and services, leading to my hypothesis that lower socioeconomic status would be associated with lower MHL. This was not supported by the analyses. This study utilized a subjective socioeconomic status measurement, however, and results may have looked different with an objective socioeconomic status measurement and more specific socioeconomic status variables such as income. Similarly, I also hypothesized that those in urban areas would have higher MHL due to increased access with

MHL, but this was also not supported, unlike previous research findings that showed this to be significant (Zhang et al., 2020). Although my sample was relatively mixed in terms of location, the lack of significant differences may be due to the fact that the survey asked about an individual's hometown. Given the age variability of the sample, it is possible that individuals may have spent more of their lives in a town larger or smaller than their hometown, making the association between hometown and MHL less strong.

As for my hypotheses for experiential predictors, I hypothesized that those with more contact with others with mental illness and more personal experience with mental illness would have higher MHL. Both general contact and personal experience were positively associated with MHLS sum scores and personal experience was significantly associated with vignette score. Prior research on experiences and MHL supports these findings and shows that increased personal experience with mental illness can have a positive correlation with MHL (Gorczynski et al., 2017). Similarly, literature shows that exposure to others with mental illness can increase MHL, which also supports my findings (Lauber et al., 2003; Lauber et al., 2005; Simões et al., 2023). Finally, my hypothesis on MHL increasing with education level was also not entirely supported, although those with some college or more did have higher vignette MHL scores than those with high school diplomas or less. This partly supports prior research that found MHL to increase with education level (Simões et al., 2023).

In this study, I measured MHL using two measures: the Mental Health Literacy Scale, which is a survey asking questions directly about the participant, and a series of case vignettes. Comparing these two measures can help to assess which methods may be most effective in measuring MHL accurately. In evaluating the bivariate associations, there were some differences in factors predicting the vignette scores versus the MHLS sum scores. Only personal experience and education levels were significant predictors of the vignette score. However, personal experience with mental health issues, general contact with others with mental health issues, gender, and age were significantly associated with MHLS sum scores. Overall, the vignette seems to be associated with experiential factors more than demographic factors, but the MHLS seems to provide a fuller picture of MHL overall, as it was associated with both experimental and demographic factors. Although they seemed to have different abilities in predicting these variables, the two scales were significantly related to one another, which provides evidence of convergent validity for the two measures.

Limitations

As with any study, this study includes limitations. For example, it is important to note that the measures were self-report and the measurement was cross-sectional. Self-report data may be biased due to the reliance on participants' subjective perceptions and potential recall inaccuracies. Additionally, the cross-sectional nature of the data limits the ability to evaluate longitudinal relationships between variables.

One major goal of this study was to include transgender and non-binary individuals and evaluate them separately from men and women. Unfortunately, the non-binary and transgender sample size in this study was not large enough in comparison to the number of men and women, which resulted in the combination of these participants into a transgender/gender non-conforming (TGNC) category, limiting the ability to evaluate specific differences between those groups. Non-binary and transgender individuals may have unique experiences in regard to MHL; understanding of this underrepresentation and trying to obtain a significant sample can increase awareness of their experiences and potentially help mental health resources in the future to be inclusive and effective for them. Sampling bias may be another limitation of this study as the recruitment primarily involved college campus advertisement and the utilization of personal social media pages.

Another limitation of this study involves the measurements of socioeconomic status and location, both of which used measurements that have not previously been used in MHL studies. Although measuring subjective socioeconomic status, which relies on an individual’s perception of their status, may be more beneficial in some cases, objective socioeconomic status, which relies on concrete measurements, may have produced more significant results in this area because of its more specific questions surrounding income level and occupation. The mixture of college students and non-college students, while a strength of the study in relation to generalizability, may have made it more difficult to capture socioeconomic status, as college students may struggle to accurately perceive their own socioeconomic status. Similarly, I asked participants to describe the size of the city in which they grew up in order to more accurately capture the experiences of current college students. However, older individuals may have spent most of their lives after childhood in cities of different sizes. This could make their hometown size less relevant to their current lives.

A final limitation of this study is the use of a yes/no question to assess personal experience with mental illness. This question does not consider the nuances of the experiences, which can range from a direct personal diagnosis to more indirect experiences, such as experiencing a family member with mental illness. It is important to note, however, that the Level of Contact Report Scale does incorporate a broader range of these experiences, which can allow for a more nuanced assessment of an individual's general experience and contact with mental illness. Future research may benefit from a more detailed question to ask about a personal diagnosis of mental illness in order to clarify the difference between personal experience, or direct self-experience, and indirect experience.

Future research discussing predictors of MHL could also benefit from using a targeted sampling method to obtain a larger sample of non-binary and transgender individuals as there is still a lack of research in this area. Inclusion of underrepresented gender identities is becoming more common in psychological studies, but it is still missing in most current literature of MHL. In addition, qualitative research evaluating gender diversity as well as differences in generations could provide additional insights into the nuanced experiences of these groups. Finally, future literature could include other socioeconomic status variables to use in comparison to MHL; using a standardized objective measure of socioeconomic status may also provide insight into how different factors of socioeconomic status (income, occupation, etc.) can correlate with MHL rates.

An important strength of this study is that it specifically evaluated demographic (fixed) and experiential (changeable) factors and their relationship to MHL. Although many studies have evaluated different factors in MHL, this is the first to systematically compare demographic and experiential factors and evaluate their relative contribution to MHL. It is important to understand which factors need more attention and which are stronger predictors of MHL overall. This data may be beneficial in creating early intervention and increased measures in each of the areas (demographic and experiential) with low MHL rates.

These findings emphasize the importance of exposure to mental illness and its role in increasing MHL and awareness, which similarly suggests that experience with mental health issues overall may lead to better understanding and recognition of mental health disorders. The study also demonstrates that experiential factors and demographic factors may both have correlations with MHL and should be examined further. Additionally, the insight provided as a result of this study can be used to inform mental health education and potentially pinpoint areas of lower MHL to increase educational efforts in these areas. For example, given the findings suggesting that older adults and men may demonstrate lower MHL, targeted outreach to these groups may be beneficial. Continued research into demographic and experiential factors can further assist in developing mental health education and outreach in those predicted to have lower MHL.

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ANXIETY AND SOMATIC SYMPTOMS AS SERIAL MEDIATORS OF GENDER DIFFERENCES IN DEPRESSION AMONG COLLEGE STUDENTS

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Abstract – Prior research indicates that depression, anxiety, and somatic symptoms disproportionately affect women between the ages of 12 and 29 (Brody & Hughes, 2025; Haug et al., 2004; Terlizzi & Zablotsky, 2024). Furthermore, research has suggested potential temporal links between anxiety and the development of depression (Kessler et al., 2015; Starr & Davila, 2012) and identified somatic symptoms as features of both (APA, 2023; Sawchuck, 2022). Despite available research and lifetime comorbidity rates of anxiety and depression of 45.7% (Kessler et al., 2015), little research addresses the mechanisms of these relationships with a sample of young adult women. This study investigates whether anxiety and somatic symptoms serially mediate the relationship between gender and depression in a population of undergraduate students. The study has four hypotheses. 1) Women will report higher depression, anxiety, and somatic symptoms. 2) Increased anxiety will influence increased somatic symptoms. 3) Anxiety and somatic symptoms will independently mediate relationships between gender and depression. 4) There will be a significant serial mediating effect of gender on depression, via anxiety and somatic symptoms. Participants were 893 psychology undergraduate students from California State University, Northridge, during the 2023-2024 academic year (71.2% women, M_{age} = 19.18, *SD* = 2.24), who completed the GAD-7, SSS-8, and PHQ-8 using SONA. Women reported significantly higher anxiety (*M* = 9.26, *M* = 7.01), somatic symptoms (*M* = 12.24, *M*=7.7), and depression (*M* = 10.44, *M* = 8.17) than men. Anxiety (*B* = 1.43, *95% CI* [.89, 1.97]), somatic symptoms (*B* = .69, *95% CI* [.48, .92]), and the serial path, via anxiety and somatic symptoms (*B* = .43, *95% CI* [.27, .62]), were significant, suggesting that anxiety and somatic symptoms mediate the relationship between gender and depression individually and sequentially. The direct effect of gender on depression was not significant (*B* = -.05, *SE* = .26, *p* = .28), indicating full mediation. The model accounts for 70.35% of the variance in depression. These findings highlight the importance of assessing anxiety and somatic symptoms when treating depression, regardless of gender, suggesting that gender differences in depression may reflect differences in symptom prevalence rather than distinct etiological processes.

Keywords: depression, anxiety, somatic symptoms, gender, undergraduate students

Gender Differences in Depression

According to data collected by the Centers for Disease Control (CDC), between August 2021 and August 2023, 13.1% of adolescents, ages twelve and over, experienced symptoms of depression lasting at least two weeks. Though prevalence decreased with age, across both men and women, the highest prevalence was amongst the 12–19-year-old age group (19.2%) (Brody & Hughes, 2025), suggesting that this is a population acutely at risk for developing depression. Gender is also a significant variable when addressing depression prevalence. In the same study conducted by the CDC, the gender disparity in depressive symptoms was such that, regardless of age, women experienced higher rates of depressive symptoms (16%) than men (10.1%). However, when examining the age group with the highest reported prevalence of depression (12–19-year-olds), the observed gender disparity became more extreme, with women (26.5%) reporting more than double the depression rates of their male counterparts of the same age (12.2%) (Brody & Hughes, 2025). This data further defines the population reporting increased depression as being specifically young adult/adolescent women.

Depression can cause significant distress in an individual's personal and professional lives. Individuals experiencing depression can potentially display several biological, psychological, and cognitive symptoms. Common symptoms include anhedonia, irritability, feelings of emptiness or hopelessness, anxiety, agitation, trouble concentrating or remembering, somatic symptoms (e.g., back pain or headaches), and suicidal

ideation or attempts (Sawchuk, 2022). These symptoms have the potential to cause significant distress and dysfunction in numerous areas of an individual's life. Of those surveyed by the CDC in 2023-2024, 87.9% of participants who reported high levels of depression reported having difficulty with personal, social, and professional activities due to their depressive symptoms. This was the case across genders (Brody & Hughes, 2025).

Depression, on a national level, represents a serious social and economic burden. When limited strictly to those formally diagnosed with major depressive disorder (MDD), in 2019, the societal economic weight of MDD was estimated to be 333.7 billion dollars (Greenberg et al., 2023). This is alarming considering that the 333.7 billion dollars pertains only to major depressive disorder, one of eight depressive disorders listed in the DSM-5 (American Psychiatric Association, 2013). In 2020, additional data collected by the CDC (n = 392,746) reported that the age-standardized prevalence of having been diagnosed with any depressive disorder was 18.5%. This data also further identified the 18–24-year-old demographic (21.5%) as well as women (24.0%) as exhibiting uniquely high prevalences of depressive disorders (Lee et al., 2023). This suggests that the true 1representing the total societal economic burden of depression is likely much larger than what is attributed to MDD and further highlights the vulnerability of the young adult female demographic.

Depression is often discussed hand in hand with anxiety, for good reason, considering that anxiety is one of the myriad symptoms of depressive disorders (Sawchuk, 2022). The highly intertwined nature of depression and anxiety is reflected in data that examines the comorbidity trends of the two. In 2015, the World Health Organization conducted a cross-national study to examine the lifetime and 12-month comorbidity patterns of anxiety and depressive disorders, conducting interviews in 24 countries, including a total of 74,045 adult participants. The data revealed that, on an international level, 45.7% of those who had lifetime major depressive disorder had one or more comorbid lifetime anxiety disorders, as well as identifying women as being at an elevated lifetime risk of developing depression, along with some form of comorbid anxiety disorder (Kessler et al., 2015).

Gender Differences in Anxiety

Anxiety has its own biological, psychological, and cognitive symptoms. Understanding more about the varied expressions of anxiety also helps to lend a glimpse into the devastating nature of anxiety with comorbid depression. Irritability, a sense of impending danger or doom, difficulty concentrating, accelerated heart rate, sweating, chest pain, headache, shortness of breath, sleep disturbances, and other somatic symptoms like numbness or tingling in the extremities are some of the numerous symptoms of anxiety (American Psychiatric Association, 2023). The American Psychiatric Association (2023) estimates that as many as 30% of adults will be affected by anxiety in their lifetime, while yearly prevalence data from the CDC suggests that over 12 months, 18.2% of US residents experience some form of anxiety, mild, moderate, or severe. (Terlizzi & Zablotsky, 2024).

Following national trends regarding depression prevalence disparities, anxiety disorders seem to affect more women than men. In 2022, women reported nearly double the prevalence of symptoms of anxiety (24.4%), compared to men (14.8%) (Terlizzi & Zablotsky, 2024). Data on anxiety, like that on depression, also highlights the vulnerability of the young adult population. The same National Health Statistics Report by the CDC that highlighted the elevated level of women reporting anxiety symptoms, also stated that the 18–29-year-old demographic reported more general symptoms of anxiety (26.6%), compared to 30–44-year-olds (20.7%), 45–64-year-olds (15.8%), and those 65 and over (11.2%) (Terlizzi & Zablotsky, 2024). The same demographic of adolescent/young adult women is acutely at risk of depression and anxiety.

Somatic Symptoms

A recurring theme in discussions revolving around depression and anxiety is somatic symptoms. Somatic symptoms, like headaches and muscle aches, tend to appear in both descriptions of most major anxiety and depressive disorders in the DSM. Somatic symptoms, as defined by the American Academy of Child and Adolescent Psychiatry (2023), are physical symptoms of psychological distress that may or may not be attributed to an underlying medical condition. Other examples of somatic symptoms include stomach issues, weakness, shortness of breath, vision change, tingling or numbness, and vomiting (AACAP, 2023). The presence and severity of somatic symptoms can directly influence the severity of anxiety and depression, so addressing these issues can be crucial to treatment outcomes. In research conducted by Kroenke (2003), an estimated 33% of visits to primary care physicians were related to somatic symptoms, while between 5% and 10% met the criteria for MDD. This being said, it is also important to note that women report significantly more baseline somatic symptoms than men. In a large study by Haug et al. (2004), women reported an average of 3.8 unexplained somatic symptoms over one year, compared to 2.9 reported by men, and 32% of

women reported having at least five unexplained somatic symptoms over one year, versus 22.7% of men (*n* = 50,377).

Anxiety and Depression

Depression should not be examined without analyzing its relationships with anxiety. In 2015, Kessler et al. identified in a cross-national study that 45.7% of those with lifetime MDD will also experience an anxiety disorder during their lifetimes. The same respondents with MDD reported significantly higher rates of impairment (64.4%) compared to those with non-anxious MDD (46%), controlling for income and gender (Kessler et al., 2015). This data highlights the comorbid nature of anxiety and depression, and why anxiety must be examined in tandem with depression. However, additional studies have postulated a temporal relationship between anxiety and depression, where anxiety and associated symptomology are predictors of future depression and depressive symptoms. One such study uses data from the Netherlands Mental Health Survey and Incidence Report (NEMESIS), an epidemiological study containing 7,076 adults ages 18-64. It investigates the comorbidity patterns of mood disorders and anxiety disorders by analyzing and comparing retrospective self-reports and medical records. The results showed that, of those with comorbid anxiety and mood disorders, one of which was major depression, a mood disorder diagnosis was more often secondary to an initial diagnosis of an anxiety disorder. The shortest observed time-lag between an anxiety disorder and subsequent mood disorder was between Generalized Anxiety Disorder, Panic Disorder, and substance use disorder, followed by a diagnosis of MDD, controlling for gender (de Graaf et al., 2003). This presents a strong justification for examining anxiety and related symptoms as precursors to depression and associated symptoms. These results have also been echoed by other large analyses.

The World Health Organization, in a cross-national study, found that 68% of participants with lifetime major depressive disorder, controlling for gender, reported experiencing symptoms of the onset of anxiety before the symptoms associated with MDD. This is significant considering only 13.5% reported having experienced symptoms of, or being diagnosed with, MDD before an anxiety disorder, controlling for gender (Kessler et al., 2015). This further speaks to the temporal aspects of depression with comorbid anxiety, suggesting that anxiety may develop before and influence the onset of depressive symptoms. It is important to recognize that this data is centered around major depressive disorder, which is one of many depressive disorders.

Additional analysis has also been able to glean insight into the temporal patterns of anxiety and depression by analyzing their associated mood states. This analysis gives a closer-up view of the fluctuations between anxiety/anxiety-related symptoms and depression/depression-related symptoms as an individual might experience them in real time. Starr and Davila (2012) conducted a 21-day diary analysis of a sample of 55 adults (16-64), 60% of whom met the lifetime criteria for one or more anxiety-related disorders, to examine the temporal relationship between anxious and depressed moods in individuals currently exhibiting both anxious and depressed symptomology. First, results show a significant co-occurrence of anxious and depressed mood, echoing large-scale comorbidity patterns of anxious and depressive disorders. However, results also show that a reported anxious mood on day X significantly predicted depressed mood on days X+1, X+2, X+3, and X+4, the strongest association being observed between reported anxious symptoms and depressive symptoms on a 2 and 3-day lag. Fluctuations in self-reported anxious symptoms also predicted proportionate fluctuations in depressive symptoms reported within the following 2-3 days. This evidence is particularly robust considering that researchers analyzed depressive mood as a predictor of anxiety and found little to no relationship over the 21 days, concluding that depressive symptoms are significantly less likely to precede than follow anxious ones (Starr & Davila, 2012).

On a macro-scale, this analysis is important as it offers evidence of longitudinal co-occurrence between anxious and depressive symptomology by exposing how they interact over a period of three weeks. When examined in the context of larger studies using cross-sectional data to study the temporal relationship between anxiety disorders and depressive disorders in general, there is a strong foundation for analyzing anxiety as a potential precursor to depression, both in terms of symptomology and diagnosis. This being said, it is important to acknowledge that neither the research cited above employing cross-sectional data nor the analysis provided by the current study is sufficient to prove causation and should not be interpreted as such. The goal of the following analysis is a statistical exploration of the associational patterns present between anxiety, somatic symptoms, and depression, as they affect a sample of undergraduate students, and should not be taken as a suggestion of causation.

Current Study

Despite clear research outlining the interconnected nature of anxiety, somatic symptoms, and depression, specifically for young adult/adolescent

women, modern research on these topics is largely disjointed. Little research is focused primarily on this relationship as it applies to undergraduate populations (18-29-year-olds), specifically undergraduate women. For this reason, this study aims to further investigate the relationship between gender, anxiety, somatic symptoms, and depression. Specifically, this study investigates whether anxiety and somatic symptoms jointly mediate the relationship between gender and depression, serially, in a population of undergraduate students. The study has four main hypotheses: 1) Women will report higher depression, anxiety, and somatic symptoms. 2) Increased anxiety will influence increased somatic symptoms. 3) Both anxiety and somatic symptoms will independently mediate the relationships between gender and depression. 4) There will be a significant serial mediating effect of gender on depression, via anxiety and somatic symptoms.

Table 1
Sample Descriptive Statistics (*N* = 893)

Variables	*N* (%)	*M* (*SD*)
Age		19.18 (2.24)
Gender		
Man	257 (28.80%)	
Woman	636 (71.20%)	
Race		
White	406 (45.50%)	
Black or African American	69 (7.70%)	
Asian	95 (10.60%)	
Native American/Alaskan Native	26 (2.90%)	
Native Hawaiian/Other Pacific Islander	5 (0.60%)	
Other/Multiracial	292 (33.40%)	
Ethnicity		
Latinx	595 (7.87%)	
Non-Latinx	298 (33.40%)	
Annual Household Income		
<$20,000	122 (13.7%)	
$20,000-$34,999	108 (12.1%)	
$35,000-$49,999	79 (8.8%)	
$50,000-$74,999	80 (9%)	
$75,000-$99,999	42 (4.7%)	
$100,000+	71 (8.0%)	
Prefer Not to Answer	77 (8.6%)	
No Answer	314 (35.2%)	
Nativity Status		
1st Generation	102 (11.4%)	
1.5th Generation	50 (5.6%)	
2nd Generation	527 (59%)	
3rd Generation	214 (24%)	

Method

Participants

A total of 893 undergraduate students (18 years or older) enrolled in psychology courses at California State University, Northridge (CSUN), participated in this study. Participants' average age was 19 (*SD*=2.24), and the sample consisted of 636 women (71.2%) and 257 men (28.8%). The 893 participants being analyzed were 45.5% white, 7.7% Black or African American, 10.6% Asian, 2.9% Native American/Alaska Native, 0.6% Hawaiian or Other Pacific Islander, and 32.7% Other or Unknown. A total of 595 participants (66.6%) identified as Latinx/Hispanic, and 298 identified as non-Latinx/Hispanic (33.4%). See Table 1 for a complete summary of participant demographics.

Measures

General Anxiety Disorder – 7 (GAD-7; Spitzer, 1999). The GAD-7 is a self-report measure used to assess the severity of anxiety symptoms in participants. The measure consists of seven items, such as "Over the last two weeks, how often have you been bothered by the following problems?... Having trouble relaxing." Participants respond using a 4-point Likert scale, ranging from 0 (Not at all) to 3 (Nearly every day). Based on analysis done by Spitzer et al. (2006), the expected internal reliability of the scale is approximately α = .92. The observed internal reliability of the current sample was α = .92.

Somatic Symptom Scale – 8 (SSS-8; Gierk et al., 2014). The SSS-8 is a self-report measure used to assess the presence and severity of perceived somatic symptoms. Participants are asked to rate how bothered they have been in the past seven days by several symptoms, including back pain, stomach or bowel problems, headaches, trouble sleeping, feeling tired or dizzy, and more. The rating is done on a 5-point Likert scale ranging from 0 (Not at all) to 4 (Very much). Preliminary analysis by Gierk et al. (2014) found that the internal reliability of SSS-8 was α = .82; the current sample had an internal reliability of α = .85.

Patient Health Questionnaire, Depression – 8 (PHQ-8; Kroenke et al., 2009). The PHQ-8 is a self-report measure used to assess the presence and severity of depressive symptoms over two weeks. Participants are asked to respond to how often they have been bothered by several symptoms normally associated with depression, such as loss of joy in activities that are normally enjoyed, poor appetite or overeating, and trouble maintaining concentration. The inventory uses a 4-point Likert scale, where participants choose between not at all, several days, more than half the days, and

nearly every day. Numbers 0 – 3 were assigned to participants' responses, starting with not at all (0). Previous research into the internal validity of the PHQ-8 as a measure of depression found an internal reliability of α = .82 (Pressler et al., 2010). The internal reliability of this scale with the current sample was *α*=.89.

Procedure

The study was conducted using the California State University, Northridge SONA system and received full approval from the California State University, Northridge IRB before commencing. Participants completed the study online using Qualtrics, a cloud-based platform used for collecting and analyzing data for research. The participants completed several questionnaires, including the three analyzed in this study (GAD-7, SSS-8, PHQ-8) and questions on demographic information. Demographic items were first, followed by the Multigroup Ethnic Identity Measure, Ethnic Identity Scale, Familial Ethnic Socialization Measure, Perceived Ethnic Discrimination Scale, Familism Scale, Simpatía Scale, Mindfulness-based Self Care Scale, and ultimately the three variables examined in this study (GAD-7, SSS-8, PHQ-8). Students (18+) enrolled in a psychology course at CSUN during the 2023-2024 academic year accessed the study via SONA and were immediately asked to give informed consent before continuing with the questionnaire. Those who did not consent were redirected to the end of the survey. Participants used their device of choice, at the time and place most convenient, to connect to Qualtrics and complete the survey. Completion of the full survey took between 45 minutes to 1 hour.

Data Analytics Plan

After the data was collected, we used SPSS Version 29 for analysis. Assumption checks included tests for normality, linearity, homoscedasticity, multicollinearity, and outliers. Univariate outliers were identified using the Standard Score Method, and multivariate outliers were assessed using Mahalanobis Distance (Tabachnick & Fidell, 2013). Multicollinearity diagnostics followed recommendations outlined by Tabachnick and Fidell (2013) using variance inflation factor (VIF) and tolerance values, with thresholds set at VIF < 4.0 and tolerance > 0.20. Additionally, as this specific analysis deals with somatic symptoms not better explained by physical illness, 90 participants who self-reported having experienced a physical injury in the past 12 months that impacted their ability to work (including academically) were excluded to reduce the impact of third-variable influences. Mahalanobis distance testing, using 4 degrees of freedom (df = 4), identified one outlier that was removed due to exceeding the acceptable threshold ($D^2 > 18.47$), resulting in a total of 91 excluded cases and a final sample size of 893 participants.

Initial analyses included descriptive statistics and correlational analyses in SPSS Version 29. We conducted a serial mediation analysis using PROCESS v4.2 for SPSS (Model 6; Hayes, 2023), with gender as the independent variable, anxiety and somatic symptoms as serial mediators, and depression as the criterion. Supplementary multi-group path analyses were conducted in RStudio (version 4.3.1) using the lavaan package (Rosseel, 2012). We used an exploratory one-way multivariate analysis of variance (MANOVA) to examine whether gender was associated with differences in anxiety, somatic symptoms, and depression as a MANOVA reduces Type I error and accounts for correlations among the dependent variables.

Results

Descriptive Statistics

The distribution of GAD-7 scores was approximately normal (Skewness = .44, Kurtosis = -.81), with a mean score of 8.62 (*SD* = 5.96). Scores on the SSS-8 followed a similar trend (Skewness = .56, Kurtosis = -.39) with an average score of 10.94 (*SD* = 7.38). Lastly, PHQ-8 scores were also approximately normally distributed (Skewness = .33, Kurtosis = -0.71), and participants reported an average score of 9.79 (*SD* = 6.12). Refer to Table 2 for bivariate correlations of study variables.

Serial Mediation Analysis

Before mediation analysis, multicollinearity diagnostics indicated acceptable levels of collinearity between GAD-7 and SSS-8, with variance inflation factors

Table 2
Correlation Matrix for Study Variables (N = 893)

Variables	1	2	3	4
1. Gender	—			
2. Anxiety	.17**	—		
3. Somatic Symptoms	.28**	.66**	—	
4. Depression	.17**	.81**	.70**	—
M		8.62	10.94	9.79
SD		5.96	7.38	6.12

Note. Anxiety = Generalized Anxiety Disorder Scale–7 (GAD-7); Somatic Symptoms = Somatic Symptom Scale–8 (SSS-8); Depression = Patient Health Questionnaire–8 (PHQ-8); ** $p < .01$; Gender was coded as: 0=Man, 1=Woman.

(VIF = 1.78) and tolerance values (0.56 for both) falling within recommended thresholds. This supported the validity of the proposed mediation model. A serial mediation model was tested, using PROCESS Model 6 (Hayes, 2022) to examine whether gender influences depression (PHQ-8) indirectly through anxiety (GAD-7) and somatic symptoms (SSS-8). Gender was coded as 0 = male and 1 = female.

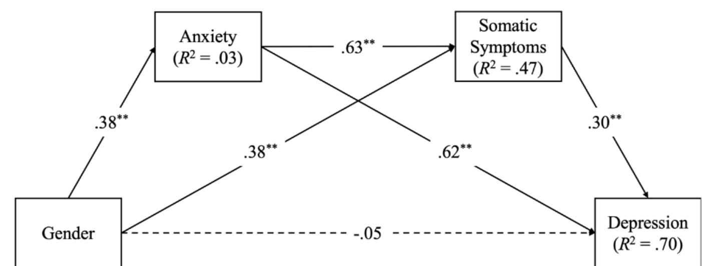
Table 3
Unstandardized Path Estimates for Serial Mediation Model

	B	*SE*	95% C.I. [*LL*, *UL*]	*p*
		Direct Effects		
Gender → Anxiety	2.25***	0.43	[1.40, 3.10]	< .001
Gender → Somatic Symptoms	2.78***	0.41	[1.99, 3.58]	< .001
Anxiety → Somatic Symptoms	0.78***	0.03	[0.75, 0.84]	< .001
Anxiety → Depression	0.63***	0.03	[0.58, 0.68]	< .001
Somatic Symptoms → Depression	0.25***	0.02	[0.21, 0.29]	< .001
Gender → Depression	-0.28	0.26	[-0.78, 0.22]	< .001
		Indirect Effects		
Gender → Anxiety → Depression	1.43	0.28	[0.87, 1.97]	-
Gender → Somatic Symptoms → Depression	0.69	0.11	[0.47, 0.92]	-
Gender → Anxiety → Somatic Symptoms → Depression	0.43	0.09	[0.27, 0.62]	-
		Total Effects		
Gender → Depression	2.27	0.45	[1.39, 3.14]	-

Note. Anxiety = Generalized Anxiety Disorder Scale–7 (GAD-7); Somatic Symptoms = Somatic Symptom Scale–8 (SSS-8); Depression = Patient Health Questionnaire–8 (PHQ-8); ****p* < .001; Gender was coded 0=Male, 1=Female; 95% C.I. = confidence interval based on 5,000 bootstrap samples.

Gender significantly influenced both GAD-7 scores (β = .38, *SE* = .43, *p* < .001) and SSS-8 scores (β = .38, *SE* = .41, *p* < .001). GAD-7 scores significantly influenced SSS-8 scores (β = .63, *S* = .03, *p* < .001). Both GAD-7 and SSS-8 significantly influenced PHQ-8 scores (β = .62, *SE* = .03, *p* < .001; β = .30, *SE* = .02, *p* < .001 respectively). The direct effect of gender on PHQ-8, controlling for the mediators, was not significant (β = -.05, *SE* = .26, *p* = .28). Bootstrapping analysis (5,000 samples, 95% CI) revealed a significant total effect of gender on depression through anxiety and somatic symptoms, β = 2.27, 95% CI [1.39, 3.14]. Three indirect pathways were examined. First, gender significantly influenced depression via its association with anxiety alone, β = 1.43, 95% CI [.89, 1.97]. Second, the indirect effect of gender through differences in somatic symptoms alone was also significant, β =.69, 95% CI [.48, .92]. Finally, the sequential indirect effect of gender, considering gender differences in both anxiety and related somatic symptoms, was significant, β =.43, 95% CI [.27, .62], suggesting that anxiety and somatic symptoms mediate the relationship between gender and depression both individually and sequentially. Overall, all indirect effects were significant, suggesting that anxiety and somatic symptoms mediate the relationship between gender and depression both individually and sequentially. The full mediation model accounted for 70.35% of the variance in depression scores, R^2 = .70, $F(3, 889)$ = 703.15, *p* < .001, indicating a strong model fit. Refer to Table 3 for unstandardized path estimates and Figure 1 for standardized path estimates.

Figure 1
Serial Mediation Model of Gender Disparities in Depression via Anxiety and Somatic Symptoms



Note. $^{**}p$ < .001. Standardized path coefficients are presented. Anxiety = Generalized Anxiety Disorder Scale–7 (GAD-7); Somatic Symptoms = Somatic Symptom Scale–8 (SSS-8); Depression = Patient Health Questionnaire–8 (PHQ-8); Gender was coded 0 = men, 1 = women. Solid lines represent significant paths; dashed lines represent a non-significant path. Anxiety was measured using the GAD-7, somatic symptoms using the SSS-8, and depression using the PHQ-8. All indirect pathways (anxiety alone, somatic symptoms alone, and the serial path) were tested and are reported in the text and Table 3.

Supplementary Multi-Group Analysis

To evaluate whether the hypothesized anxiety–somatic–depression pathway differed by gender, we conducted a multi-group path analysis (see Tables 4 and 5). Indirect effects of anxiety on depression via somatic symptoms were significant for both women ($\beta = .19$, $p < .001$ and men ($\beta = .18$, $p < .001$). Although constraining all paths equal across groups produced a significant chi-square difference ($\Delta\chi^2(3) = 10.79$, $p = .013$; $\Delta CFI = .005$), we followed recommended guidelines that prioritize incremental fit indices over chi-square due to the latter's sensitivity to sample size. Specifically, a $\Delta CFI < .01$ was taken as evidence of practical invariance (Cheung & Rensvold, 2002; Chen, 2007). These results suggest that the associative pathway linking anxiety, somatic symptoms, and depression was consistent across genders. For more information, refer to Table 4 for unstandardized path estimates and Table 5 for invariance testing across genders.

Table 4
Unstandardized Path Estimates by Gender

	Men (n = 257)					Women (n = 636)				
			95% CI					95% CI		
	B	*SE*	*LL*	*UL*	*p*	*B*	*SE*	*LL*	*UL*	*p*
Anxiety ⟶ Somatic Symptoms	0.63	0.06	0.51	0.75	< .001	0.84	0.04	0.76	0.91	< .001
Somatic Symptoms ⟶ Depression	0.28	0.04	0.21	0.36	< .001	0.24	0.03	0.18	0.29	< .001
Anxiety ⟶ Depression	0.61	0.05	0.52	0.70	< .001	0.64	0.03	0.58	0.71	< .001
	Indirect Effect									
Anxiety ⟶ Somatic Symptoms ⟶ Depression	0.18	0.03	0.13	0.24	< .001	0.20	0.02	0.15	0.24	< .001
	Total Effect									
Anxiety ⟶ Depression	0.79	0.04	0.71	0.87	< .001	0.84	0.02	0.79	0.89	< .001

Note. Anxiety = Generalized Anxiety Disorder Scale–7 (GAD-7); Somatic Symptoms = Somatic Symptom Scale–8 (SSS-8); Depression = Patient Health Questionnaire–8 (PHQ-8). Gender was coded 0 = Man, 1 = Woman. 95% CI = bias-corrected confidence interval based on 5,000 bootstrap samples; all p values < .001.

Exploratory MANOVA

As an additional check, a MANOVA showed significant gender differences across GAD-7, SSS-8, and PHQ-8 scores, with women scoring higher on all measures, $F(3, 889) = 638.89$, $p < .001$. These mean-level differences are consistent with the mediation findings (see Table 6).

Discussion

Summary of Findings

Depression not only poses a risk to cognitive, psychological, and physiological well-being but also represents a significant economic burden on a national level (Greenberg et al., 2023). Prior research on the prevalence of depression in the United States has identified young women between the ages of 18 and 24 as being acutely at risk of developing depression (Brody & Hughes, 2025; Lee et al., 2023). With this in mind, this study aimed to examine the possible mediating role of anxiety and somatic symptoms in the observed gender disparity of depression, in a sample consisting of undergraduate students.

Anxiety and somatic symptoms were analyzed as potential mediators due to the myriad observed and reported relationships between anxiety, somatic symptoms, and depression. Anxiety, as reported by the CDC, is frequently comorbid with depression and affects women disproportionately when compared to men. Anxiety was also found to disproportionately affect young women between the ages of 18-29, compared to men of the same age, and often preceded the onset of depression (de Graaf et al., 2003; Kessler et al., 2015; Terlizzi & Zablotsky, 2024). Somatic symptoms, like depression and anxiety, have also been reported to be more prevalent among young women (Haug et al., 2004). Considering that both depression and anxiety are associated with somatic symptomology, this is to be expected. This identifies the same population at risk of depression as being at risk of anxiety and lends an important glimpse at what may be a temporal

Table 5
Model Fit Statistics and Invariance Testing Across Gender

Model	χ^2 (*df*)	CFI	Δdf	ΔCFI	*p*
Configural	—	1.00	—	—	—
Constrained	10.79 (3)	0.995	3	0.005	.01*

Note. N = 893. Invariance was evaluated using ΔCFI < .01 as an indicator of acceptable model fit change. *p < .01

Table 6
Multivariate and Univariate Effects of Gender on Depression, Anxiety, and Somatic Symptoms

Source	*Dependent Variable*	*F*	*df*	*p*	η^2
Multivariate					
Gender (Wilk's λ)	-	25.59	(3, 889)	<.001	.08
Univariate					
Gender	Depression	25.84	(1, 891)	<.001	.03
	Anxiety	26.94	(1, 891)	<.001	.03
	Somatic Symptoms	75.33	(1, 891)	<.001	.08

Note. Anxiety = Generalized Anxiety Disorder Scale–7 (GAD-7); Somatic Symptoms = Somatic Symptom Scale–8 (SSS-8); Depression = Patient Health Questionnaire–8 (PHQ-8); Box's M Test was non-significant (M=17.86, p=.007), suggesting the assumption of equal covariance matrices was met; Wilk's Lambda was used to assess the multivariate effect; All three dependent variables showed a significant difference based on gender and small to moderate effects sizes, except for SSS-8 which showed a moderate to large effect; Gender was coded as: 0=Man, 1=Woman.

relationship where experiences of anxiety and somatic symptoms that vary by gender are involved in the development of depression.

Large-scale epidemiological and cross-national research has also suggested a temporal relationship where anxiety is more likely to precede depression, in terms of both symptomology and diagnosis. Two large cross-national surveys identified a pattern of anxiety disorder diagnoses preceding depressive disorder diagnoses (de Graaf et al., 2003; Kessler et al., 2015). Complementing these macro-findings, 21-day diary data has outlined daily fluctuations in anxious mood as a significant predictor of subsequent increases in depressive symptoms. It is also important to note that the inverse, depressive mood predicting subsequent anxious mood or symptomology, was not observed (Starr & Davila, 2012). In concert, these results point to a potentially significant relationship between anxiety and depression, on both a diagnostic and daily symptomology level, where anxiety acts as a precursor to depression. Considering that somatic symptoms are strongly associated with anxiety (American Psychiatric Association, 2023) and depression (Sawchuk, 2022), the mediating roles of gender differences in anxiety and somatic symptoms were investigated in terms of their influence on observed gender disparities in depression among undergraduate college students.

This study's first hypothesis was that, following what was reported by prior research, undergraduate women would report higher levels of depression, anxiety, somatic symptoms, and depression. The results of the study support this hypothesis. Across depression, anxiety, and somatic symptoms, women reported significantly higher levels compared to their male counterparts.

Crucial to the proposed mediation model, the second hypothesis, that increased anxiety scores would be associated with increased somatic symptomology, was supported. To further reinforce these findings and justify the ordering of variables within the model, individuals who reported experiencing a traumatic injury in the past year were removed from analysis. This reduces the likelihood that somatic complaints are not confounded by symptoms stemming from physical trauma, rather than anxiety. These findings reinforce prior research regarding the interconnected nature of anxiety and somatic symptomology and highlight the potential for anxiety to present itself physically through somatic symptoms.

Mediation analysis, run using PROCESS v4.2 Model 6, provided further clarification as to the roles of anxiety and somatic symptoms in depression disparities between young women and men. Both anxiety and somatic symptoms were found to be independently associated with the relationships between gender and depression, confirming hypothesis number 3. Gender was found to significantly influence depression via gender disparities in anxiety (Ind1) as well as via gender disparities in somatic symptomology (Ind2). Additionally, confirming hypothesis 4, gender was found to influence depression via a serial pathway, including gender differences in both anxiety and somatic symptoms, suggesting that gender disparities in anxiety were associated with increased somatic symptomology and increased depression among young adult women (Ind3). All of the observed relationships were found to be statistically significant.

Interpretations and Implications

Through the results of this analysis, we were able to make observations regarding the comparative strength of the observed mechanisms driving depression disparities. For example, the observed pathway where gender disparities in anxiety are associated with disparities in depression (Ind1) was stronger than the

pathway focused on only gender differences in somatic symptoms (Ind2). This data adds valuable statistical context to the mechanism behind the observed near 50 percent lifetime comorbidity rate of major depressive disorder and Anxiety (Kessler et al., 2015), and to observed fluctuations in anxious and depressive daily symptoms (Starr & Davila, 2012). The strength of the associational pathway considering anxiety suggests that, compared to the role of somatic symptoms alone, gender's association with anxiety may play a larger role in observed depression disparities among undergraduate college students. This is important considering that this is a group that has been identified as being acutely at risk of both depression and anxiety, on a national level (Brody & Hughes, 2025; Lee et al., 2023; Terlizzi & Zablotsky, 2024). This information has real clinical applications. For example, college counseling services attempting to address depression among undergraduate women might find fruitful results by employing outreach and intervention that addresses undiagnosed or previously unaddressed anxiety.

Relevant to somatic symptomology, reports show that, as well as being reported at higher rates by women, unexplained somatic symptomology may be a precursor of an MDD diagnosis (Kroenke, 2003). This is a small potential relationship that was clarified in this study. The analysis we are presenting demonstrates the role that the association between gender and somatic symptoms plays in the development of depression, specifically among young women, though not as significant as the role played by anxiety. Lastly, the serial pathway, including anxiety and somatic symptoms, and the weakest of the three indirect pathways, was also statistically significant. This suggests that while gender's association with anxiety may be the most statistically powerful influence on depression among young women, followed by somatic symptoms alone, the interplay between anxiety and somatic symptoms, as experienced by women, plays an important role in depression disparities.

The strength of the influence of gender on anxiety and somatic symptoms is clear, considering that the direct effect of gender on depression was found to be insignificant. This suggests that a large portion of gender disparities in depression are not directly related or attributable to gender alone, but rather potentially explained by heightened anxiety and somatic symptomology reported by women. Gender alone was found to account for a very small percentage of the variation in depression scores. In other words, the observed depression disparities may not be due to gender but more of a reflection of gendered patterns of emotional and physical expressions of mental health, specifically anxiety and somatic symptoms. Supplementary analysis confirmed this hypothesis, as the associational patterns between anxiety, somatic symptoms, and depression were found to be consistent across genders. Further strength is lent to this interpretation of the model being proposed when considering that it was found to account for a large percentage of the variation in depression scores among participants, more than twenty times the variation accounted for by gender alone.

Through a sociocultural lens, the results of this analysis call into question the impact of internalized gender norms regarding emotional expression. The data presented in this study is not only a statistical representation of the mechanisms behind depression disparities, but also a statistical representation of young women internalizing psychological distress. Epidemiological research conducted by the CDC has long shown an elevated prevalence of internalizing disorders, like anxiety and depression, among women, as well as elevated prevalence of behaviors associated with emotional suppression and rumination (Eaton et al., 2012). This data further fleshes out the relationship between gender, internalizing symptoms, and internalizing disorders generally associated more with young women, further reiterating the necessity of gender sensitive screening and interventions as well as the need to examine social norms of emotional expression. While the proposed model accounts for a large percentage of the variance in depression scores, a considerable portion of the variance remains unexplained. Future research should address the sociocultural aspects that might account for variations in depression disparities between young men and young women.

In summary, this study highlights a potential associational framework affecting depression disparity among young adult women, specifically undergraduate college students. This study proposes a biopsychosocial model where gender-based experiences like social norms of expression interact with interconnected psychophysiological experiences like anxiety and somatic symptomology to influence mental health and well-being. The complex interplay between gender and the associations between anxiety, somatic symptoms, and depression, as observed in this study, points out the interconnected nature of mental health outcomes. Furthermore, assessment and treatment should adapt to reflect the multifaceted and nuanced nature of mental health across genders.

Limitations and Future Studies

Despite the various significant findings in this study, we consider it important to acknowledge several

limitations. Primarily, the study utilized a cross-sectional design, which does not allow for causal inferences. Though the proposed serial mediation suggests a temporal effect, there is no valid strategy to prove causation with the provided data (longitudinal data). Another limitation is that the sample being used, although large overall, was unbalanced across gender groups (636 women, 257 men). While supplementary analysis ruled out a cross-product interaction, this may likely be related to the unbalanced sample. The results of this study should be interpreted as a framework to guide future longitudinal and experimental research. Future research should also strive to collect a more evenly distributed sample of genders.

Second, the study relies on self-report measures of anxiety, somatic symptoms, and depression. Self-report measures are inherently susceptible to bias, over- and under-reporting, social desirability bias, and more. When examining the mental health of younger demographics, this becomes acutely relevant as their emotional insight, intelligence, or openness may affect responses. While we recognize that these variances would likely appear across groups, variables in how individual groups interpret and disclose symptomology may contribute to over- and under-reporting that is not uniform across groups, affecting observed differences in anxiety, somatic symptoms, and depression. Participants with undiagnosed health concerns may attribute somatic symptoms to psychological distress in place of a formal diagnosis, inflating scores.

Third, the sample being used is a convenience sample of undergraduate psychology students. This limits the generalizability of the study's findings. The demographics of the study, being overwhelmingly Latinx/Hispanic female, do not accurately represent the broader US population. Specific cultural or social variables that uniquely affect this population may influence how symptoms of anxiety, somatic symptoms, and depression are experienced and reported. Future research should investigate the possible moderating and mediating influences of variables such as immigration status, socioeconomic status, or academic achievement.

Similarly, based on the requirements of PROCESS v4.2 for mediation analysis, limiting gender to male and female does not respect the diverse mental health experiences of different genders, other than male or female, and makes it difficult to generalize the results of this analysis. While 12 of the total 1003 participants pre-data cleaning identified outside of the binary genders, and we recognize that this limitation is unlikely to have changed our findings, this criterion restricts the inclusivity of the conclusions and narrows them to binary gender groups only. Future studies should attempt to collect a more representative sample, including larger numbers of participants from other genders and races/ethnicities, in order to have a more universal and generalizable analysis.

Strengths

One of the initial strengths of this study is the application of widely used and validated psychological measures, like the GAD-7, SSS-8, and PHQ-8. This lends to the overall construct validity of the study and minimizes the potential for error. All three measures used in this study reported exceptional reliability coefficients, lending further validity to the statistical analysis. Next, the application of serial mediation analysis to explore the underlying mechanisms affecting depression among this sample allows for a unique perspective on the relationship between the variables being examined. Another strength of this study is the sample size being analyzed. A large sample size lends further reliability to the results of this study, as well as strengthening the generalizability of the results and lowering the potential for error. Lastly, this study lends valuable context to the role of somatic symptoms in the observed relationship between anxiety and depression. Internalizing disorders are often discussed as emotional distress, like anxiety and depression. However, this study highlights the relationship between our physical and mental health.

Clinical Implications

From a clinical perspective, these findings underscore the importance of transdiagnostic practices in mental health. Early screening for depression in women should reflect the diversity of mechanisms identified in this research, addressing both potential unaddressed anxiety and somatic symptoms as they contribute to depression risk. The data in this study suggests that early screening for depression, specifically in young women, might be more beneficial by being more sensitive to undiagnosed anxiety, which was identified as the strongest factor to influence depression among this demographic. Given the fact that somatic symptoms were also seen to solely mediate depression disparities, as well as contribute to the relationship between anxiety and depression, and that somatic symptoms are more often reported in young women, special attention ought to be paid to the mind-body connection as it pertains to psychoeducation and interventions with female patients in a clinical setting when addressing somatic symptoms. As this study dealt with a population of college undergraduate students, college counseling centers, as well as counselors with many patients from this demographic, should incorporate more tools that assess

anxiety and somatic symptomology. As it pertains to treating depression among a population of young women (18-24), although women reported higher levels of anxiety and somatic symptoms, the structural relationships among anxiety, somatic symptoms, and depression were equivalent across genders. This suggests that observed gender differences in depression may reflect differences in symptom prevalence rather than distinct etiological processes. These findings highlight the importance of addressing anxiety and somatic symptoms when treating depression, regardless of gender, while simultaneously recognizing that young women (18-24) may be more likely to present with elevated levels of these symptoms and therefore benefit from their early treatment.

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The relationship between managerial status, job satisfaction, and voice power among firefighters

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Abstract – Firefighting is a difficult profession with unique workplace stressors, yet it is highly under-researched in psychology. Despite prior findings on workplace benefits associated with the possible benefits of employee voice for job satisfaction, no known research has simultaneously examined these constructs with firefighters nor the differences among such constructs depending on whether firefighters are in managerial positions. This study addressed this research gap by examining whether manager and non-manager firefighters would differ in feeling that their voice makes a difference in their workplace and job satisfaction, whether feeling that one's voice makes a difference in the workplace would predict job satisfaction, and whether the strength of this association depended on firefighters' manager or non-manager status. Firefighters (n = 119) employed at a suburban fire department located in the U.S. completed a survey on their workplace experiences and attitudes. Results of regression analyses revealed that firefighters feeling that their voice makes a difference in the workplace significantly predicted job satisfaction, while managerial status did not significantly moderate this association. More research is needed to better understand mid-level manager voice.

Keywords: firefighters, job satisfaction, managers, employee voice

Firefighting is a difficult profession, laden with unique stressors. Not only does the profession include extensive physical demands (e.g., lifting and dragging heavy objects and people), but firefighting also requires a distinctive mental and emotional capacity (e.g., doing effective work while witnessing traumatic events). Firefighting is a profession as much as it is a lifestyle, as suggested by the 24-hour shifts that mandate sleeping at the station, being awakened and ready to answer calls for duty in the night, and spending entire days away from family. And yet there is satisfaction to be had in this difficult yet rewarding profession that can be systematically measured with the theoretical construct of job satisfaction, which in this paper will refer to the general degree to which one feels content with various elements of one's job (Mishra, 2013).

The implications of job satisfaction within the workplace cannot be overstated. Studies have found higher employee job satisfaction to be associated with greater employee morale and greater feelings of loyalty and commitment toward their organization, along with a lower likelihood of employees not attending work (i.e., absenteeism), leaving their job in favor of another (i.e., turnover), and overall work grievances (Adekola, 2012; Alam & Asim, 2019; Baloch, 2009; Dole & Schroeder, 2001; Eslami & Gharakhani, 2012). In addition, job satisfaction is associated with employees' ability to effectively meet both work commitments and family/non-work commitments (i.e., work-life balance), which tends to positively correlate to one's overall health and well-being (Delecta, 2011; Haar et al., 2014; Mas-Machuca et al., 2016).

Most research on job satisfaction has focused on non-firefighter samples. However, research utilizing firefighter samples has also found job satisfaction to be an important workplace construct with several significant predictors. Specifically, firefighters' job satisfaction has been positively predicted by their working environment (e.g., up-to-date equipment), relationships with their coworkers, perceived organizational support, and job resourcefulness (i.e., their ability to meet demands of the job; Rubaca & Majid Khan, 2021; Zahari et al., 2019). Additionally, greater firefighter job satisfaction has been found to not only correlate with lower turnover intention (Bae, 2010; Kim & Baek, 2014), but also to predict lower burnout (Choi et al., 2014; Jensen, 2005).

In terms of leadership, firefighter job satisfaction has been negatively correlated with the presence of conflict with administrative bodies (Beaton & Murphy, 1993) and positively correlated with each of six various

constructs of servant leadership (e.g., displaying authenticity, valuing people, etc.; Lindquist & Russell, 2019). Numerous studies have also been conducted on how firefighters' job satisfaction correlates with their various demographics and standings in their organization. Indeed, higher job satisfaction has been found among younger firefighters, rescue-EMT firefighters (in comparison to fire suppression firefighters), newer firefighters, and firefighters ranking fire chief or higher (in comparison to those at lower ranks; Choi & Song, 2018; Jensen, 2005; Kim & Baek, 2014; Traut et al., 2000).

The present study aims to better understand job satisfaction among firefighters. More specifically, this study will examine whether firefighters' (1) job satisfaction and (2) feeling of whether their voice in the workplace makes a difference varies with managerial status (managers v. employees); and whether (3) feeling that one's voice makes a difference predicts job satisfaction and (4) this association is moderated by managerial status. Not only does this study address a sizable gap in psychological research, but a better understanding of these constructs in the context of firefighters can also illuminate areas for fire departments to focus on in improving their organizations, as vital to society as they are.

Voice in the Workplace and Job Satisfaction

Another organizational element with abundant research is that of employee voice, a construct contentiously defined in research but generally regarding the factors surrounding the decision of workers to speak up (or stay silent) and the subsequent effects within the workplace (Morrison, 2023). Such research has continuously suggested the importance of nurturing employee voice. Not only does providing voice to all involved in organizational procedures increase employees' expectation of success in their endeavors, but their speaking up is also positively correlated with work unit effectiveness when they are speaking up directly to unit leaders (Detert et al., 2013; Moore & Blader, 2007). Additionally, when employees work in an environment where they feel they can express their views, there is a lower likelihood for silence-induced burnout in employees (Knoll et al., 2019; Sherf et al., 2021). Having more mechanisms for employee voice in an organization has also been found to be correlated with greater rates of employee retention, such that employees are less likely to leave an organization (Spencer, 1986). Regarding a similar construct, having less voice in processes of decision-making has been found to lead to less organizational commitment (Brockner et al., 2001).

Employee voice is also of great importance to job satisfaction. When companies have a greater quantity of employee voice opportunities (e.g., a direct channel to supervisors of higher rank than immediate supervisors, a channel for voicing challenges, suggestions, etc.) and such voice opportunities are effective (e.g., followed by managerial action), employee job satisfaction is likely to be higher (Lee, 2023; see also Holland et al., 2011). Similarly, when non-manager employees' voices are acknowledged by organizations, employee job satisfaction increases as motivation within the work environment is increased by that organizational acknowledgement (Alfayad & Arif, 2017). More specifically, a positive association has been found between employee job satisfaction and employees' use of voice both through providing suggestions for organizational improvement (i.e., promotive voice) and through bringing forth concerns for preventing organizational failure (i.e., prohibitive voice; Song et al., 2020).

Research has also focused on the factors contributing to employees' decision to voice their opinions, feelings, or concerns, such as how employees experience a bystander effect, in which the more employees there are with the same opinions about a work-related topic, the less likely an employee is to disclose those opinions to superiors (Hussain et al., 2019); how employee silence is more likely when they perceive their organization's prestige to be high, but organizational support to be low (Mignonac et al., 2018); how constructive employee voice is more likely when organizations keep their promises (Ng et al., 2014); and how employee voice can be predicted by workplace norms (Hilverda et al., 2018). We are unaware of any research that has examined the association between employee voice and job satisfaction among firefighters. Given the distinctions between firefighting and other professions (e.g., 24-hour shifts, frequent risks to safety, etc.) and the hierarchical structure of the industry (described in a subsequent section), it is likely that findings on employee voice will differ for firefighters than findings that overarchingly refer to 9-5 PM non-firefighter employees; thus, it is vastly important to study the voices of firefighters in their own workplace rather than assuming that the general findings on employee voice will apply to their unique circumstances.

Power Positions, Employee Voice, and Job Satisfaction

Research regarding the influence of leadership on employee voice (and, subsequently, employees' job satisfaction) is abundant (e.g., Detert & Burris, 2007; Klammer et al., 2002; Morrison et al., 2015). What is more scarcely researched, however, are the managerial

forces themselves, particularly managerial voice (rather than solely employee voice) and the ways in which managerial voice interacts with other workplace constructs, such as job satisfaction. However, research by Mowbray (2018) found that blockages within organizational structures resulted in a sample of mid-level managers feeling that there was no one on the receiving end of their speaking up, seemingly suppressing their managerial voice. Additionally, Sherf and colleagues (2019) shed important light on the managerial mind with their finding that managers are more likely to seek out employee voice when they perceive themselves to have the personal control to enact change accordingly. Research has also been done on the ways in which the group voice of employees influences managers emotionally. One such study from Sessions and colleagues (2020) found that promotive group voice (e.g., suggestions for organizational improvement) negatively and indirectly affects managers' emotional exhaustion, whereas prohibitive group voice (e.g., raising concerns of organizational failure) positively and indirectly affects managers' emotional exhaustion. As such, despite being advantageous in many ways, most of the research involving managers fails to consider managerial voice, especially in terms of how it interacts with managerial job satisfaction. This may be particularly important among firefighters, as fire departments tend to be organizationally structured such that there are many mid-level managers.

Firefighter Voice

While research on firefighter job satisfaction and related constructs is clearly abundant, literature on firefighter voice mirrors the research on managerial voice in its sparseness. Nevertheless, Lewis and colleagues (2011) in their research on wildland firefighters found that firefighters at the novice level exhibited fears of stigmatization if they were to voice concerns, while more experienced firefighters and firefighters in leadership roles exhibited greater confidence in voicing concerns despite also experiencing social pressures that could potentially increase their silence. Additionally, Parhizgar and colleagues (2019) found that firefighters' silence can actually reduce their performance, suggesting the importance of firefighter voice given the necessity of their optimal performance when they are called to action.

It is especially important to consider both managers' and non-managers' voices and their implications for job satisfaction, as the unique structure of fire departments requires many managers at the mid-level. Between firefighters at the lowest rank and administrative chiefs at the highest lie the majority of fire departments' managerial bodies: lieutenants (in charge of one crew during one shift at one station), captains (in charge of all crews at a specific station, across all shifts), and battalion chiefs (in charge of all crews at all stations on a specific shift). As such, an expansion in firefighter research is vital, especially in terms of firefighter voice and the role of managerial status. The vitalness of this expansion is suggested by existing literature. Indeed, Swift (1984) has theorized that empowerment occurs when those impacted by an intervention (e.g., decision-making process) are at the center of the participation in that intervention, as opposed to being relegated to the sidelines. Similarly, Perkins and Zimmerman (1995) posited that organizational structures that endorse the participation of its members ultimately enhance members' empowerment. Drawing on these theories' assumptions that the amount of power one holds within an organization is evident in how involved one is in its decision-making processes, it is likely that mid-level managers experience more power in organizations than do non-manager employees, even if mid-level managers are not as powerful as the highest level of management.

Present Study

It is important to note that much of the body of research discussed thus far has most often referred to workplace superiors as "managers." For consistency, we will use the term "managers" or the phrase "managerial status" in reference to firefighters with direct reports (listed from lowest to highest ranking: lieutenants, captains, battalion chiefs, and administrative chiefs) as well as the term "employees" or the phrase "without managerial status" in reference to unranked firefighters.

This study utilizes data collected from a Midwestern, suburban fire department to examine whether managers and employees differ in (1) feeling that their voice makes a difference and (2) job satisfaction. In addition, the present study examines (3) the association between feeling that one's voice makes a difference and job satisfaction; and (4) whether that association differs based on managerial or non-managerial status.

While the research of Mowbray (2018) found that managers can also experience feelings of having their voice unheard, the power that managers often hold in promoting or quelling the voice of subordinate employees, as found by Burris (2012), suggests that those with managerial status will be more likely to feel that their voice makes a difference than those without managerial status. Therefore, we predict:

Hypothesis 1. People with managerial status will be more likely to feel that their voice makes a difference than those without managerial status.

The finding of Kim and Baek (2014) that firefighters at the rank of fire chief or higher had greater

job satisfaction than those at lower ranks suggests that people with managerial status will indicate a greater job satisfaction than those without managerial status. Therefore, we predict that:

Hypothesis 2. People with managerial status will indicate greater job satisfaction than those without managerial status.

Lee (2023) found that employee job satisfaction is likely to be higher when companies have a greater quantity of employee voice opportunities (e.g., a direct channel to supervisors of higher rank than immediate supervisors, a channel for voicing challenges, suggestions, etc.) and when such voice opportunities are effective (e.g., followed by managerial action). In terms of predictive ability, Holland and colleagues (2011) found that direct voice (e.g., regularly occurring meetings between staff and managers) positively predicted employees' job satisfaction, which suggests that feeling as though one's voice makes a difference will be a significant predictor of one's job satisfaction. Therefore, we predict that:

Hypothesis 3. Feeling that one's voice makes a difference will be a significant predictor of job satisfaction.

Finally, research by Lewis and colleagues (2011) suggests that firefighters in leadership roles and more experienced firefighters in general exhibit a more inherent comfortability with using their voice to express concerns; this combined with the theorizations of Swift (1984) - that empowerment occurs when those impacted by an intervention (e.g., decision-making process) are at the center of the participation in that intervention, as opposed to being relegated to the sidelines - and of Perkins and Zimmerman (1995) - that organizational structures that amplify the participation of its members ultimately enhance members' empowerment - suggest that mid-level managers in organizations experience more power in organizations than do non-manager employees, even if mid-level managers are not as powerful as the highest level of management. Therefore, we predict:

Hypothesis 4. Feeling that one's voice makes a difference will be a stronger predictor of job satisfaction for those without managerial status than for those with managerial status).

Methods

Procedure

Firefighters at a Midwestern, suburban fire department were recruited to complete a Qualtrics survey via a mass email sent by the Battalion Chief and site visits by researchers (research personnel visited each of the 7 stations to recruit firefighters on duty and left a flier with a QR code for firefighters on a different shift). All 142 individuals employed as sworn firefighters at this fire department were welcome to participate in the survey. The survey began by providing participants with an informed consent form, after which participants were permitted to answer survey questions regarding workplace stressors common among firefighters and workplace attitudes, which included items regarding managerial status, feeling as if their voice makes a difference, and job satisfaction.

Participants

A total of 119 (83.8%) firefighters at this department completed the survey. Participants' ages were identified via a scale, such that participants identified themselves to be aged 21-25 years (n = 1, 0.93%), 26-30 years (n = 15, 13.89%), 31-35 years (n = 16, 14.81%), 36-40 years (n = 13, 12.04%), 41-45 years (n = 23, 21.30%), 46-50 years (n = 17, 15.74%), 51-55 years (n = 19, 17.59%), or 56+ years (n = 4, 3.70%). Participants' primary positions at the fire department included working on an ambulance (n = 19, 18.27%), working on a firetruck (either engine or ladder; n = 57, 54.81%), working administrative, 9 AM to 5 PM jobs (n = 9, 8.65%), floating from station to station (n = 10, 9.62%), and other (n = 9, 8.65%). Participant gender and race/ethnicity were not assessed because the majority white, male dynamic of the firefighting profession would have made participants outside of these demographics identifiable.

Measures

Voice. To assess whether participants feel that their voices make a difference, they reported their agreement with one item (*"I feel that voicing my concerns makes a difference"*). This item was created by the researchers for the purpose of this study due to the appearance of the theme of voice frequently reported in focus groups we led at the beginning of the research process with several firefighters from the department. The item utilizes a 5-point scale ranging from (*1 = Strongly disagree*) to (*5 = Strongly agree*).

Job Satisfaction. Job satisfaction was assessed using a single-item measure (*"Overall, I am satisfied with my job"*) developed by Fisher and colleagues (2016), which utilizes a 5-point scale ranging from (*1 = Strongly disagree*) to (*5 = Strongly agree*). Fisher and colleagues' analyses on the validity of using a single-item measure to represent the construct of job satisfaction suggest that the item is representative of the construct and, thus, acceptable to use to determine participants' job satisfaction. For example, they found that this 1-item variable was rated by subject matter experts as having content validity (M = 4.35, SD = 1.06), specifically in the

item's ability to represent the accepted definition of job satisfaction: "An individual's global assessment that they enjoy their job, they do it well, and that they are suitably rewarded for their efforts (Fisher et al., 2016, p. 8)."

Managerial Status. Participants also indicated whether they had anyone that directly reports to them, with 32.7% indicating "yes" (n = 35) and 67.3% indicating "no" (n = 72).

Analyses

Independent samples t-tests were used to determine whether managers and employees differ in (1) feeling that their voices make a difference and (2) job satisfaction. Regression analyses were used to determine (3) the association between feeling that one's voice makes a difference and job satisfaction and (4) whether that association differs based on managerial or non-managerial status.

Results

Means and standard deviations for the study variables (feeling that one's voice makes a difference and job satisfaction) can be found in Table 1. Independent samples t-tests suggested that managers and employees significantly differed in feeling that their voice makes a difference, but not in job satisfaction (see Table 1 for test statistics). Thus, the first hypothesis was supported, while the second hypothesis was not.

OLS regression (Hayes, 2014) was used to determine (1) whether feeling that voicing one's concerns makes a difference would be a significant predictor of job satisfaction and (2) whether feeling that voicing one's concerns makes a difference would be a stronger predictor of job satisfaction for those without managerial status than for those with managerial status. For the purpose of this analysis, the managerial status variable was dummy coded such that having direct reports (i.e., being a manager) was coded as 0 and not having direct reports (i.e., being an employee) was coded as 1. The graph in Figure 1 depicts the relationship between the mean-centered voice variable, the dummy coded managerial status variable, and job satisfaction. Analyses initially indicated that 30% of the variance in reports of job satisfaction could be explained by the predictors feeling that one's voice makes a difference and managerial status, and their interaction, $R^2 = .30$, $F(3, 103) = 14.90$, $p < .001$. While managerial status did not significantly predict job satisfaction, $B = .32$, $SE = .20$, $p = .12$, the results suggested that feeling that one's voice makes a difference positively predicted levels of job satisfaction, $B = .46$, $SE = .11$, $p < .001$, which supports the third hypothesis. However, results also indicated that the interaction between the predictor variables, feeling as though one's voice makes a difference and managerial status, did not significantly predict job satisfaction, $B = .02$, $SE = .14$, $p = .90$, which fails to support the fourth hypothesis that feeling as though one's voice makes a difference would be a stronger predictor of job satisfaction for those without managerial status than for those with managerial status.

Discussion

The purpose of this study was to address the gap in research literature regarding firefighters, especially in terms of their job satisfaction and voice within the workplace. More specifically, the present study aimed to further analyze previously collected data to examine whether firefighters with and without direct reports at a Midwestern, suburban fire department differed in (1) feeling that their voice makes a difference and (2) job satisfaction. In addition, the study examined (3) the association between feeling that one's voice makes a difference and job satisfaction; and (4) whether that association differed based on managerial or non-managerial status.

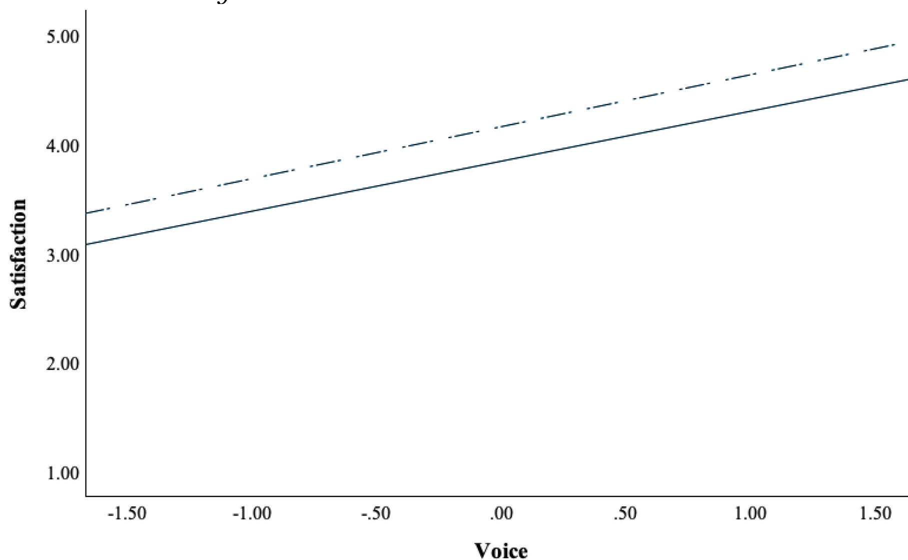
First, we hypothesized that participants with managerial status would be more likely to feel that their voice makes a difference than those without managerial status. The results support this hypothesis and also reflect Burris's (2012)

Table 1
Descriptive Statistics and Independent Samples T-test Results

Voice	Overall	Employees	Managers	t-test		
N	107	72	35	*t*	*df*	*p*
M	2.42	2.17	2.94	2.96	105	.004**
SD	1.29	1.21	1.19			
Job Satisfaction						
N	107	72	35	*t*	*df*	*p*
M	4.05	4.04	4.09	.20	105	.84
SD	1.09	1.07	1.12			

Note. ***p* < .01

Figure 1
OLS Moderation Regression Results



Note. Hayes's (2014, p. 585) PROCESS Model 1 results were calculated using the mean-centered feeling that one's voice makes a difference variable, such that scores indicate standard deviations above the mean. The dashed line represents employees; the solid line represents managers.

finding that managers have a degree of power in either promoting or quelling the voices of subordinate employees, a finding which suggests that managers are more likely to have their voices recognized than employees due to having fewer potential restrictions of voice. While Mowbray's (2018) finding that mid-level managers can also have their voices quelled due to blockages within organizational structures does not necessarily support the results for this hypothesis, their finding does reflect what descriptive analyses found to be a lower than average mean score overall for both non-managers and managers in feeling that voicing their concerns makes a difference.

Second, we hypothesized that participants with managerial status would indicate greater job satisfaction than those without managerial status. The results do not support this hypothesis and, therefore, do not align with Kim and Baek's (2014) finding that firefighters ranking fire chief or higher had greater job satisfaction than those at lower ranks. This discrepancy may be explicable for two main reasons: first, the measure of job satisfaction used in Kim and Baek's study consisted of 33 questions divided into various subfactors for the construct (e.g., autonomy, role burden, etc.), whereas job satisfaction was assessed with only one question in the present study and, thus, took a more holistic approach to the construct; second, Kim and Baek's study had a greater sample of individuals with managerial status than did this study.

Next, we hypothesized that participants feeling that voicing their concerns makes a difference would be a significant predictor of job satisfaction. The results support this hypothesis, specifically finding that when participants felt as though voicing their concerns made a difference, higher job satisfaction was predicted. This finding reflects that of Holland and colleagues (2011) that employees having direct voice (e.g., regularly occurring meetings between staff and managers) was associated with higher employee job satisfaction, and that of Lee (2023) that higher employee job satisfaction is more likely when there are more employee voice opportunities and when these opportunities are effective (i.e., when they make a difference by being followed by managerial action).

Fourth, we hypothesized that participants feeling that their voice makes a difference would be a stronger predictor of job satisfaction for those without managerial status than for those with managerial status. The results did not support this hypothesis and, therefore, are not consistent with cited literature, namely Lewis and colleagues' (2011) finding that experienced firefighters and firefighters in leadership positions tend to be more inherently comfortable with voicing their concerns, along with Swift's (1984) and Perkins and Zimmerman's (1995) theorizations that the ability of organizational members to participate in organizational processes (e.g., decision-making) actually empowers these members. The use of this literature as justification for this hypothesis was based on the assumption that those in managerial positions would be more likely to experience this empowerment, given that their voices are inherently more likely to be included in organizational processes and, thus, they are more likely to be empowered than non-managers.

Limitations and Future Research

One limitation of the present study is that it is difficult to generalize because the survey was conducted in a single fire department (with 7 stations) within one relatively affluent region of the United States. Future research could benefit from taking a similar study approach (i.e., examining associations between job

satisfaction, voice, and managerial status) to several different fire departments in several different regions, as results may differ for departments with less pay, departments with a larger number of runs on average, for volunteer firefighters, for departments in more rural settings, etc. Another limitation of the present study is that the item measuring voice (*"I feel that voicing my concerns makes a difference"*) was created by the researchers for the purposes of the original field research study, rather than being derived from a validated measure; however, this item was developed in alignment with the voice expression concerns communicated by firefighters in our preliminary focus groups. A related limitation of the present study is that the item measuring job satisfaction (*"Overall, I am satisfied with my job"*) is a single-item measure for a relatively complex construct; albeit a valid measure of job satisfaction according to Fisher and colleagues (2016), future research on firefighters' job satisfaction may benefit from using a broader measure of job satisfaction to further specify results.

Because research literature has specified mid-level managers as their own group in the past (e.g., Mowbray, 2018), future research projects could assess the variables of job satisfaction and voice by examining how they differ among firefighters with managerial status (e.g., differences in job satisfaction between lieutenants, captains, battalion chiefs, and administrative chiefs). This would not only lessen the gap in literature surrounding managerial voice in firefighters and nonfirefighters, but it also has the potential to explain, for example, the lack of a significant difference in employees' and managers' job satisfaction.

Conclusion

The uniqueness of firefighting as a profession necessitates research that is specific and directly applicable to firefighters if the profession is to be properly understood and improved, yet there is a large gap in this literature. The present research lessens this gap with its demonstration of voice, a variable scarcely researched in the firefighter context, as an invaluable construct in the workplace for both managerial and non-managerial firefighters. Not only does this research exhibit how voice matters in terms of job satisfaction, but also how voice differs depending on whether a firefighter is in a managerial position. Thus, fire departments may benefit from ensuring that their members perceive the use of their voices as having a tangible impact within the workplace, considering the predictive implications that voice has for job satisfaction and potentially for other important constructs that have significant associations with job satisfaction (e.g., turnover intention). Not only does this research suggest potential benefits of utilizing the voices of all members in a fire department, but also that fire departments must act with the knowledge that managers and employees have been found to significantly differ on some of these constructs; thus, perhaps policies and decisions should not be assumed to have monolithic perceptions and effects. The vital nature of these constructs in firefighters cannot be overstated, as greater understanding of such constructs can help provide the tools necessary to ensure that fire departments are able to effectively conduct the duties that are so essential to society.

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Author Note
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Emotion regulation as prevention and treatment for autoimmune disease

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Abstract – Autoimmune diseases are complex chronic illnesses that significantly impact quality of life. While many factors play a role in the development of autoimmune disease, chronic stress is one of the most common and impactful components to its onset. The physiological damage that ensues from a chronically activated stress response is corrosive to the body and makes it difficult to regulate critical processes, like immune system functioning. Emotion regulation plays a significant role in the relationship between stress and autoimmune disease. The ability to regulate emotions is critical to calming the stress response and can be achieved through a variety of different techniques, including cognitive, psychotherapeutic, psychosocial, and body-based interventions. Important future directions include conducting more research on the impacts of emotion regulation, adding related techniques into existing interventions, and increasing the accessibility of these strategies. The goal of the present review article is to identify how emotion regulation can be used to mitigate the damaging effects of chronic stress (e.g. worsening of symptoms) in patients with autoimmune disease.

Keywords: assessing creativity, torrance, drawings

Autoimmune diseases are characterized by a variety of clinical symptoms and the presence of autoimmune markers, typically defined as the immune system mistakenly reacting to the healthy bodily cells instead of invader cells (Miller, 2023). The immune cells in those with autoimmune disease harm the body and impair typical functioning, causing a variety of symptoms including fatigue, weight changes, fever, and chronic pain (Viswanath, 2013). These diseases are rising at an alarming rate worldwide, with both incidence (the number of new reported cases) and prevalence (the number of existing cases) likely much higher than currently estimated (Lerner et al., 2015; Miller, 2023). Though it is difficult to ascertain what factors contribute to the onset of autoimmune diseases, one of the most significant mechanisms is chronic stress, which has been known to interrupt critical homeostatic processes.

The ability to quickly react to life-threatening stressors is crucial to the survival of an organism, its ability to restore homeostasis, and ultimately, allowing for species evolution (Russell & Lightman, 2019). In modern day, the presence of imminent danger is a major trigger for the stress response to activate, but it also activates whenever a person merely perceives a situation to be threatening (Godoy et al., 2018). Researchers have found that various characteristics of stress (e.g. whether it is acute or chronic, the context in which it occurs, the degree to which it impacts a person, etc.) help to determine how harmful a stressor is (Agorastos & Chrousos, 2022). For example, stressors that are erratic, prolonged, and severe, like caring for a family member with long-term illness, hurt the body and its ability to properly respond to stress in the future, overriding its capacity to handle stressors effectively (Agorastos & Chrousos, 2022). Additionally, there is a crucial link between the functioning of the stress response and how the immune system operates. Chronic stress can lead to a weakened immune system, (e.g. immunosuppression and inflammation), which has been suggested to be a risk factor for 75-90% of chronic diseases (Agorastos & Chrousos, 2022).

One way to address the impacts of chronic stress, particularly in those with autoimmune diseases, is to use emotion regulation techniques. Emotion regulation is the process where one attempts to control their emotions and how they experience and respond to them (Gross, 1998). The primary strategies and interventions that promote emotion regulation include cognitive strategies (e.g. cognitive reappraisal), psychotherapeutic strategies (e.g. dialectical behavioral therapy), and body-based strategies (e.g. yoga). These techniques have been found to improve both physical and psychological health in a variety of ways, including reductions in physical pain, improvements in both positive and negative affect, and

boosts in immunity (Haspert et al., 2020; Ong et al., 2023; Shafir, 2015). This paper will give an overview of autoimmune diseases, explore the relationship between the stress response and the immune system with regards to these diseases, and investigate how emotion regulation can be used to prevent and/or treat them.

Autoimmune Disease

Autoimmune diseases are poorly understood since their causes, mechanisms of action, and diagnostic criteria are not fully agreed upon by the medical community. Some of the most commonly studied autoimmune diseases include multiple sclerosis (MS), rheumatoid arthritis (RA), celiac disease (CD), systemic lupus erythematosus (SLE), inflammatory bowel diseases (IBD) including Crohn's disease, and type 1 diabetes (IDDM) (Lerner et al., 2015). Diagnosis for these and other autoimmune diseases is often very challenging because patients often have a nonspecific array of symptoms that could meet the diagnostic criteria for multiple diseases, autoimmune and otherwise. For example, someone with Hashimoto's thyroiditis may experience weakness, fatigue, weight changes, and muscle aches, which are consistent with many other pathologies (Viswanath, 2013). The amount, frequency, duration, and intensity of symptoms may present quite differently, even in patients who have the same diagnoses, further complicating the diagnostic process (Viswanath, 2013). Autoimmune diseases are also frequently misdiagnosed as psychological disorders, making it more difficult for people suffering with physical ailments to get necessary treatment. Despite this, comorbid psychiatric disorders like depression, anxiety, and bipolar disorder, are common in patients with autoimmune disease (Marrie et al., 2018; Ortega et al., 2022).

Causes and Mechanisms for Onset

As researchers continue to investigate the mechanisms behind new diseases, a growing number of conditions have become classified as autoimmune. While it is thought that the onset of autoimmune diseases is due to a combination of genetic and environmental risk factors interacting with one another, genomewide studies have failed to provide evidence that specific genes are consistently predictive of autoimmune disease onset (Miller, 2023; Wang et al., 2015). Several environmental triggers have been proposed in autoimmune disease onset and progression, including modern changes to our diet, alteration of the microbiota-gut-brain axis, sleep deprivation and circadian rhythm disruptions, impacts from climate change, smoking, UV light exposure, certain pharmaceutical agents, hormonal interference, vaccines, and toxic metal and chemical exposure (Ortega et al., 2022; Miller, 2023; Wang et al., 2015; Viswanath, 2013).

One study also found that autoimmune patients often report having developed their disease following an acute infection, like Streptococcus pyogenes causing acute rheumatic fever (Wang et al., 2015). As previously mentioned, chronic stress is known to be a significant risk factor in many chronic diseases, including autoimmune diseases. Additionally, Adverse Childhood Experiences (ACEs), like sexual abuse and substance abuse in the household, as well as incidents of repeated discrimination, like racism, increase the likelihood of developing autoimmune disease (Dube et al., 2009; Martz et al., 2023).

Also, research suggests that autoimmune diseases typically impact those assigned female at birth at a higher rate than those assigned male at birth (Wang et al., 2015; Dube et al., 2009). While the causes for this disparity remain unclear, some researchers believe that sex hormones and differences in immune response by sex may play a role (El-Gabalawy et al., 2010; Dube et al., 2009).

Treatments

Treatment for autoimmune diseases is often multifaceted, highly individualized, and evolves from the process of trial-and-error. Pharmacological agents like biological anti-cytokine therapy, TNFα inhibitors, Janus kinase inhibitors, and disease-modifying antirheumatic drugs are potentially viable options for a variety of autoimmune conditions (Ortega et al., 2022). However, there are serious side effects from these types of drugs including an increased risk of developing infections and malignancies, infusion reactions, neurological disorders, and bone marrow suppression (Wang et al., 2015). Because of the risk of serious side effects and its varied efficacy in treating autoimmune symptoms, pharmacological treatments are often used in conjunction with other treatments, if at all.

Psychosocial and integrative treatments play an important role in quality of life and symptom management for many people with autoimmune diseases. For example, diet improvements are essential to mitigate symptoms from celiac disease as its symptoms are caused by an immune response to gluten (a protein found in wheat products). However, symptoms of other autoimmune diseases can also improve significantly if a person eats a diet free of foods known to cause inflammation. A varied diet high in vitamins, dietary fiber, and omega-3 fatty acids has been shown to have anti-inflammatory properties, among other beneficial effects for autoimmune patients (Ortega et al., 2022). There is also evidence that pharmacological agents are

more effective if accompanied by a healthy diet. Additionally, physical activity can improve symptoms for some patients with autoimmune diseases depending on the type and intensity of the exercise program (Ortega et al., 2022).

A systematic review found that interventions related to mindfulness, like mindfulness based stress reduction, correlated with improvements in related biomarkers and psychological functioning for participants with autoimmune diseases (Penberthy et al., 2018). Mindfulness, either by itself or in conjunction with psychotherapy, can improve stress, coping with emotions, and resilience in chronically ill populations (Ortega et al., 2022). Other integrative medicine interventions like yoga, meditation, acupuncture, cupping, hydrotherapy, and biofeedback have shown efficacy in improving symptoms in patients with autoimmune disease as well (Serraino, 2022). Patients often need to experiment with different treatments, both pharmacological and integrative, to determine what works best for them.

Regardless of the treatment plan, stress management plays an important role for patients with autoimmune disease. It is crucial for patients to be aware of how stress impacts the body and what interventions they can utilize to manage this. Because the stress response and immune system are deeply interconnected, understanding this relationship is of particular importance for those with autoimmune diseases.

Stress and the Immune System

The stress response is primarily governed by the nervous and endocrine systems, though it impacts the functioning of every system in the body. These physiological changes can cause hormonal dysregulation, impair concentration and memory, and lead to other chronic diseases like diabetes, cardiovascular disease, and chronic fatigue syndrome (Agorastos & Chrousos, 2022).

Research in the field of psychoneuroimmunology has demonstrated that the nervous and immune systems are closely connected and have significant implications related to various pathologies in the body including cardiovascular, neoplastic, and autoimmune (González-Diaz et al., 2017). The purpose of the immune system is to identify and defend the body from trauma and infections, maintaining homeostasis within the body whenever possible (Bower & Kuhlman, 2023). Additionally, many factors including genetics, environment, and lifestyle impact the relationship between the immune system and the brain (González-Diaz et al., 2017).

There is a large body of research demonstrating how psychological stress impacts immune functioning, suggesting that the immune system responds similarly to psychological stress as it does to artificially induced physical stress (e.g. via administration of an endotoxin, whose introduction to the body creates an immune response) (Bower & Kuhlman, 2023). One well studied example of this is Adverse Childhood Experience (ACE) scores, which measure traumatic events in childhood (Felitti et al., 1998). The original ACEs study found a significant relationship between the presence of ACEs and poor health behaviors and outcomes including drug abuse, depression, and cancer (Felitti et al., 1998). Many studies have built off the idea that stressful life events cause worse health outcomes, focusing on a more broad range of stressful life events and different types of health outcomes (e.g. onset of autoimmune diseases). A more recent meta-analysis found a significant association between stressful life events at any stage of life and subsequent autoimmune disease (Porcelli et al., 2016).

Another noteworthy type of stress that significantly contributes to dysfunction in immunity is discrimination. A critical review discussed how perceived acts of discrimination in racial and ethnic minorities activates immune responses that disrupt critical homeostatic processes and worsen health outcomes overall (Cuevas et al., 2020). For example, a study found that incidents of racial discrimination significantly increased C-reactive protein (CRP) levels, which can impair immune functioning, in a sample of Black women with systemic lupus erythematosus (Martz et al., 2023). Another study found that gay men who tried to hide their minority status had higher levels of an inflammatory mediator after perceived acts of discrimination (Doyle & Molix, 2016). Discrimination due to belonging to a marginalized group significantly disrupts critical homeostatic functions of the immune system and brain.

Pathophysiology and Connections to Chronic Disease

When stress is acute, the immune system responds by sending out proinflammatory cytokines to prepare the body to react to the stressor (Bower & Kuhlman, 2023). But when stress is chronic, the body is impacted in much more complex ways. For example, people who have experienced chronic stress often have symptoms of hypercortisolemia (an excess of the stress hormone cortisol) like depression, weight gain, and immune suppression (Agorastos & Chrousos, 2022). However, in some people whose stress system has been depleted of its resources and seriously struggles to maintain homeostasis, they can show symptoms of hypocortisolemia (not enough cortisol in the body) such as chronic pain, irritability, and inflammation. A variety of factors can influence the relationship between states of hyper- and hypo-cortisolemia including the timing of the

stressor in development, its controllability, and subjective appraisal of the stress (Agorastos & Chrousos, 2022).

Regardless of cortisol levels, persistent dysregulation of the stress response due to chronic stress leaves people susceptible to various diseases, including mental illnesses like depression, post-traumatic stress disorder, and schizophrenia. Chronic inflammation due to stress can also impact critical processes that support a healthy mood and mental state, including cognitive functioning and memory (Agorastos & Chrousos, 2022). Repeated activation of the stress response also leaves people more vulnerable to chronic physical diseases such as hyperthyroidism, hyper- and hypo-tension, Cushing syndrome, obesity or significant weight loss, and cardiovascular disease (Agorastos & Chrousos, 2022). Additionally, chronic stress can disrupt the balance of the intestinal microbiome, which is vital to a healthy gastrointestinal system, leaving people more susceptible to diseases of the digestive system (Ge et al., 2022).

It is clear that chronic stress significantly impacts the body, particularly the immune system, in many ways. However, there are a variety of interventions that can be used to mitigate these harmful effects. Emotion regulation interventions, strategies that help one manage their emotions in order to bring the body back to a balanced state, have been identified as a particularly promising approach to protecting autoimmune patients from the physical risks of stress.

Emotion Regulation

Emotion regulation has been shown to improve bodily responses to stress. One study investigated cognitive reappraisal (when one changes the way they think about a stressful situation) and expressive suppression (when one minimizes the external experience of the emotion they feel) as emotion regulation strategies (Jentsch & Wolf, 2020). The use of maladaptive emotion regulation strategies, such as catastrophizing, rumination, and blame, has also been linked to more intense emotional responses, a dulled endocrine response to stress, and increased susceptibility to health issues (Krkovic et al., 2018).

While the bulk of emotion regulation research has focused on cognitive reappraisal and expressive suppression, there is some evidence that other types of emotion regulation strategies can improve physical and psychological health as well. One of the most important behavioral tools for emotion regulation is exercise (Shafir, 2015). Exercise can be used as a regulation tool because of physiological reactions (e.g. release of mood-elevating neurotransmitters) as well as psychological changes (e.g. greater sense of self-efficacy), which can improve symptoms of mental health disorders and decrease the risk of preventable chronic disease (Shafir, 2015; Warburton et al., 2006). Likewise, progressive muscle relaxation and certain breathing techniques have been associated with stronger endocrine and immune functioning, namely decreased cortisol levels and improved antibody production. Additionally, practicing mindfulness, a significant component to multiple different emotion regulation interventions, has been shown to improve psychological well-being and aid in stress reduction (Shafir, 2015). While more research is needed to fully investigate the benefits of these and other body-based emotion regulation strategies, preliminary evidence demonstrates that these techniques may be useful in promoting improved stress management as well as physical and psychological health.

Emotion Regulation Strategies

Cognitive reappraisal, a thoroughly studied technique, has shown to be an effective tool for emotion regulation, leading to decreased depressive symptoms as well as improved physical and psychological well-being (Brown et al., 2022; Karademas et al., 2020). On the other hand, participants with a background of trauma who utilized expressive suppression as an emotional regulation strategy had significantly higher levels of posttraumatic stress disorder, anxiety, and depression (Moore et al., 2008). Other studies have found that participants who used cognitive reappraisal had more optimistic attitudes, increased expression of positive emotion, and better measures of well-being than those who utilized expressive suppression (Gross & John, 2003; Richards & Gross, 2000).

Psychotherapy often employs emotion regulation strategies. Dialectical behavior therapy (DBT) is a therapeutic intervention that was developed to treat chronic suicidal ideation, but has been adapted to treat other clinical issues (Hood et al., 2024). DBT focuses on four key skill building areas, one of which is emotion regulation (Neacsiu et al., 2014). One example of this is "PLEASE" skills which aim to improve emotional reactivity through treating physical ailments, encouraging positive lifestyle habits like good nutrition and regular exercise, staying off non-prescribed drugs, and getting enough sleep. This skill set aims to provide a solid physiological foundation so that patients have an easier time applying other cognitive emotion regulation skills, too. Additionally, DBT includes biological strategies for emotion regulation known as "TIP" skills. These skills involve temperature change (e.g. splashing freezing water on the face), high intensity exercise (e.g. running), and relaxation strategies (e.g. paced breathing), all of which function to help the body physiologically

regulate a significantly activated stress response (Neacsiu et al., 2014).

Other psychotherapeutic modalities utilize emotion regulation skills as well. Acceptance and commitment therapy (ACT) is a type of psychotherapy that aims to improve psychological flexibility (Haspert et al., 2020). It does this by focusing on mindfulness (recognizing something that is happening and simply observing it) and cognitive defusion (detaching from thoughts, feelings, or sensations and just noticing them). A study found that participants with chronic pain who used acceptance and mindfulness focused emotion regulation strategies had significantly less intense pain and feelings of discomfort compared to controls (Haspert et al., 2020). Emotional regulation therapy (ERT) is a lesser known intervention that focuses on teaching regulation strategies to patients in order to replace less effective strategies like rumination and self-criticism with more effective ones (Renna et al., 2017). There is preliminary evidence for ERT demonstrating that the intervention was effective in reducing symptoms of anxiety and depression as well as improving quality of life for patients (Renna et al., 2017). Another psychotherapeutic intervention that involves emotion regulation is eye movement desensitization and reprocessing therapy (EMDR). EMDR works by using bilateral stimulation (stimulating both sides of the body, typically through eye movement) in conjunction with mentally reliving traumatic memories and the emotional responses that come along with them. Patients who utilize this intervention and have less intense emotional experiences activated by their trauma are more likely to have an easier time regulating moving forward (El Khoury-Malhame et al., 2017).

Some other psychosocial interventions aim to increase positive affect by building emotion regulation skills. One study used a self-paced, online intervention with eight strategies to increase positive emotion and regulation including gratitude, recognizing personal strengths, and practicing self-compassion. Adults during the COVID-19 pandemic were found to have significant improvements in anxiety, social isolation, and general well-being after using this emotion regulation intervention (Addington et al., 2022). A related study using a sample of adults with fibromyalgia found that a self-paced online intervention significantly improved both positive and negative affect as well as pain catastrophizing (Ong et al., 2023).

Body-based emotion regulation strategies have been studied less than cognitive strategies but show promise in supporting a variety of outcomes (Shafir, 2015). Exercise has long been recognized as an important strategy to promote health and prevent disease. However, as mentioned previously, it can also be a tool for improving emotion regulation. One study replicated previous findings which suggest that people who engage in more physical exercise reported an easier time coping with intense emotions and had fewer symptoms of psychopathology than those who did not exercise as much (Bernstein & McNally, 2018). Additionally, research has shown that moving to adopt body language cues reflective of positive emotions (e.g. sitting up straight and smiling to invoke joy instead of slouching and frowning when sad) can help regulate emotions. Even something as small as changing body position can help shift someone from an intense emotional state to a more regulated one (Shafir, 2015).

Relaxation-focused body-based interventions, like progressive muscle relaxation (PMR) and breathing exercises, have also been shown to improve emotion regulation (Shafir, 2015). Progressive muscle relaxation is a technique where one intentionally tenses and releases various muscle groups in the body. PMR has been shown to increase subjective relaxation, lessen symptoms of anxiety and perceived stress, and promote immunity. Additionally, breathing techniques like abdominal breathing and alternate nostril breathing can help physically calm the body when experiencing intense emotions. These relaxation-focused interventions have been found to decrease stress as well as symptoms of many psychopathologies including posttraumatic stress disorder, obsessive compulsive disorder, and schizophrenia (Shafir, 2015).

Emotional Freedom Technique (EFT) also shows promise for improving emotion regulation. EFT is a strategy where a patient is asked to think about an emotionally activating event and tap on a specific series of acupuncture points on the body using their fingertips (Church & Feinstein, 2017). The intervention works by sending calming signals to parts of the brain responsible for emotional responses, increasing levels of neurotransmitters that improve mood, and decreasing cortisol levels. EFT has been shown to improve symptoms of posttraumatic stress disorder, anxiety, and depression in veterans, among other populations. Additionally, this intervention is typically brief and easy to implement, carries little risk, and can be adapted to many different populations and platforms (Church & Feinstein, 2017).

Future Directions and Implications

Conducting More Research Focused on Emotion Regulation

While there is a solid body of research on emotion regulation, more needs to be done. There are plenty of populations which have been left out of emotion

regulation research, including those with rare and/or poorly understood autoimmune diseases. For example, patients with chronic fatigue syndrome/myalgic encephalomyelitis (CFS/ME) and postural orthostatic tachycardia syndrome (POTS), both of which have a proposed autoimmune component, could benefit greatly from additional research on how emotion regulation can improve their health outcomes. The underlying mechanisms leading to the onset and symptoms of these diseases are complex and differ between diagnoses, so we cannot generalize findings from one disease to another.

In addition to focusing this research on populations with different autoimmune diseases, we need to tailor emotion regulation interventions to specifically target those with complex physical symptoms. While some research (Haspert et al., 2020; Jedel et al., 2014; Ong et al., 2023; Penberthy et al., 2018) has begun to implement this approach, more needs to be done. Future research should focus on how to best combine emotion regulation techniques to support those with the most common and disabling symptoms of autoimmune disease. Researchers have found that mindfulness based interventions have led to improved quality of life and reduced pain and fatigue in patients with autoimmune disease, which is a great start (Penberthy et al., 2018). If people are able to lessen their most disabling symptoms through the use of emotion regulation techniques, they will be more likely to break the cycle of an overactive stress response and worsened autoimmunity. Additionally, the long term impacts of emotion regulation should continue to be investigated. Researchers should use longitudinal studies to measure relationships between frequency of emotion regulation use and health outcomes. It would also be worthwhile to see how these strategies impact symptom quantity and severity in those with autoimmune conditions long term.

Integrating Emotion Regulation into Existing Preventive Measures

In Medical Settings

Risk factors for health complications are frequently assessed in medical contexts. In primary care settings, patients are typically screened for depression and anxiety using measures like the PHQ-9 and GAD-7 (Salinas et al., 2023). Patients may also be asked to fill out forms detailing their health history, lifestyle habits, recent changes in their life, etc. for their provider to be able to get the most comprehensive picture possible. Building off this important practice, we should build off the existing screening protocols to measure stress and use of emotion regulation skills. Although there is some overlap between symptoms of depression/anxiety and stress, a separate questionnaire should be administered specifically focused on measuring stress. Patients should be asked something like, “Do you notice that your levels of stress seem to evoke the following symptoms?” followed by symptoms of chronic stress. They should also be asked questions specific to emotion regulation like “Do you frequently have strong emotions that feel difficult to control?” or “How do you calm down when you experience strong emotions?” These could be asked in a survey, like those mentioned above, or could be asked conversationally as part of a regular wellness check appointment.

Assessing patient stress levels is crucial to understanding their risk of developing autoimmune disease. Early detection and subsequent intervention through stress management and emotion regulation could help patients avoid developing any disease at all. It may also allow for healthcare providers to provide psychoeducation and introduce the patient to some basic stress management techniques, including emotion regulation. This could provide more opportunities for providers to be able to refer patients to emotion regulation focused psychotherapy as well. Additionally, healthcare providers need to receive more training on stress, emotion regulation, and autoimmune diseases in general. While psychiatrists and therapists have training in emotion regulation, medical providers do not. Not only will implementing these skills improve the quality of the care they provide, but providers will also be able to teach their patients how to use them in stressful medical situations.

In Schools

Emotion regulation can also be promoted through the systemic implementation of social emotional learning (SEL) curricula in schools. There is robust evidence showing that the use of social emotional learning in schools improves student attitudes, behavior, academic achievement, and stress management, while also reducing conduct problems and internalizing behaviors (Durlak et al., 2011). There is even evidence that SEL can improve cardiovascular, hormonal, and neurological health in students (Blewitt et al., 2024).

Emotion regulation is a crucial component of a successful SEL education, falling under the competency of “self-management” (CASEL, n.d.). Teaching students how to identify their own emotions and use healthy regulatory skills to calm them is very important. Doing so provides students with a toolkit to combat stress, reducing the likelihood of it becoming chronic. Not only does SEL break the negative cycle of chronic stress and its detrimental outcomes, but it also encourages a more healthy one focused on minimizing stress and more positive outcomes later in life. Implementing universal

SEL for students of all grade levels is a great way to prevent chronic stress and autoimmune disease onset.

Improving Accessibility of Emotion Regulation Techniques

Public health specialists should focus on promoting accessibility of emotion regulation strategies through increasing public knowledge and improving physical access to these services. Marketing experts should collaborate with public health organizations to determine how to best expand messaging around the importance of emotion regulation and related services available to the public. Equity-focused marketing targeting a variety of communities should be made a priority as well. This may include translations of crucial information for non-English speaking communities, simple but effective messaging for people with lower levels of education, and ensuring cultural sensitivity and diversity in all communication.

Initiatives should be taken to ensure that public health measures can be physically accessed by members of all communities. One way to do this is to increase funding for community health centers that offer mental and behavioral health support so that more people, regardless of ability to pay, are able to access treatment that supports their emotion regulation. Providing community centers or other groups (e.g. social service organizations) more funding would enable them to offer more free programming that centers around emotion regulation (e.g. yoga or meditation classes, how to use basic DBT techniques). Additionally, barriers such as a lack of adequate public transportation and cost of childcare must be acknowledged and addressed in order for patients to be able to actually access these services. It is crucial that emotion regulation techniques are made more readily available in every way possible for communities to use as a preventive tool.

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Applying two psychological principles to explain the appeal of negative news

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Abstract – The current paper argues that negative news is ubiquitous and that two psychological factors—negativity bias and confirmation bias—may contribute to the appeal of such news. Using the psychological literature, negativity bias and confirmation bias are described and empirical examples are provided to demonstrate how the biases may contribute to individuals' consumption of negative news. By describing and applying the two biases, the paper reveals how psychological science can help explain people's tendency to consume negative media.

Negative news is ubiquitous in the media (Boukes & Vliegenthart, 2017; Gurr & Metag, 2022; Trussler & Soroka, 2014). Whether individuals consume news via television, newspapers, radio, social media, or other sources, they are sure to find news that is negative—creating sadness, worry, anger, or even fear. As an example of the ubiquitous nature of negative news, in a Google search of "today's top news stories" (January, 2025), the top three results revealed 1) continued rates of inflation in the U.S. across most—seemingly all—products and services from food to transportation; 2) international crises including humanitarian issues related to war and conflict in the Middle East; and 3) gun violence, with over 600 mass shootings reported to have occurred in the U.S. last year.

The ubiquitous presence of negative news is concerning because empirical research has demonstrated that the valence of news can affect individuals' behavior. For example, in a controversial study—reflecting ethically dubious methods where informed consent was not obtained—Kramer et al. (2014) manipulated the presence of negative and positive emotional content on almost 700,000 people's Facebook news feeds. Specifically, individuals' Facebook news feeds were systematically manipulated to either reduce the presence of their friends' negative or positive emotional posts. The extent to which individuals' subsequently posted content with positive or negative emotions was then recorded by reviewing over 3 million posts, containing over 122 million emotion words. Results revealed that Facebook users posted content with fewer positive emotion words when positive news had been withheld and fewer negative emotion words when negative news had been withheld. Such results demonstrate how the presence of positive and negative news has the power to impact individuals' behavior (e.g., emotional experiences and expressions).

A relatively large body of research suggests that individuals are drawn to negative news (e.g., Boukes & Vliegenthart, 2017; Glavač et al., 2022; Johnston & Davey, 1997; Soroka et al., 2019; Szabo & Hopkinson, 2007), with exposure to such news amplified by algorithms designed to filter content to align with individuals' prior selections (Zimmer et al. 2019). From an evolutionary perspective, consuming negative news may be adaptive because humans have evolved to be vigilant of potential threats; consuming negative news allows individuals to actively monitor their environments and, potentially, use the information to avoid danger. Such a perspective is supported by empirical research demonstrating that individuals more quickly recognize and, consequently, respond faster to threatening compared to non-threatening words (Dijksterhuis & Aarts, 2003). Given the ubiquity of negative (potentially threatening) news, the goal of the current paper is to use the empirical psychological literature to describe two biases—negativity bias and confirmation bias—that may contribute to individuals' consumption of negative news.

Negativity Bias

The appeal of negative news may be explained, at least in part, by a psychological phenomenon called the negativity bias (Rozin & Royzman, 2001). Negativity bias is defined as individuals' "proclivity to attend to, learn from, and use negative information far more than positive information" (Vaish et al., 2008, p. 383). The negativity bias is theorized to reflect four unique, but related, features. Specifically, negativity bias is theorized to occur when negative information is more salient than positive information (i.e., negative potency); when negative events have more extreme anticipatory

experiences than positive events (i.e., steeper negative gradient); when ambiguous information is more likely to be interpreted negatively than positively (i.e., negative dominance); and when negative events are more memorable than positive events (i.e., negative differentiation; Rozin & Royzman, 2001).

As a demonstration of the negativity bias with news, Trussler and Soroka (2014) examined if people's stated preferences for news—whether they report preferring positive versus negative news—impacts their actual news-related consumption decisions. That is, if the negativity bias emerges in news consumption, even people who believe they prefer positive news may not demonstrate that preference in their actual behavior. In the study, Trussler and Soroka coded the valence—operationalized from very negative to very positive—of news stories that participants selected to read among 30 available stories on a broad range of topics. After selecting and reading the stories, participants responded to a brief survey, which included questions assessing their preferred preferences for positive or negative news. Results revealed that negative stories were 26 percent more likely to be read than positive stories. Additionally, and consistent with the researchers' predictions, regardless of participants' stated preference for positive or negative news, all participants were more likely to read news with negative compared to positive content. That is, counter to some participants' preference for positive news, they did not read more positive news nor avoid more negative stories. Such research provides a good example of how the negativity bias may be one factor contributing to people's everyday reading of the news.

Additional, and arguably stronger, evidence of negativity bias in news consumption is demonstrated in a cross-national experimental study by Soroka et al. (2019). In the study, over 1,000 participants from 17 different countries (e.g., Canada, China, Israel, Russia, U.S.) watched 7 BBC World News stories that varied in tone from negative to positive. While watching the news stories, participants' skin conductance and pulse were recorded via sensors on their fingertips. Results revealed that participants were more physiologically aroused by—as measured by greater skin conductance and higher heart rate—and attentive to negative compared to positive news. Such results extend prior research demonstrating that negativity bias not only predisposes individuals to selectively attend to negative (compared to positive) news but affects them physiologically, by heightening their biological responsiveness to negative (compared to positive) news.

Confirmation Bias

A second psychological phenomenon that may help to explain the appeal of negative news is confirmation bias. Confirmation bias reflects individuals' tendency to process information by seeking and/or interpreting information consistent with their existing beliefs and values (Casad & Luebering, 2024). Peter Watson, a cognitive psychologist, is commonly credited with the earliest empirical demonstrations of confirmation bias (Evans, 2016; Gatlin et al., 2017). In Watson's seminal work, he showed individuals a set of numbers, such as "2-4-6", and asked them to identify—and subsequently create three new numbers following—the "rule" for the numbers. Individuals consistently applied a rule that confirmed their beliefs, such as reporting any pattern of even numbers increasing by two, rather than testing alternative patterns following a different rule (e.g., any three increasing numbers). Such a pattern of results led Watson to argue that individuals are inclined to confirm their existing beliefs demonstrating a confirmation bias (Evans, 2016; Gatlin et al., 2017).

If individuals are inclined to consume negative news, then confirmation bias may be a factor contributing to and/or intensifying such consumption tendencies when the news aligns with their preexisting beliefs. For example, in a study using a selective exposure paradigm—which reflects a method for recording individuals' choices when they are exposed to different kinds of information—Knobloch-Westerwick et al. (2017) examined if individuals are more likely to read articles that align with their preexisting attitudes than articles that misalign. In the study, participants reported their attitudes toward eight topics (e.g., gay marriage; abortion) and were then allowed to browse a random selection of online news magazines, with articles pre-identified by the researchers to support or refute the eight topics. Participants' selection of news articles was surreptitiously logged by the computers while they browsed. Results revealed strong evidence for confirmation bias in individuals' consumption of news. Specifically, participants were more likely to select articles (and spend more time reading the articles) that aligned with their pre-existing beliefs than articles that misaligned with their pre-existing beliefs. Such work demonstrates the role of confirmation bias in people's consumption of news.

In another example of how confirmation bias may contribute to individuals' consumption of negative news, Van der Meer et al. (2020) examined if confirmation affects individuals' selection of negatively (or positively) framed news. More specifically, Van der Meer et al. tested whether individuals are more likely to selectively expose themselves to news that affirms their

existing belief (role of confirmation bias), particularly when the news is negatively valanced (role of negativity bias). In the study, participants were exposed to positively and negatively valanced news headlines on two topics (i.e., immigration and public healthcare) that either aligned or misaligned with their existing beliefs. Participants were then asked to select the three news items they would most likely choose to read in real life. Results revealed that when news headlines aligned with participants' attitudes, or were negatively valanced, participants were more likely to select the items to read. When analyses compared the relative impact of confirmation bias (i.e., whether the political topics aligned with participants' existing beliefs) to negativity bias (i.e., valence of the headlines), confirmation bias was a stronger predictor of headline selection. Such results suggest that confirmation bias may play an important role in mobilizing readers to select and consume news, with the selection and consumption erring on negatively valanced content (i.e., negativity bias).

Implications and Conclusion

In the current paper, we used the empirical psychological literature to describe two factors—negativity bias and confirmation bias—potentially contributing to individuals' consumption of negative news. The importance of such information may, at least initially, be in its educational value. If people understand their tendency to attend to and learn from negative information (compared to positive), as well as their tendency to seek information consistent with their existing beliefs, they may be more equipped to identify when such tendencies are problematic and become more receptive to considering alternative (positive) news. Although identification of one's own (potentially problematic) news consumption may be unrealistic, such identification remains important because excessive consumption of negative news has been shown to affect individuals' wellbeing. Specifically, in a study by Shabahang et al. (2022) examining individuals' tendency for "doomscrolling", which reflects a persistent focus on and search for negative news, results revealed that greater doomscrolling was associated with reduced psychological wellbeing, decreased life satisfaction, and increased levels of depression. Such results powerfully demonstrate the value of understanding the role, and monitoring the impact, of negative news on individuals' behavior.

Recommendations for reducing exposure to negative news includes monitoring and limiting exposure time, as well as purposely selecting and reading positive news (Rodrigues, 2022). Such recommendations are intended to help individuals' challenge the biases that may make negative news appealing, while also reducing the potential negative effects of such news on wellbeing. Despite the value of such recommendations, research is needed to confirm the effectiveness of strategies to reduce the appeal of negative news, particularly the extent to which such strategies impact wellbeing.

Encoding Phase

Participants watched a short video under two minutes in length that contained either positive or negative emotional content. In the positive video, a baby with a rare disorder that affects his vision reacts to seeing his mother for the first time due to the use of special glasses. In the negative video, reporters show live video from a SWAT standoff involving a murder-suicide outside a suburban Texas neighborhood. After the video was watched, a distractor task was used to prevent mental repetition of information used to enhance participants' memory of the video. During this task, participants were given a timed trigonometry test. Using only paper and pencil, participants were asked to complete as many mathematical problems as they could within the time limit of five minutes.

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A mother's manipulation: The dark triad in "Coraline"

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Abstract – The Beldam, also known as the Other Mother, is the main antagonist from the popular animated horror movie *Coraline,* directed by Henry Selick (2009). The Beldam is a shape-shifting entity who manipulates any child living on the main floor of the apartment building "The Pink Palace." The Beldam displays many characteristics of the negative personality traits known as Machiavellianism, narcissism, and psychopathy—the three traits that make up the "Dark Triad" (Paulhus & Williams, 2002). The Other Mother may be particularly terrifying because these traits are so misaligned with stereotypical expectations of nurturing, empathetic mother figures. One lesson in this film is that real parents can still be loving, even though they are not always perfect.

Keywords: dark triad, psychopathy, machiavellianism

On the outskirts of town, Coraline—a young girl—and her workaholic parents move into the ground level of the three-apartment building "The Pink Palace." This is the start to the animated horror movie *Coraline,* directed by Henry Selick (2009). Coraline quickly discovers a little door in their drawing room leading to a parallel world. The first person she meets calls herself Coraline's "Other Mother"; in reality, it is a creature whose true name is the Beldam. At first, the Other Mother appears to only concern herself with making Coraline's life a waking dream, fulfilling every wish Coraline cannot have fulfilled in reality. However, Coraline slowly realizes that the Other Mother has ulterior motives, and has designed this parallel universe to lure Coraline to stay there forever as a way of trapping Coraline's soul. The Other Mother eventually shows herself to be a disturbingly evil creature embodying personality traits known in psychology as the Dark Triad (Furnham et al., 2013; Paulhus & Williams, 2002).

Film Summary

At the start of the film, Coraline pursued her own creativity to alleviate her boredom. She explored the house and grounds independently, causing her to almost fall down a well and to contract a rash from poison oak. She often attempted to gain her parents' attention, only to be told to entertain herself; they were even distracted from her injuries and physical well-being. Coraline's feelings of rejection, resentment, and self-pity about her situation are likely relatable to many children who feel similarly neglected by parents who work long hours, are required to travel, or have many obligations and therefore may not spend as much time as they would like with their families. Her bitterness and loneliness leave her vulnerable to the captivating tricks of the Beldam.

When Coraline initially entered the world created by the Beldam just for her, she was startled by the unnerving button eyes of her Other Mother and Other Father. However, she quickly overlooked her qualms due to their lavish magical attention. Even though their button eyes scared her, the Beldam's pampering was designed to persuade Coraline to return repeatedly, even if it went against Coraline's better judgment. This gave the Beldam opportunities to convince Coraline never to return to her real parents. Once Coraline was successfully charmed, the Other Mother made an offer to let Coraline stay with her forever. The only requirement would be letting the Other Mother sew buttons in her eyes. It was never explained to Coraline how the buttons would be sewn, making it all the scarier. The only clue she was given was when the Other Father mentioned the needle was "so sharp you won't feel a thing" (Selick, 2009).

This request scared Coraline, and knowing she was in danger, she tried to get home without alarming the Other Parents. She tried several methods that had previously worked, only to find them blocked off by the Other Mother. When Coraline was again faced with empty words of love, Coraline insulted her. The Other Mother punished Coraline by sending her into a dark room where she met several ghost children. They explained they were previous victims of the Beldam—a shape-shifting, evil entity that lured them from their families by promising everything in exchange for sewing

buttons in their eyes. Once the buttons were sewn, the Beldam consumed their souls and locked them in her world forever, simultaneously ending her false kindness toward them.

Eventually, Coraline escaped the parallel world by playing a trick on the Beldam. She proposed a “finding things game.” If she found her parents and the missing eyes of the ghost children, the Beldam would be obligated to set them all free. The Beldam had magically disguised the ghost children’s eyes as other small, round objects: a ring, a knob, and a tiny circus ball. Using a seeing stone gifted to her by her neighbor in the real world, Coraline successfully found all the missing eyes. Right before she ran out of time, she also found her real parents, trapped and hidden inside a snow globe.

Coraline was about to show the Beldam the hidden objects, when she realized that the Beldam would not let her go even if she won. Finally, Coraline used the Beldam’s arrogance against her. Coraline pretended her parents were behind the door back to her real world, tricking the Beldam into unlocking it. Once the door was unlocked, Coraline brought the ghost children’s eyes and the snow globe back into her original world, causing the objects to break; this released all of the souls from the Beldam’s power. Coraline’s creativity, bravery, and intelligence saved them all and returned her to her real family.

The Nature of the Beldam

As Coraline is tempted to spend increasing amounts of time in the parallel universe she discovers through the little door, she learns more about her Other Mother and why she created a magical place where everything is too perfect. The Other Mother seems to be a generous and caring maternal figure, but as the film progresses, her true horrifying nature comes out. The Beldam eventually displays many selfish and manipulative behaviors, aligning with the personality traits labeled Machiavellianism, narcissism, and psychopathy—a group of characteristics now known in psychology as the Dark Triad (Furnham et al., 2013; Paulhus & Williams, 2002).

The Dark Triad

The Dark Triad is a personality construct consisting of three traits that people typically deem as undesirable: Machiavellianism, narcissism, and psychopathy (each is described below; Furnham et al., 2013; Paulhus & Williams, 2002). For a summary of the characteristics within the Dark Triad, see Table 1. Measures of the three traits typically reveal high positive correlations among them within individuals (e.g., McHoskey et al., 1998, Jonason et al., 2010). A common core is callous manipulation and low empathy toward others. Still, each trait has unique qualities and can be seen in the behaviors of the Beldam.

Machiavellianism

The term Machiavellianism originates from the philosopher, diplomat, and author Niccolò Machiavelli. Machiavelli wrote a book called *The Prince* which instructed others on how to retain “supreme political power” using various strategies (Machiavelli, 1532). Some of these strategies include manipulation, cruelty over mercy when necessary, avoiding too much generosity, and only keeping your promises when convenient. People who display high levels of the personality trait Machiavellianism tend to manipulate others for their personal benefit (Christie & Geis, 1970). They may be willing to lie, cheat, and trick others. Importantly, while Machiavellianism is not associated with actually having higher intelligence, high scores in this trait are associated with the *appearance* of intelligence, intimidation of others, and willingness to wait patiently to achieve their goals (Wilson et al., 1996).

Out of the three traits within the Dark Triad, the one the Beldam displays the most is Machiavellianism. Her entire goal was to capture children and trap their souls so they cannot leave her. To do this, she used two primary methods. First, she shape-shifted to change from her true form to look exactly like the child’s real parent (but with button eyes). Second, she used magic to create a parallel universe that was an exact replica of the child’s world, only with slight changes. The changes were

Table 1
Key Features and Sample Scale Items for the Dark Triad

	Key Characteristics	Self-Report Items
Machiavellianism	Duplicity, manipulation, focus on personal gain	Make sure your plans benefit you, not others. It’s wise to keep track of information you can use against people later.
Narcissism	Vanity, immediate gratification, entitlement over others	Many group activities tend to be dull without me. People see me as a natural leader.
Psychopathy	Antisocial behaviors, low remorse, lowered inhibitions, criminal tendencies	I like to pick on losers. People who mess with me always regret it.

Note: Key characteristics are taken from Muris et al. (2017). Self-report items are examples from the scale published in Jones & Paulhus (2014).

designed to fulfill each child's naïve desires. For Coraline, the Beldam made the garden more fruitful, the neighbors more exciting, the food more delicious, and everything more colorful than it was in Coraline's real world. All of this work was quite a bit of effort for the Beldam, showing her willingness to manipulate her victims. When Coraline met the ghost children, she realized that the Beldam's tricks worked on them. They told her, "She lured us away with treasures and treats and games to play; she gave us all that we asked for, but we still wanted more, so we let her sew the buttons" (Selick, 2009).

When Coraline looks anxious or looks like she wants to leave, the Other Mother reassures her through increasingly thoughtful—but manipulative—gifts: mud that magically heals her poison oak rash, new clothes, trips flying in the air, a circus and theatrical show, and a feast. However, these treats are all designed to gratify the Beldam's purposes (of luring Coraline to stay forever). As soon as Coraline begins to refuse the Beldam's requests, the Beldam throws her in a room as a display of her power. In this room, Coraline meets three previous victims of the Beldam, the ghost children. They don't remember anything about who they were before they agreed to live with the Beldam forever, letting her sew buttons on their eyes—their only remaining memory is that their real mothers loved them. Meeting the ghost children is what makes Coraline finally realize the true nature of the Other Mother, and that she is really the Beldam in disguise.

A character who gives the viewer more insight into the Beldam is a cat Coraline meets. The cat explains to Coraline, "She only made what she knew would impress you" (Selick, 2009). At this point in the film, it becomes clear that the Beldam's manipulation tactics are a technique called "love bombing", in which one person or group praises an individual and showers them with displays of love and attention, hoping to get their devotion in return (Goodfriend & Nix DeAngelo, 2024; Stein, 2017). Once the target of the love bomb has committed, however, treatment toward them quickly turns hurtful (such as the Beldam's treatment of the ghost children, and toward Coraline after she starts to show doubts). Love bombs are explicitly used as a manipulation tactic by the Beldam, which she acknowledges when she offhandedly mentions, "They say even the proudest spirit can be broken with love," (Selick, 2009). The implication is that her goal is to break Coraline's spirit with empty shows of affection.

Narcissism

A person who has high levels of narcissism believes that they are superior to others and that they should be rewarded for it (Paulhus & Williams, 2002). People who display narcissism tend to be self-absorbed, extraverted, socially dominant, and cunning. Even at subclinical levels, other people usually find narcissists socially annoying or frustrating (Leary et al., 1997). When the Beldam finally revealed her true nature to Coraline, it was clear that she only cared about herself.

The Beldam's high levels of narcissism are shown through how she does not value the lives of either Coraline or the Other Father. The Beldam has already stolen the lives of several other children, but does not care about the consequences to any of them when she sews buttons in their eyes and feels entitled to collect more souls. There are also many instances throughout the story where the Beldam sends the Other Father away or when she makes him do her work for her. She makes him show Coraline the garden. More importantly, she also attempts to use him as a tool to win the game that Coraline eventually proposes to win her freedom back. The Beldam also prevents the Other Father from helping Coraline in any way. These actions show that the Beldam only cares about her own self-interest, a core aspect of those high in narcissism.

Research indicates that people high in narcissism are also capable of emotion management (Vonk et al., 2015). Throughout the movie, the Beldam is seen controlling her expressions and behaviors toward Coraline as she pretends to be a stereotypical caring mother, even when her motive is clearly selfish. She carefully hides behind a curated image of the perfect mother to manipulate Coraline into giving her what she wants. The Beldam consistently puts her own needs before anyone else, hungering for others' lives and souls.

Psychopathy

People who display high levels of psychopathy tend to have criminal tendencies, high sensation seeking, and affective and emotional issues that align with the Hare (1991) Psychopathy Check List, such as pathological lying. One important way to distinguish psychopathy from Machiavellianism is that individuals high in psychopathy are usually very impulsive and seek immediate gratification, whereas Machiavellianism is associated with self-discipline and long-term planning (Muris et al., 2017; Paulhus & Williams, 2002). However, individuals can be high in both traits simultaneously.

Several of the Beldam's behaviors already described fit the profile of psychopathy. The game that Coraline and the Beldam agree to play at the end of the movie is also a key example. The Beldam had Coraline in her grasp and just needed to sew the buttons on her eyes. However, when Coraline proposed they play a game, the Beldam could not resist. Her decision showed high

impulsivity and the need for immediate gratification, as she was confident Coraline would lose.

As previously described, a hallmark of psychopathy is a lack of empathy (Jonason & Kroll, 2015); the Beldam showed this trait toward Coraline or any other being who stood in her way. When Coraline began to defy her, the Beldam kidnapped Coraline's parents and used them as bait. When another character attempted to help Coraline, the Beldam attempted to knock him into a well, which caused him to almost fall to his death. Her goal was to capture children's souls—forever—for her own endless hunger. Considering all the things the Beldam did, she appeared to feel no remorse or regret for her actions.

The Light Triad

The Beldam—the Other Mother—may be particularly terrifying as a villain in this animated film because her personality traits are so misaligned with stereotypical expectations of nurturing, empathetic mother figures (Bye et al., 2022). Overall, "mother" is a social group perceived as emotionally warm, communal, and the "gold standard" for women (Valiquette-Tessier et al., 2016). They are expected to be cooperative, protective of others, and helpful (Bays, 2017). Instead of the Dark Triad, behaviors and personality traits expected of most mother figures are those aligned with the opposite—a group of characteristics now labeled the Light Triad (Kaufman et al., 2019).

The Light Triad was purposely designed to parallel the Dark Triad and to focus on positive individual differences (Kaufman et al., 2019). The three traits include (1) faith in humanity—behaviors and values associated with trusting that people are good and have positive intentions; (2) humanism—the idea that everyone should be treated with respect; and (3) Kantianism—not using people for selfish reasons, and a tendency toward honesty. Research has shown that typically, women are less likely to display behaviors associated with the Dark Triad (compared to men; Ermis et al., 2024; Jonason & Webster, 2010) and are more likely to display behaviors associated with the Light Triad, such as empathy and altruism (again, compared to men; Baron-Cohen, 2012; Ermis et al., 2024; Graziano & Tobin, 2017).

When Coraline first met the Beldam, she was a charming, attentive clone of Coraline's real mother. The Beldam reflected social norms for "motherhood" in general—in fact, even more than Coraline's real mother, because the Beldam appeared to be completely devoted to Coraline's happiness. As the movie progresses, however, the Beldam's appearance shifts to reveal less similarity to the person she is mimicking. The unnerving change in appearance is backed up with the terrifying change of her personality, where she shows she truly did not display the traits of the Light Triad, but rather was showing traits of the Dark Triad the entire time.

Conclusion

The Beldam shows every trait in the Dark Triad (Furnham et al., 2013; Paulhus & Williams, 2002): She manipulates anyone she meets, has other people work for her benefit, eliminates anyone in her way, believes she is entitled to other people's lives, and is uncaring about the wellbeing of anyone other than herself. She is a particularly horrifying villain because everything she does would typically be considered unmotherly, despite her attempts to appear otherwise.

At the end of the movie, Coraline is relieved to return to the safety of her real mother. Perhaps one lesson of this story is that real mothers may not always be able to live up to their perfectly nurturing, self-sacrificing stereotype—because they are, after all, genuine human beings. While Coraline was lonely and resentful that her real parents could not spent more time with her at the start of the film, by the end she realized that she may have been taking their genuine love for granted. One lesson of *Coraline* may be that parents can still be loving, nurturing, and wonderful—even if they are not perfect.

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