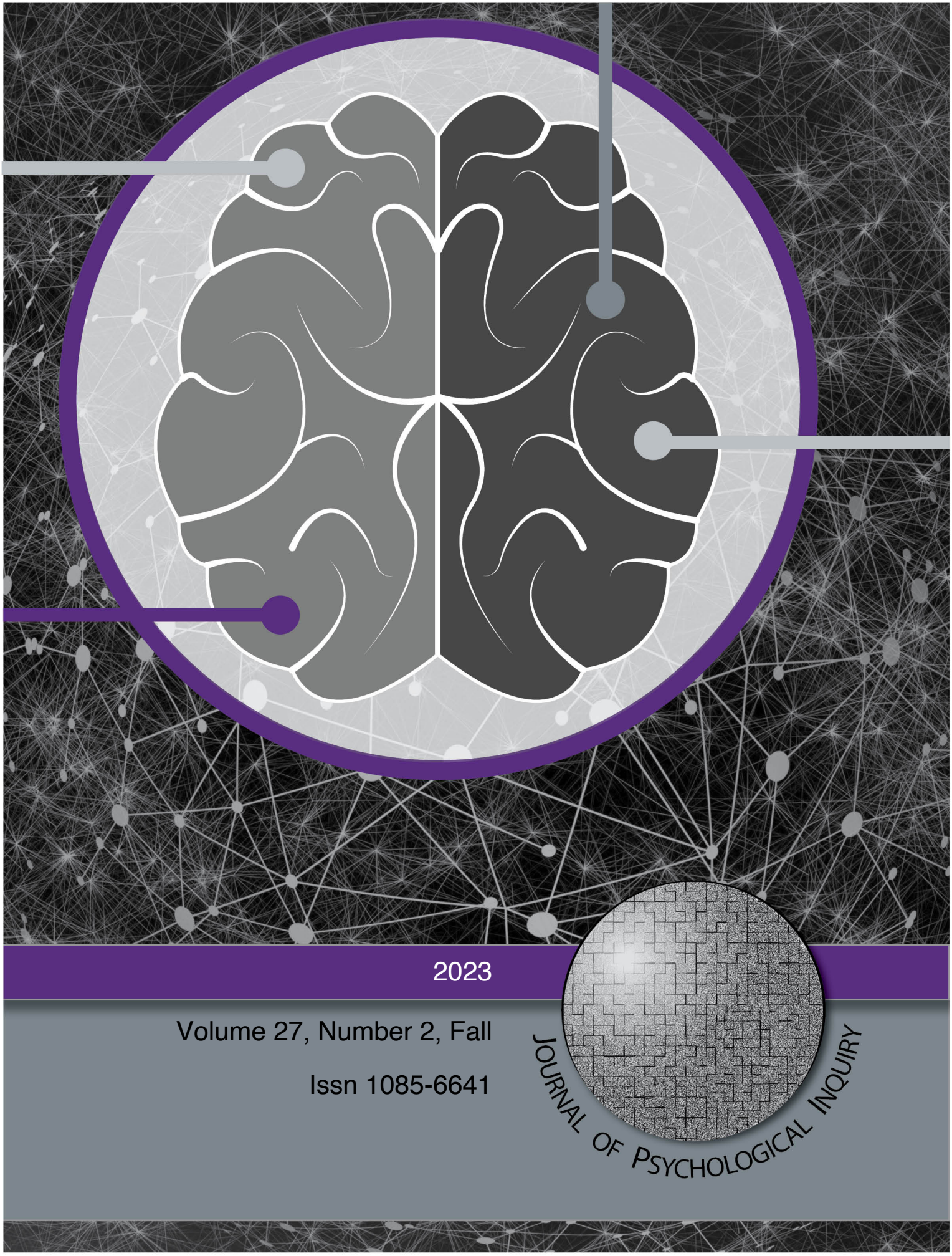

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From the Editor's Desk

The Fall, 2018, issue of the *Journal of Psychological Inquiry* was the first issue I published, which means that this year's spring issue marked the end of my fifth year as managing editor. I can hardly believe that this issue begins my sixth year at *JPI*; maybe the global pandemic made us all lose our bearings a little.

I am on sabbatical this semester so I did not have the benefit of a graduate assistant to help me compile this issue. I thought I had already appreciated the value of my GAs' contribution to the journal, but now I *really* miss Autumn, Julianne, and Tristan.

This issue is packed with terrific articles that showcase their authors' hard work and dedication to scientific discovery. For example, the article that won this issue's award for excellence in undergraduate research compared the attitudes of American and Japanese participants toward seeking mental health counseling.

Other articles comprehensively reviewed the literature and employed solid experimental methods to answer their research questions. And the pioneer of experimental psychology, Hermann Ebbinghaus, is given his due in a historical article. I hope that all the readers of this issue of JPI are inspired to write and submit manuscripts to appear in future issues of the journal.

Ken Sobel
Managing Editor
University of Central Arkansas

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

A CROSS-CULTURAL STUDY ON ATTITUDES TOWARDS MENTAL ILLNESS AND WILLINGNESS TO SEEK PROFESSIONAL HELP AMONG JAPANESE AND U.S. COLLEGE STUDENTS

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Abstract – This study explored predictors of willingness to seek help for mental illness. We hypothesized that mental illness stigma, internal locus of control, and lower SES would be associated with less likelihood of seeking professional help for mental illnesses. We also hypothesized that these results would differ in two samples based on culture (U.S. versus Japanese). College students in each country completed an online survey in their language. Results showed partial support for Hypothesis 1 in that help seeking was more likely in individuals with lower mental health stigma. However, help seeking was surprisingly correlated with higher external locus of control and was not significantly correlated with SES. Exploratory analyses also showed that women were more likely to seek help than men. Supporting Hypothesis 2, these results differed by country; for the Japanese sample, the only significant predictor of help seeking was mental health stigma. These findings are similar to previous studies which highlight the importance of mental health stigma regarding willingness to seek help. Future research can build upon this study's foundation by further exploring the questions and patterns of results found here.

Taking care of our mental health and well-being is a crucial part of living well; it also allows us to better cope with the stresses of life. According to the World Health Organization (World Health Organization, 2018), mental health is "a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community." Intrapersonal relationships, biological factors, life experiences such as trauma or abuse, family history of mental health problems, and a variety of other circumstances may all negatively influence people's mental health (MentalHealth.gov, 2022).

Taking care of one's mental health ensures that one's capacity to enjoy life is retained and allows individuals to cope with life's difficulties and to make meaningful contributions to their communities (MentalHealth.gov, 2022). Unfortunately, some people neglect care of their mental health due to stigma. Mental health stigmatization is a problem all over the world (Corrigan, 2004; Pescosolido et al., 2008). The purpose of this study was to explore variables that might affect degrees of mental health stigma (such as locus of control and socioeconomic status), as well as to compare attitudes toward mental health and help seeking between two cultures: Japan and the United States.

Attitude Towards Mental Illness

According to HealthyPeople.gov (2020), "Mental disorders are among the most common causes of disability. The resulting disease burden of mental illness is among the highest of all diseases. In any given year, an estimated 18.1% (43.6 million) of U.S. adults ages 18 years or older suffered from any mental illness and 4.2% (9.8 million) suffered from a seriously debilitating mental illness." Despite the pervasive nature of mental illness, the World Health Organization revealed that stigma, discrimination, and neglect of mental health all contributed to prevent care and treatment for people affected by mental illness (World Health Organization, 2018). The reduction of the public health burden of mental illness begins with addressing stigma. Mental health stigma is not just a problem in the United States. For example, participants in a Japanese survey on public

attitudes of mental illness revealed the idea that mental disorders are treatable, yet stigma towards mental illness remained rather prevalent (Kasahara-Kiritani et al., 2018).

There are many factors which may mediate or moderate individual attitudes toward mental illness; this study focused on four: stigma, locus of control, socioeconomic status (SES), and culture. These factors were the predictor variables in this study, with willingness to seek professional help as the outcome variable. Stigma, locus of control, and SES can be more fully understood with a cultural lens; we focused on comparisons between the U.S. and Japan.

Stigma

Stigmatization of people with mental illnesses is a major problem all over the world; this stigma can discourage people with mental illnesses from seeking help (Corrigan, 2004; Pescosolido et al., 2008). That said, recent research indicated a considerable reduction (at least 10%) in public stigma toward depression in the United States over the last 25 years, likely due to changing cultural norms in recent generations (Pescosolido et al., 2021). In short, older generations have more conservative views about mental illness, while millennial generations are more progressive. This trend has been occurring in the U.S. for quite some time, with positive change being documented in studies comparing generational perceptions starting in 1950 (Phelan et al., 2000).

In comparison to other industrialized countries, there is evidence that stigma-related attitudes toward people with mental illness remain quite high in Japan (Ando et al., 2013; Follmer & Jones, 2018; Griffiths et al., 2006; Kudva et al., 2020; Naganuma et al., 2006; Zhang et al., 2020). Around 80% of people in Japan diagnosed with a mental condition based on the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) did not obtain any mental health care in the previous year (Naganuma et al., 2006). In some Asian cultures (including Japan), psychological suffering is generally considered a diagnosis that connotes personal weakness and is therefore often concealed from others (Munakata, 1986; Ng, 1997). The "weakness" might be associated with psychological faults (such as lack of resolve or low self-control) or sociomoral issues (such as a breakdown of family structure). Historically, patients and family members faced social prejudice in areas such as marriage, business, and education (Samuma, 1978).

While the research cited above found commonalities across several Asian nations in terms of culture, other scholars note differences. For example, five studies comparing mental health stigma in Japan to other nations (such as China and Taiwan) found varying degrees of stigma—with Japan in the middle range (Griffith et al., 2006; Haraguchi et al., 2009; Jorm et al., 2005; Kurumatani et al., 2004; Nakane et al., 2005). The variation was moderated by several factors such as whether medical and psychological care are socialized, providing easier access to general practitioners or social workers. Stigma within a given nation may also be tied to average education level of citizens, including specifically health literacy education (Ishige & Hayashi, 2005).

Furthermore, the unique history and essence of Japanese society may explain why Japanese people have frequently displayed stigmatizing attitudes toward mental illness. According to Furnham and Murao (2000), it was once considered taboo to discuss mental illness in public, and until recently family members were responsible for the care of those with mental illnesses. Japanese people have historically been reticent to reveal their genuine thoughts in public, preferring to present beliefs and actions that will be accepted by the public majority. They generally prefer not to stick out as being different from others, valuing conformity to the group over individual needs (Naito, 1992; Rasiban & Hardianti, 2022; Schmidt-Petri et al., 2022). Japanese culture also highly values personal control and willpower, and mental health symptoms can be viewed as a lack of mental self-control (Munakata, 1986). If a Japanese person is perceived as losing this willpower, they are socially trained to feel ashamed. Despite the fact that many mental health issues have solutions (e.g., prescription medications), over two-thirds of those who suffer in Japan never seek help from a health professional (Desapriya, 2002). These differences between Japanese and U.S. culture led to the current study's comparison between the two nations, to provide further data regarding the potential effect of culture on attitudes toward help seeking.

Locus of Control

Locus of control refers to how much an individual feels that outcomes in their life are dependent on their own choices and actions (Rotter, 1954, 1966). While typically measured along a range, scores are often categorized as simply "internal" or "external." Individuals with an internal locus of control hold the belief that outcomes are determined by their own actions or personal attributes. Individuals with an external locus of control think that life events are governed by elements beyond their control, such as luck or chance. Several studies (e.g., Shute et al., 1984; Skinner et al., 1998; Weisz & Stipek, 1982) have found that locus of control trends toward internal with age and maturity. Development of locus of control is also connected to

family style and resources, cultural stability, and experiences with effort resulting in reward. In the U.S., many individuals with an internal locus of control were raised in households that emphasized values that align with an internal locus. These families put a priority on work, education, responsibility, and critical thinking. According to Schultz and Schultz (2005), children in the U.S. who grow up in households where their parents are supportive and consistent in punishments develop an internal locus of control. Alternatively, children in the U.S. whose parents have an external locus of control are more prone to ascribe their triumphs and failures to external factors, possibly passing these beliefs on to the next generation (Schneewind, 1955).

In addition to family influence, one's locus of control might be influenced by national culture. According to cross-cultural studies (Fukuzawa & Inamasu, 2020; Hsieh et al., 1969; Morren & Grinstein, 2016), Americans may be more internally oriented than Asians in general. Gillin (1955) has commented on American society's focus on personal productivity, pragmatic ingenuity, independence, and self-reliance. Hsu (1961) emphasized the characteristics of individuality, independence, and self-reliance that are often regarded as traits of the American character. Hsu, on the other hand, characterized Asians (in particular, Chinese people in this study) as believing in luck, chance, and fate significantly more than Americans. There is some evidence to suggest that this is also true of Japanese people. According to Caudill and DeVos (1956), Japanese people are more tightly governed by external constraints than by internal control. According to McGinnies et al. (1974), the fact that Japanese respondents are more disposed to subscribe to external control appears congruent with the structure of Japanese society, where there appears to be less potential for social and professional mobility.

A study on locus of control and its influence on subjective well-being revealed that higher levels of externality result in lower levels of well-being (April et al., 2012). This finding builds on prior research (Morrison et al., 1994), which revealed that belief in personal control (or internal locus of control) predicted perceiving mental patients as comparable to "normal" people, differing only in degree but not in kind. Internal locus of control appears to be associated with higher well-being as well as lesser stigmatization of others who have been diagnosed with a mental illness.

When it comes to help seeking for mental illness, two hypotheses seemed potentially valid. On one hand, people with an internal locus of control might perceive that mental illness is controllable with enough willpower and discipline; therefore, seeking outside help would not be needed. On the other hand, people with an internal locus of control have higher well-being and lower stigma according to past research (April et al., 2012), both of which might lead to more help seeking for mental illness. In this study we hypothesized the former (higher internal locus would be associated with less help seeking), due to the emphasis on values such as independence and self-reliance in people with high levels of internal locus of control.

Socioeconomic Status

Socioeconomic status (SES) is described as an individual's position on a social-economic scale that takes into account factors such as education, income, occupation, location of residence, and, in certain communities, heritage and religion (APA, 2022). A number of surveys (Bhavsar et al., 2014; Cechnicki et al., 2011; Corrigan & Watson, 2007; Hansson et al., 2016; Robinson & Henderson, 2018; Wang et al., 2007) have discovered that those with lower SES hold more stigmatizing opinions on mental health. This may intensify the experience of mental illness for people in these groups, who also have a greater prevalence of mental illness (McManus et al., 2016). According to a number of studies, treatment response differs by SES level. Cohen et al. (2008), for example, found that inhabitants of middle- and high-income census tracts were more likely to react to late-life depression therapy and less likely to express suicidal ideation than residents of low-income census tracts. Jakubovski and Bloch (2014) discovered that other markers of low socioeconomic position, such as low income, education, and unemployment predicted poor responses to treatment for major depressive disorder.

The relationship between SES and mental health stigma is unclear, however, and may be further complicated by nation and/or culture. A research study conducted inside a Buraku area of Nishinari ward in Japan—known as a lower SES region—discovered that the unfavorable effect of geographically-based discrimination on mental health was larger among the highly educated than among the less educated in a stratified analysis (Tabuchi et al., 2012). In Japan, a culture which historically values outward-facing status, high-SES individuals may have more resources to seek help, particularly if they live in urban areas where professionals (e.g., doctors, psychologists) are available. However, this trend might contribute to the stereotype that lower-SES citizens are less likely to seek help for mental illnesses, potentially out of choice (Poore et al., 2002). These social judgments seem to be more exaggerated in the U.S. than in Japan (Hanibuchi et al.,

2012; Kagamimori et al., 2009), although further research seems warranted.

Willingness To Seek Professional Help

Despite the stigma, seeking professional help to decrease symptoms of mental illness is beneficial (MentalHealth.gov, 2022). This means it is important to understand how the variables described above, when combined with cultural influence, make people less likely to seek help. Over half of adults with mental illnesses in the United States do not receive treatment, and 24.7 percent of adults with mental illnesses in 2019 reported an unmet treatment need (Mental Health America, n.d.). There are also significant differences in mental health treatment for adolescents of color, with White youth being the most likely to obtain therapy and Asian-American youth being the least likely to receive treatment (Mental Health America, n.d.), potentially reflecting attitudes from subcultures.

In Japan, there is a similar problem with underuse of professional psychological and psychiatric treatment (e.g., Follmer & Jones, 2018; Furukawa et al., 2000; Naito et al., 2020; Tajima, 2001). According to Munakata (1986), the societal expectation in Japanese culture is that people with diseases supposedly linked with a lack of mental or behavioral self-control will be supervised or cared for privately, by their family. As a result, mental illness is not seen as requiring professional medical attention.

Researchers have investigated a number of factors that might be linked to seeking help in order to better understand how people use psychological services. The attitudes of people about obtaining professional psychological help are one such influence. In the United States, several studies have investigated the nature of attitudes about getting psychiatric care (many of which are cited above), but there have been few in Japan—perhaps because seeking treatment for personal difficulties is traditionally seen as bringing dishonor to the family (Braun & Browne, 1998). According to Fukuhara (1986), Japanese college students suffering from psychological issues sought aid from friends and had unfavorable opinions regarding counseling. Negative attitudes regarding obtaining professional psychological help might also be linked to a lack of counseling information as well as a cultural stigma connected with self-disclosure (Mojaverian et al., 2013).

Hypotheses

The primary goal of this study was to explore if mental health stigma, locus of control, and SES predict an individual's attitude toward mental health and desire to seek professional help if needed. We also explored whether these variables differed by culture. We hypothesized that (1) higher mental illness stigma, higher internal locus of control, and lower SES would be associated with less likelihood of seeking professional help for mental illnesses and that (2) these associations would show different patterns in the U.S. versus in Japan.

Method

Participants

A total of 274 college students (130 men, 139 women, 5 others) participated. All were university students; 144 were from a midwestern U.S. university and 130 were from a rural university in Japan. Each university has about the same number of students on the relevant campus (a little fewer than 1000) and both are located in small, rural areas with towns of equivalent size (between 10,000-15,000 residents). See Table 1 for a summary of the demographics in each sample.

Table 1
Demographics by Country

	U.S.	Japan
	Gender	
Men	43.75%	51.94%
Women	54.86%	46.51%
Other	1.39%	1.55%
	Race	
White	81.25%	0%
Black	4.17%	0%
Hispanic	11.18%	0%
Asian	0%	100%
Other	2.78%	0%
	Age	
	M = 19.49	M = 19.17
	SD = 1.17	SD = 1.08

Measures

Rotter's (1966) scale was used to determine locus of control orientation. This is a self-report scale with 29 items, six of which are filler items. Filler items are often used in self-report surveys as a way to mask the purpose of the scale, to avoid demand characteristics in which participants attempt to manipulate their answers to either make themselves look more socially desirable or to answer in ways they think will please the research team (Rotter, 1966). Responses are in forced-choice format where participants have to choose between option A or option B. For example, (A), "In my case getting what I want has little or nothing to do with luck" (indicating an internal locus of control) versus (B), "Many times we might just as well decide what to do by flipping a coin" (indicating an external locus of control). An example filler item is (A), "There is too much emphasis on athletics in

high school" versus (B), "Team sports are an excellent way to build character." All answers connected to external locus of control receive one point, whereas those related to internal locus of control receive zero points. Composite scores can vary from 0-23, with higher scores indicating more of an external locus.

A modified version of the Kuppuswamy scale (Saleem & Jan, 2021) measured SES. It includes three broad domains of SES: occupation, total family income, and education. Items were modified to be in local currency (either USD or Japanese Yen) and to reflect modern typical salaries. For each domain, participants indicated their family history on a range from 1-6, with higher numbers indicating more education, status at work, and income. The composite SES score was a sum of the three responses, with a possible range from 3-21; higher scores indicate higher SES (Saleem & Jan, 2021). Internal consistency was good, $\alpha = .63$.

Stigma was measured using the Stigma Scale for Receiving Professional Psychological Help (Komiya et al., 2000). It consists of five items measuring one's perceived stigma about mental health treatment, such as, "It is a sign of personal weakness or inadequacy to see a psychologist for emotional or interpersonal problems." Responses for each range from 0 (*Disagree*) to 3 (*Agree*). Responses are averaged, leading to a possible range from 0-3, with higher scores indicating greater perception of stigma associated with receiving psychological treatment. Internal consistency was good, $\alpha = .62$.

Willingness to seek help was measured using the revised Attitudes Toward Seeking Professional Psychological Help Scale – Short Form (Fischer and Farina, 1995). It consists of 10 items, five of which are reverse scored. Participants read statements such as, "A person coping without professional help is admirable" and indicated their degree of agreement using a 4-point scale ranging from 1 (*Disagree*) to 4 (*Agree*). After reverse scoring, items ratings were averaged to create a composite score with a possible range from 1-4, where higher scores indicate more positive attitudes and willingness to seeking professional help. Internal consistency was good, $\alpha = .81$.

Procedure

In the United States, the English version of the scales was utilized by the first and second authors. The third author of this study is lecturer at a western university in Japan who is proficient in both English and Japanese. She produced the Japanese translation, which was checked and verified by a third party. Both groups of participants used an online software program (hosted by PsychData.com) to complete the questionnaire materials in their language. Participants from each university were recruited in classes taught by professors who had given permission for the research team to approach their students. Depending on the specific professor's preference, some students were directly sent emails with initial information and a link to the study's consent form. Other students heard about the study from a researcher who visited classes and spoke to the students as a group, then passed around sign-up sheets for anyone who wished to receive the email with the same link.

Either way, the link led students to the electronic survey on PsychData.com. Before beginning the survey questions, participants read the informed consent information and had to click a link to proceed; they could choose to stop participation at any time or skip any questions. They first provided demographic information, then completed all scales in the order described above. All participants were given the chance to win one of four $50 Amazon gift cards, and some U.S. participants also received extra credit. In order to preserve their anonymity, at the end of the survey students who wanted extra credit or to be entered in the lottery could click on a link taking them to a second survey where they could provide their name and contact information; this information was kept separate from the answers they provided on the research survey itself. The U.S. university's IRB approved this study and the Japanese university's administration provided equivalent letters of approval.

Results

Correlations

Hypothesis 1 was that higher mental illness stigma, higher internal locus of control, and lower SES would be associated with less likelihood of seeking professional help for mental illnesses. For exploratory purposes, we also calculated a correlation to test the association between gender and help seeking by dummy-coding participants with 1 for men and 2 for women. Three sets of correlations were completed: (1) for all participants combined, (2) for just participants in the U.S., and (3) for just participants in Japan.

Across all participants, professional help seeking was negatively correlated with mental illness stigma, $r(274) = -.20$, $p < .001$ (as predicted), but was positively correlated with external locus of control (in the opposite direction of our hypothesis), $r(274) = .22$, $p < .001$. It was not correlated with SES, $r(273) = -.01$, $p = .85$. We also found that help seeking was correlated with gender; women were more likely to indicate wiliness to seek help than men were, $r(273) = .30$, $p < .001$. Hypothesis 1 was therefore partially supported: Help seeking was more likely in individuals who have a low mental health stigma (as predicted). However, it was not correlated with SES

and, surprisingly, was positively correlated with higher external locus of control. Help seeking was also more likely in women.

The results split by country are shown in Table 2; numbers above the diagonal are for the U.S. sample and numbers below the diagonal are for the Japan sample. As shown in the first row, the U.S. sample showed the same pattern as that in all participants: help seeking was negatively correlated with stigma [$r(144) = -0.21$, $p = .01$] and positively correlated with higher external locus of control [$r(144) = .28$, $p < .001$) and with being a woman [$r(144) = .47$, $p < .001$]. However, the pattern was different in Japan. As shown in the first column of Table 2, the only variable significantly correlated with help seeking in those participants was mental illness stigma, $r(130) = -.30$, $p < .001$. All other correlations were not significant (all ps > .11). The differential pattern of results in the two countries supported Hypothesis 2.

Direct Country Comparisons

It is possible different patterns of correlations were found because base levels of help seeking differed by country. To check for this possibility, a series of *t*-tests compared the U.S. and Japanese samples on all variables of interest (see Table 3). Likelihood of help seeking was equivalent in the U.S. and Japanese samples, $t(272) = .83$, $p = .408$. That said, the other variables did have significant differences by country. People in the U.S. had significantly higher SES [$t(254) = 8.69$, $p < .001$] and higher stigma toward mental illness [$t(272) = 7.76$, $p < .001$], as well as significantly lower external locus of control [$t(272) = -2.21$, $p = .028$].

Regression

Across the entire sample, stigma, locus of control, and gender were all associated with different levels of help seeking. But as shown in Table 2, there are also correlations among the predictor variables in the U.S., with women making significantly less than men and with significantly higher scores on external locus of control. Therefore, a regression analysis was completed just for U.S. participants in which stigma, locus of control, and gender were all tested as simultaneous predictors of help seeking. Locus of control dropped out of significance ($p = .07$), while stigma ($p = .004$) and gender ($p < .001$) remained significant.

Table 2

Correlations Among Variables, By Country

Variable	1	2	3	4	5
1. Help Seeking	--	-.09	.28**	-.21*	.47**
2. SES	.07	--	-.10	.07	-.12
3. Locus of Control	.14	.00	--	.00	.34**
4. Stigma	-.30**	-.06	.08	--	.00
5. Gender	.08	.07	.05	-0.05	--

Note. Results from the U.S. sample are shown above the diagonal; results from the Japanese sample are shown below the diagonal. Degrees of freedom in the U.S. sample are always 144; degrees of freedom in the Japan sample range from 128-130.

*indicates $p < .05$; ** indicates $p < .01$.

Table 3

Comparisons by Country

	U.S. Sample		Japanese Sample			
	M	*SD*	*M*	*SD*	*t*	*p*
SES	11.71	2.76	9.24	1.89	8.69	< .001
LOC	12.58	3.81	13.44	2.60	-2.21	.028
Stigma	2.05	0.53	1.56	0.53	7.76	< .001
Help seeking	2.46	0.53	2.41	0.45	0.83	0.408

Note. LOC = Locus of control.

Discussion

This study explored if culture-based mental health stigma, locus of control, and socioeconomic status are substantially linked to an individual's attitude toward mental health and desire to seek professional help. Across all participants, professional help seeking was negatively correlated with mental illness stigma (as hypothesized) and positively correlated with an external locus of control (in the opposite direction of the hypothesis). However, it was not correlated with SES. While not specifically hypothesized, help seeking was also correlated with gender; women were more likely to indicate a willingness to seek help than men were. Hypothesis 2 was supported by the differential patterns of results in the two countries: The U.S. sample showed the same pattern as all participants; however, the only variable significantly correlated with help seeking in the Japanese sample was mental illness stigma.

These findings are similar to the findings of numerous previous studies highlighting the importance of mental health stigma regarding willingness to seek help. For example, Eisenberg et al. (2009) discovered that perceived stigma was a substantial barrier to getting care for mental health problems among college students in the United States. Similarly, Corrigan and Watson (2002) discovered that perceived stigma was a strong predictor of help seeking intentions among patients with mental illnesses.

While we expected help seeking to be associated with higher internal locus of control, the opposite occurred (at least, in the U.S. sample). Past work (e.g., April et al., 2012) has found that internal locus of control predicts greater wellbeing and less mental illness stigma. However, there are reasonable explanations for the opposite effect, as found here. Mackenzie et al. (2004) discovered that those with an external locus of control were more likely to seek care for mental health difficulties than those with an internal locus of control. Perhaps those with an external locus perceive that while they, personally, cannot control their mental health, it may be possible that other resources – such as a professional counselor or medication – may be effective, motivating them to seek help. Further research is clearly needed to fully understand the role of locus of control in this context, given the mixed results of studies so far.

The finding that help seeking was not associated with socioeconomic status fails to support some earlier research. For example, Mojtabai (2010) discovered that those with higher income and education levels were more likely to obtain treatment for mental health problems than those with lower income and education levels. However, it is possible that the sample used in the current study was not representative of the broader population, which may explain this discrepancy. The sample in this study did not include particularly high or low SES participants, therefore missing these individuals (i.e., a restricted range). More diversity of SES would be informative to further explore these connections.

The finding that women are more willing to seek help for mental health issues than men is consistent with previous research. For example, a study by Vogel et al. (2007) found that men were more likely to endorse stigmatizing attitudes toward mental illness and less likely to seek help for mental health issues than women. The differential pattern of results between the U.S. and Japanese samples in the current study is also interesting. The fact that only mental illness stigma was significantly correlated with help seeking in the Japanese sample may reflect cultural differences in how mental illness is perceived and stigmatized in Japan compared to the United States (in other words, in Japan national culture seemed to be more predictive than gender-based culture or any of the other constructs tested in this study).

Importance of Stigma

Taking on mental illness stigma is critical for improving mental health and encouraging help-seeking behavior. Research has demonstrated that stigma may result in embarrassment, shame, and fear of discrimination, which can deter people from getting treatment (Clement et al., 2015; Corrigan et al., 2002; Vogel et al., 2006). As shown by the current study's findings, stigma toward mental illness is associated with less help-seeking behavior, making it a significant factor. While causal implications cannot be made with correlational data, it is possible that the stigma associated with mental illness may impede getting care, harming one's mental health. Those who do not seek assistance cannot get the support they need to manage their symptoms and enhance their well-being, which can have significant consequences for mental health outcomes. Society and/or individuals might take numerous approaches to reduce stigma in the context of mental health.

To start, awareness and education about mental health can be increased, to lessen the misunderstandings and misinformation that frequently fuel stigmatization. This may entail efforts designed to clear up misconceptions and promote awareness of the causes and symptoms of mental illness. Second, more welcoming and encouraging settings might be created, encouraging individuals to ask for assistance when needed. This entails setting up places where people can discuss mental health difficulties without worrying about prejudice or judgment.

Finally, the media and popular culture can support accurate depictions of mental illness. This might entail encouraging sensitive and realistic depictions of psychological disorders in television programs, motion pictures, and other forms of media as well as publicizing the experiences of people who have successfully sought care for mental health difficulties. Lowering the stigma associated with mental illness is essential for encouraging behavior that leads to help-seeking and enhancing mental health outcomes. Finally, a more welcoming and encouraging environment can be fostered that encourages individuals to seek assistance, which may positively impact both the well-being of the person and the community by taking action to combat stigma.

Limitations & Strengths

These findings are somewhat consistent with past research on help-seeking behavior and are supported by studies such as those done by Corrigan and Watson (2002) emphasizing the central role of stigma. However, it is critical to address potential sources of bias and threats to internal and statistical validity that may alter the interpretation of these data. One potential cause is selection bias, which arises when participants are not representative of the investigated population—the sample for this study comprised college students from the United States and Japan. The findings may not apply to different populations or age ranges. Also, persons with poor mental health may have been more inclined to decline participation. The study might have included a more varied sample that better represented the larger community to increase the generalizability of the results.

Another possible source of bias is the accuracy of the measurement methods utilized in this study. There may have been measurement errors because self-report measures were used, or the survey questions might not have accurately represented the examined variables. For example, participants may have been more or less likely to report mental health stigma, external locus of control, or willingness to seek help due to social desirability bias or other factors. Future studies might employ various techniques to measure the relevant dimensions, such as interviews or behavioral measurements, to reduce these sources of bias.

The reported study's strengths include its relatively large sample size and use of numerous measures to investigate the association between help-seeking behavior and diverse predictors such as mental illness stigma, external locus of control, and gender. The study also included a cross-cultural approach, comparing data from individuals in the United States and Japan, which can give insight into the cultural characteristics that impact help-seeking behavior.

Future research can build upon this study's foundation by further exploring the questions and patterns of results found here. For example, other studies could use more precise indicators of help-seeking behavior, such as administrative data or medical records. In order to increase the generalizability of the results, future research may also involve a larger, more varied sample of participants, including people from various socioeconomic and age categories and including people from additional cultures and countries. Future research may also look at people's specific assistance-seeking strategies, such as approaching experts, acquaintances, or family members for help as well as distinguishing between people who seek talking forms of therapy versus biological or pharmaceutical treatments. This may provide insight into the specific factors that influence diverse assistance-seeking behaviors, which may also help develop targeted remedies.

The effectiveness of methods for promoting mental and physical health may vary across cultures. In Asian cultural contexts, seeking professional help may not align with the prevalent social interactions and relationships model, but this does not necessarily indicate a problem. By examining the link between seeking social support and seeking professional help and considering how culture influences coping behaviors, we can aim to gain a deeper understanding of and destigmatize the low rates of professional help seeking in Asian cultures (e.g., Fukuhara, 1986).

Implications

The reported findings have several implications for future research, programs, or policies to promote help-seeking behaviors and reduce mental illness stigma. First, the finding that mental illness stigma negatively correlates with help-seeking behavior suggests that interventions that reduce stigma might effectively promote help-seeking among college students (although again, this claim cannot be made without experimental results, due to lack of causal inference). Future research could explore the most effective ways to reduce stigma around mental illness and assess the impact of these interventions on help-seeking behavior. Programs or policies that promote awareness and education about mental health and that foster a supportive and inclusive environment may effectively reduce mental illness stigma and increase help-seeking behavior among college students.

The finding that external locus of control positively correlates with help-seeking behavior suggests that interventions should concentrate on encouraging individuals to attribute their successes and failures to external factors rather than internal factors; this may

help people avoid feeling blame when suffering from mental illness symptoms. Focusing on external factors (e.g., powerful others who can provide help and resources that can change outcomes in the future) might also encourage individuals to reach out to others when they need it, which could additionally promote help-seeking. Future research could also explore the nuances between when internal versus external locus of control will be predictive of mental health stigma and help-seeking when mediated and moderated by other factors beyond those explored in the current study.

Additionally, future research could explore the reasons for the gender differences in help-seeking behavior (we saw in the study that women were more likely to seek help) and develop tailored interventions that address the specific needs of men, women, and other genders. Different patterns of results between the U.S. and Japanese samples highlight the importance of considering cultural differences when designing interventions to promote help-seeking behavior. Future research could explore the cultural factors associated with help-seeking behavior and develop interventions tailored to specific cultural contexts.

Conclusion

Stigma against mental health appears to be a clear predictor of lower likelihood to seek help. The reported findings have important implications for future research, programs, or policies to promote help-seeking behavior and reduce mental illness stigma among college students. By addressing the specific needs and cultural contexts of college students, interventions aimed at promoting help-seeking behavior might impact the mental health and well-being of this population. Future research could also address these limitations by using more precise measurement protocols, adjusting for multiple comparisons, and improving the generalizability of the study. By carefully considering these limitations and working to overcome them, researchers can contribute to a deeper understanding of the similarities and differences between cultures when it comes to seeking help for mental illness.

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How informing and training students in self-compassion affects their academic attitudes following negative feedback

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Abstract – Students can experience significant decrements in wellbeing—including increased mental health problems—during college, which can impact their academic performance (Kaya & Erdem, 2021). A contributor to students' wellbeing is self-compassion (Neff, 2003), so it is important to investigate the relationship between self-compassion and academic success. The current study examined if informing (providing *knowledge*) and training (providing *knowledge and practice*) or neither informing nor training (control) students in self-compassion impacts their academic attitudes (i.e., academic resilience) following the reception of false negative feedback. Participants (N = 90) were randomly assigned to one of three conditions: those in the knowledge condition watched a video on self-compassion, those in the knowledge and practice condition watched the video and completed a self-compassion worksheet, and those in the control condition did neither. Subsequently, students completed an academic assessment—via a reading comprehension test from an SAT practice test—and received either slightly or extremely negative feedback about their performance. Participants then completed measures assessing their self-compassion and academic resilience. Results revealed that participants who received extremely negative feedback, as compared to slightly negative feedback, reported significantly higher levels of self-compassion. Additionally, among participants who provided *slightly negative* feedback, those who were trained (provided *knowledge and practice*) in self-compassion reported more self-compassion than participants in the control condition (who were not informed of nor trained in self-compassion). No effect emerged on students' academic resilience.

Keywords: self-compassion, academic resilience, false negative feedback

According to the American Council on Education, about 33% of college students meet the criteria for a clinically significant mental health problem (e.g., depression, anxiety, eating disorder, self-injury), which translates to nearly seven million students nationwide (Lipson et al., 2019). In addition, the Clay Center for Young Healthy Minds reports that 80% of college students describe feeling overwhelmed with academic life, and 45% report feelings of hopelessness (Glass et al., 2022). Clearly, students experience significant wellbeing-related problems during college, with wellbeing impacting their academic performance (Kaya & Erdem, 2021). One valuable contributor to students' wellbeing and academic performance is self-compassion. Self-compassion involves viewing pain and shortcomings as part of the shared human experience as well as the capacity to speak and think kindly of oneself (Neff, 2003). Because research reveals that self-compassion is associated with adaptive academic motivational patterns, such as viewing academic failures as learning opportunities (Neff et al., 2005), finding ways to promote students' self-compassion should be a focus of ongoing research. Consequently, the current study examines how informing (i.e., providing *knowledge*) and training (i.e., providing *knowledge and practice*) or neither informing nor training (control) students in self-compassion may promote their academic wellbeing. Specifically, the current study examines if informing and training students on self-compassion can promote their academic wellbeing following the delivery of slightly or extremely false negative feedback about their academic performance.

Self-Compassion and Academic Success

Heightened self-compassion has been repeatedly linked with academic success including, but not limited to, the formation and pursuit of more positive achievement-related goals (Arslan, 2016; Breines & Chen, 2012; Martin et al., 2019; Neff et al., 2005) and greater adaptive coping strategies in response to academic failures (Breines & Chen, 2012; Fong and Loi, 2016; Neff et al., 2005). As an example of the connection between self-compassion and academic success, Neff et al. (2005) examined the association between students' self-compassion and their achievement-based academic goals. Using a correlational design, Neff et al. (2005) measured students' self-compassion, mastery goals (i.e., performance approach tendencies that are reflective of their curiosity and the desire to develop new knowledge and skills), and performance-avoidance tendencies (i.e., reflecting individuals' concerns with not looking incompetent or inferior to others). Results revealed that greater levels of self-compassion predicted more performance approach tendencies and less performance avoidance tendencies. These results suggest that self-compassion is meaningfully associated with students' academic motivational patterns, with greater self-compassion being associated with better motivation. In a follow-up study, Neff et al. (2005) examined if students' self-compassion remains a strong predictor of their achievement-based academic goals even when they experience an academic failure (i.e., dissatisfactory midterm grade). Again, using a correlational design, students were asked to complete measures assessing their self-compassion, mastery goals, and performance-avoidance tendencies. Students completed these measures on a class day immediately following the receipt of a dissatisfactory course grade (i.e., failure) on a midterm exam. Results revealed that, even in the context of academic failure, students who reported greater levels of self-compassion also reported more mastery goals and less performance avoidance tendencies. The findings nicely demonstrate how self-compassion affects students' academic achievement goals, even after academic failure.

Although self-compassion has been linked with positive academic goals (Martin et al., 2019; Neff et al., 2005), such work provides little knowledge about if self-compassion can help reduce students' (academically related) distress. Such work was the focus of research by Fong and Loi (2016) who examined the association between self-compassion and students' distress. In the study, distress was operationalized with various measures, including stress, burnout, and depression. Results revealed that higher levels of self-compassion were significantly negatively correlated with all measures of distress. Additionally, self-compassion was shown to mediate the relationship between measures of distress such that, for example, the positive relationship between stress and depression was reduced or eliminated after controlling for the effects of self-compassion. Such results demonstrate that self-compassion may be an important variable in helping students attenuate distress and suggest that efforts to promote self-compassion among students may be a fruitful means to promote their wellbeing.

Knowledge of and Exposure to Self-Compassion

Despite the literature demonstrating the (academic) benefits of self-compassion, many people are not self-compassionate (Chwyl et al., 2021; Neff, 2003). Consequently, researchers have examined various ways to promote individuals' self-compassion. For example, in an experimental study by Chwyl et al. (2021), inducing positive (pleasant)—compared to negative (unpleasant)—beliefs about self-compassion predicted individuals' self-reported levels of self-compassion five to seven days later. Specifically, in the study, Chwyl et al. randomly assigned individuals to read one of two fictitious articles describing how self-compassion either facilitates or hinders personal growth and goal achievement. After at least five days, participants reported their intentions to practice self-compassion. Results revealed that individuals who read about how self-compassion facilitates personal growth and goal achievement reported a greater willingness to engage in self-compassion compared to those who read about how self-compassion hinders personal growth and goal achievement. Such work is consistent with literature (see, for example, Miller & Kelly, 2020) demonstrating that describing the value of self-compassion to individuals and therefore providing them accurate knowledge about self-compassion, may be a valuable strategy for promoting its practice.

Although knowledge of and exposure to self-compassion appear to be important factors promoting individuals' willingness to engage in self-compassion, the strongest method for promoting individuals' use of self-compassion may (arguably) be giving them actual opportunities to engage in—and directly practice—self-compassion. In an effort to do just that, Neff and Germer (2012) conducted a randomized control trial to examine if a self-compassion program could effectively make people more self-compassionate. In the study, participants were randomly assigned to participate (or not) in eight weekly, two-hour, meetings focused on providing individuals knowledge of and practice with self-compassion. The eight meetings provided participants with different information (i.e., knowledge) about self-compassion as

well as opportunities to practice self-compassion (e.g., writing a letter to oneself from the perspective of an ideally compassionate friend). Results revealed that participants in the eight-week program reported significantly higher levels of self-compassion than participants in the control group, with differences maintained at six-month and one-year follow-ups. Such work demonstrates the benefits of providing individuals with both knowledge of and self-compassion practice.

Current Study

It is relatively clear from previous research that self-compassion is linked with many benefits (Neff et al., 2005). Although prior research has demonstrated that individuals who learn about (Chwyl et al., 2021; Neff & Germer, 2012) and practice self-compassion (Neff & Germer, 2012) experience these benefits, we are unaware of a single study that has experimentally examined the relative impact of acquiring knowledge—compared to acquiring knowledge *and* engaging in practice—on individuals' self-compassion tendencies. Consequently, we pursued this question and did so in a sample potentially in need of greater self-compassion: college students. Specifically, the current study examines how informing (i.e., providing *knowledge*) and training (i.e., providing *knowledge and practice*) or neither informing nor training (control) college students on self-compassion affects their self-compassion and academic resilience following the delivery of false negative feedback about their academic performance. It was hypothesized that students who learn (i.e., obtain knowledge) about *and* practice self-compassion will report higher degrees of self-compassion and greater academic resilience compared to students who only learn about self-compassion (or those who do neither learn nor practice; control). We expected this pattern of results to emerge particularly when feedback on academic performance was slight, compared to extremely, negative.

Method

Participants

A total of 90 undergraduate students at a mid-sized private university in the Midwest (17 men, 67 women, 4 non-binary, and 2 chose not to identify) participated in the study. Participants were recruited through the School of Psychology's participant pool in exchange for 0.5 hours of research credit to fulfill a course requirement. Participants ranged in age from 18 to 26 (M = 20.12, SD = 1.15) years, with the majority identifying as White/Caucasian (n = 72; 80%) and fewer identifying as Hispanic or Latino/a (n = 6; 6.7%), biracial or multiracial (n = 4; 4.4%), Asian (n = 2; 2.2%), Black or African American (n = 2; 2.2%), or prefer not to respond (n = 4; 4.4%). All participants provided informed consent before taking part in the study, which was conducted online using Qualtrics survey software and, therefore, completed at a time and location convenient to them.

Design

The study was conducted as a 3 (Self-Compassion Skills: Knowledge, Knowledge and Practice, and Control) x 2 (SAT False Negative Feedback: Slightly Negative, Extremely Negative) between-subjects experimental design. The dependent variables were the students' self-compassion and academic resilience.

Materials and Measures

Self-Compassion Intervention

An educational video (My Best Self 101, 2019; https://www.youtube.com/watch?v=iIa-A9mZHAE) was used to inform (i.e., provide *knowledge* to) participants on the construct of self-compassion, which involves the practice of extending kindness towards oneself in times of suffering or failure. The video describes how individuals are inherently deserving of self-kindness, and how those who practice self-kindness are better able to overcome barriers and thrive. In addition to the video, some participants were also trained (i.e., provided *practice*) in self-compassion by completing a 10-question worksheet, developed for the current study by translating an audio guide ("General Self-Compassion Break"; https://self-compassion.org/category/exercises/#guided-meditations; Neff, n.d;) into a worksheet. Specifically, the audio guide contains reflective prompts—which encourage the practice of self-compassion—that were translated into the worksheet (see Appendix A). For example, in the audio guide, listeners are asked to recall a situation when they suffered or struggled. For the current study, this prompt was adapted to ask participants to recall a situation when they suffered or struggled academically.

SAT Assessment and False Feedback

To presumably measure participants' academic performance, they completed a reading comprehension test from an SAT practice test (College Board SAT Practice Test 1, 2016). Specifically, the reading comprehension test required participants to read a short passage and answer 11 multiple-choice questions related to their understanding of the content. Participants' actual performance was neither evaluated nor described to them, rather they were provided false feedback describing their performance as either "slightly below average" or "extremely below average" relative to peers at the university (see Appendix B). The false feedback was consistent with information provided to participants in

prior research utilizing false feedback on academic work (Saeed & Sonnentag, 2018).

Self-Compassion

Raes et al.'s (2011) 12-item Self-Compassion Short Form (SCS-SF) was used to measure participants' ability to view suffering as a part of the shared human experience as well as their capacity to speak and think kindly about themselves. Participants responded to the items using a 5-point Likert scale ranging from 1 (*almost never*) to 5 (*almost always*). Example items include "When I fail at something important to me I become consumed by feelings of inadequacy" (reverse-scored) and "I try to see my failings as part of the human condition." After reverse scoring six negatively keyed items, scores across all items were averaged, with higher scores reflecting greater self-compassion.

Academic Resilience

An adapted version of Ricketts et al.'s (2017) measure of Academic Resilience in Mathematics was used to assess students' perceptions of their academic resilience in college. The measure was adapted to reflect *general* academic resilience as opposed to resilience *in* mathematics. For example, the item "I'm good at dealing with setbacks (e.g., bad mark, negative feedback on my worth) in math" was revised to read "I'm good at dealing with setbacks (e.g., bad marks, negative feedback on my worth) in school." The measure includes nine items rated on a Likert scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). Scores were averaged, with higher scores reflecting higher levels of academic resilience.

Procedure

Before data collection, IRB approval was obtained. The study was conducted online using Qualtrics survey software. After volunteering to participate via the School of Psychology's electronic participant pool system, Sona Systems, participants clicked a URL directing them to complete an informed consent form in Qualtrics. After providing informed consent, participants were randomly assigned—using settings available in Qualtrics—to one of six conditions where they were informed (i.e., provided *knowledge*), trained (provided *knowledge* and *practice*), or neither informed nor trained (control) in self-compassion followed by receiving false feedback that was either slightly or extremely negative feedback about their performance on a reading comprehension test from an SAT practice test. Specifically, participants either viewed a video promoting their knowledge of self-compassion, viewed the video *and* completed a 10-question self-compassion worksheet, or neither viewed the video nor completed the worksheet (control condition). Next, participants completed the reading comprehension section on the College Board's SAT Practice Test 1, which included 11 questions serving to assess their academic performance. Upon completion of the reading comprehension assessment, participants received negative feedback describing their performance as slightly below or extremely below average relative to peers at the university. Participants then completed measures assessing their Self-Compassion and Academic Resilience. Finally, participants reported demographic information, were thanked, and debriefed, including informing participants of the false feedback.

Results

To test the hypotheses that training (providing *knowledge* and *practice*) of self-compassion would be especially helpful in promoting students' use of self-compassion—as well as their resiliency in response to adverse academic feedback (i.e., academic resilience)—after receiving extremely negative feedback about academic performance, separate 3 (Self-Compassion: Knowledge, Knowledge and Practice, Control) x 2 (False Feedback: Slightly Below Average, Extremely Below Average) between-subjects analysis of variance (ANOVA) were conducted.

Self-Compassion

The main effect of the Self-Compassion condition was not significant, revealing no differences in students' self-reported self-compassion after being informed (provided knowledge; $M = 2.52$, $SD = .53$), trained (provided knowledge and practice; $M = 2.75$, $SD = .59$), or neither informed nor trained (control; $M = 2.59$, $SD = .74$), $F(2, 90) = 1.20$, $p = .31$. However, the main effect of the False Feedback was significant, revealing that students who received extremely below average feedback ($M = 2.75$, $SD = .67$) reported higher levels of self-compassion than students who received slightly below average feedback ($M = 2.51$, $SD = .56$), $F(1, 90) = 4.12$, $p = .05$. Finally, the interaction between the Self-Compassion condition and False Feedback was significant, $F(2, 90) = 3.62$, $p = .03$ (see Table 1). Post hoc simple effects tests revealed that when participants were provided *slightly negative* feedback, those who were trained (provided *knowledge and practice*) reported more self-compassion than participants in the control condition (who were neither informed of nor trained in self-compassion). In contrast, when participants were provided *extremely negative* feedback, participants' self-reported levels of self-compassion did not differ whether they were or were not informed of or trained in self-compassion (i.e., no differences between *knowledge, knowledge and practice,* or control).

Table 1
Means (and Standard Deviations) Associated with the Significant Interaction Between Self-Compassion Condition and False Feedback on Self-Reported Levels of Self-Compassion

Measure	Knowledge & Practice of Self-Compassion	Knowledge of Self-Compassion	No Knowledge of Self-Compassion
Slightly Negative Feedback	2.69 (.59)	2.57 (.53)	2.22 (.44)
Extremely Negative Feedback	2.81 (.61)	2.48 (.54)	2.96 (.81)

Table 2
Means (and Standard Deviations) Associated with the Non-Significant Interaction Between Self-Compassion Condition and False Feedback on Academic Resilience

Measure	Knowledge & Practice of Self-Compassion	Knowledge of Self-Compassion	No Knowledge of Self-Compassion
Slightly Negative Feedback	3.91 (0.66)	4.07 (0.60)	3.79 (0.54)
Extremely Negative Feedback	4.29 (0.80)	3.93 (0.82)	4.03 (0.54)

Academic Resilience

The main effect of Self-Compassion condition was not significant, revealing no differences in students' self-reported academic resilience whether they were informed (provided *knowledge; M* = 3.99, *SD* = 0.72), trained (provided knowledge and practice; *M* = 4.10, *SD* = 0.75) or neither informed nor trained (control; *M* = 3.91, *SD* = 0.55), $F(2, 84) = 0.60$, $p = .55$. The main effect of the False Feedback was also not significant, revealing that students who received feedback describing their performance as extremely negative (*M* = 4.09, *SD* = 0.74) did not report greater academic resilience than students who received feedback describing their performance as slightly below average (*M* = 3.92, *SD* = 0.61), $F(1, 84) = 1.21$, $p = .27$. Finally, the interaction between the Self-Compassion condition and False Feedback was not significant, $F(2, 84) = 1.21$, $p = .30$ (see Table 2).

Discussion

Extending previous research on the role of self-compassion on academic wellbeing, the current study examined if informing (providing *knowledge*) and training (providing *knowledge and practice*) or neither informing nor training (control) students in self-compassion impacts their self-compassion and academic resilience following the reception of false negative feedback. Results revealed that participants who received extremely negative feedback on their academic performance, as compared to those receiving slightly negative feedback, reported significantly higher levels of self-compassion. Additionally, among participants who received slightly negative feedback, those who were trained (provided *knowledge and practice*) in self-compassion reported more self-compassion than those who were neither informed nor trained on self-compassion (control). These findings provide important directions for future research on the topic.

One of the primary purposes of the current study was to examine if students who received slightly negative feedback about their academic performance would report higher levels of self-compassion and academic resilience than those who received extremely negative feedback. Contrary to prediction, students who received *extremely negative* feedback reported higher levels of self-compassion—but this effect did not extend to higher levels of academic resilience—compared to students who received *slightly negative* feedback. Although students' greater self-compassion in response to extremely negative feedback was surprising, it may be that self-compassion is less necessary in situations where performance is relatively adequate (i.e., slightly below

average performance in the current study). Rather, heightened self-compassion was reported when it was likely needed (i.e., when learning performance was extremely below average). Such findings suggest that students may know *when* to have self-compassion, which aligns with prior research (see Fong & Loi, 2016) revealing that students who report high degrees of academic distress also report high degrees of self-compassion. Future research could provide students with a broader range of academic feedback (e.g., extremely above average, slightly above average, average, slightly below average, and extremely below average) to understand if they truly delineate when to practice self-compassion.

If students do delineate when to practice self-compassion, it is curious why those who received *extremely negative* feedback did not report higher levels of self-compassion after being informed about (i.e., provided knowledge) or informed and trained (i.e., provided knowledge and practice) compared to control. One possible explanation is that when students receive *extremely* negative feedback, a single prior opportunity to learn about (i.e., be provided knowledge) or practice self-compassion is not enough to affect their wellbeing. This idea has merit because prior research (see Kaya & Erdem, 2021) suggests that when students experience a significant academic failure, their ability to think positively about themselves may be compromised. Future research might examine the boundaries of this idea, such that repeated training in self-compassion—rather than the single instance of training that was offered in the current study—may be more likely to impact students' wellbeing following severe negative feedback. Such a suggestion is consistent with research demonstrating the success of longer training—eight weekly meetings—on individuals' self-compassion (Neff & Germer, 2012).

One of the major findings in the current study revealed that among students who were provided *slightly negative* feedback, those who were trained (provided *knowledge and practice*) reported more self-compassion than students in the control condition (who were neither informed of nor trained in self-compassion). This finding is consistent with previous literature describing that exposure to self-compassion, through information and training, can increase individuals' self-compassion levels (Miller & Kelly 2020). Interestingly, however, the current study revealed that *only* informing students about self-compassion (i.e., providing only knowledge and no practice) was not enough to increase their self-compassion levels compared to neither informing nor training (control) them on self-compassion. Consequently, it appears that the combination of knowledge *and* practice—rather than knowledge alone—may most readily encourage students to use self-compassion in response to difficult situations. Such a conclusion is consistent with Neff and Germer's (2012) research, where a mindfulness program including both knowledge and practice increased individuals' self-compassion compared to control. Although the finding is consistent with prior work, it is possible that participants "took the hint" from the experimental materials (i.e., practice being self-compassionate) that they were expected to evince self-compassionate attitudes. Future studies may want to rule out such a possibility.

Although the current study revealed that students who received slightly negative feedback about their academic performance reported higher levels of self-compassion than those who received extremely negative feedback, the false feedback did not affect the students' self-reported academic resilience. One explanation may be that students' performance on the SAT assessment—as delivered through a research opportunity in the current study—lacked mundane realism and did not truly have implications for their future academic success (as a "real" SAT might). Because academic resilience is a quality that helps students overcome challenges that thwart their academic goals, the lack of real implications for poor performance on the SAT may have made it unlikely that they needed academic resilience.

Limitations and Future Directions

Although there are many strengths of the current study, particularly the experimental nature of the work, the limitations provide meaningful directions for future research. One of the primary limitations of the current study may be the believability of the false negative feedback provided to participants. Despite using procedures from prior research (see Sonnentag & Saeed, 2018), it is possible that students simply did not believe the feedback, particularly when their performance was described as extremely below average (i.e., severe negative feedback). Future research should assess the believability of false academic feedback or consider the contexts—such as actual classroom assessments—that make such feedback more believable (and, arguably, valuable to students).

A second limitation worthy of noting reflects the current study's sample, which involved a cross-sectional group of students recruited via convenience sampling procedures from a single mid-sized private university. Although it is important to study self-compassion on a college campus, the results may not be generalizable beyond college students. Future research should use a representative sampling strategy to understand the extent

to which providing students' knowledge or knowledge and practice in self-compassion can impact their academic attitudes. Such research may be particularly valuable if performed longitudinally, to examine the role of knowledge and practice in self-compassion on students' academic performance and persistence across time.

Conclusion

Overall, the current study examined if informing (providing *knowledge*) and training (providing *knowledge and practice*) or neither informing nor training (control) students in self-compassion impacts their academic attitudes following the reception of false negative feedback. Results revealed that participants who received extremely negative feedback on their academic performance, as compared to those receiving slightly negative feedback, reported significantly higher levels of self-compassion. Additionally, among participants who received slightly negative feedback, those who were trained (provided *knowledge and practice*) in self-compassion reported more self-compassion than those who were neither informed nor trained on self-compassion (control). Although the results were not as hypothesized, they have implications for research on self-compassion and may help inform directions for future research. What is clear is that research on self-compassion among college students should continue as the four-year college experience tends to be a time when individuals experience significant decrements in wellbeing, including increased mental health problems (Kaya & Erdem, 2021).

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Appendix A

Self-Compassion Worksheet

Recall and think about a time when you have suffered or struggled academically. Try your best to bring this situation to life.

1. Please write about this academic situation in detail.
2. How does this academic situation make you feel about yourself?
3. Please type the following phrase. “This is a moment of struggle. This is really hard right now.”
4. What does this phrase mean to you in the context of the academic situation?
5. Please type the following phrase. “Struggling is a part of life. It's okay to feel this way.”
6. What does this phrase mean to you in the context of the academic situation?
7. Please type the following phrase. “May I be kind to myself at this moment.”
8. How can you be kind to yourself in the context of the academic situation?
9. What would you say to a friend who was going through the same situation as you? Please do not use the friend’s real name in this response.
10. Please write down how you feel at this exact moment.

Appendix B

False Feedback

Below is information about your performance on the academic assessment. Please, very carefully, review the feedback on your performance.

Note: Participants were randomly assigned to see *one* of the following feedback conditions. Underlined text (see below) was used to draw participants' attention to the information.

Slightly Below Average Academic Ability

Academic Competence Test Score: students at Xavier University completed the SAT Test Questions.

Your performance ranked: **SLIGHTLY BELOW AVERAGE.**

Your performance on the academic competence test indicates that your <u>academic proficiency is slightly below average at Xavier University.</u>

Extremely Below Average Academic Ability

Academic Competence Test Score: students at Xavier University completed the SAT Test Questions.

Your performance ranked: **EXTREMELY BELOW AVERAGE.**

Your performance on the academic competence test indicates that your <u>academic proficiency is extremely below average at Xavier University.</u>

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ADVERSE CHILDHOOD EXPERIENCES & POST-TRAUMATIC GROWTH PREDICT DESTRUCTIVE SEXUAL BEHAVIOR IN COLLEGE STUDENTS

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Abstract – Our research examined whether suffering from sexual or domestic violence and/or other emotional and physical trauma during childhood (known as adverse childhood experiences) leads to unhealthy or destructive sexual behavior in adulthood. The goal was to replicate findings showing that adverse childhood experiences (ACEs) increase risky sexual behavior, and to extend this work to examine whether ACEs place a person at greater risk of hypersexuality. We also examined the extent to which having strong social support and experiencing post-traumatic growth (PTG) mitigated some of the negative effects of ACEs. Results indicated that experiencing ACEs predicted more hypersexuality and risky sexual behavior, while PTG predicted less hypersexuality. Social support did not predict hypersexuality or risky sexual behavior, although it was associated with greater PTG. These findings increase our understanding of the impact of ACEs and highlight protective factors, suggesting potential avenues for mitigating some of the devastating effects of adverse childhood experiences.

Although adverse childhood experiences (ACEs) are no new concept, in recent years, their prevalence and wide impact has been noted. In fact, according to the Centers for Disease Control, around 61% of adults surveyed across the U.S. reported they had experienced at least one type of ACE, and about one in six reported they had experienced four or more types of ACEs (CDC, 2022). By definition, ACEs are potentially traumatic events that occur prior to the age of 18 that can have long-term, detrimental consequences for one's health and well-being in adulthood (Chang et al., 2019). Examples include violence, abuse, neglect, witness to violence in the home or community, substance abuse issues, mental health issues, and instability due to parental separation (Baglivio et al., 2017).

Recent research conducted on the immediate or short-term effects of ACEs has shown that the stress and trauma associated with ACEs can cause children to experience anxiety, depression, aggression, learning impairments, and decreased immune function (Maroney, 2020). Other research has shown that ACEs can have a variety of long-term effects throughout adulthood including premature death, increased comorbid conditions, chronic diseases, such as cancer, and risk behaviors, such as smoking and substance abuse (Chang et al., 2019; Felitti et al., 1998). Furthermore, ACEs have been linked to risky sexual behaviors, such as having multiple sexual partners, participating in unprotected sex, anal intercourse, first engaging in sexual intercourse at an early age, having sex under the influence of drugs and/or alcohol, and commercial sex (Akumiah et al., 2020).

The aforementioned research confirms that ACEs have a variety of significant, detrimental consequences that may persist throughout the lifespan. In particular, early trauma has been linked with risks to emotional and physical well-being as well as high rates of dysfunctional behavior. Given these findings, we wondered whether ACEs would also be associated with greater risk of hypersexuality (i.e., compulsive sexual thoughts and behavior). Hypersexual individuals experience preoccupation with intense sexual fantasies, desires, or urges and compulsive sexual actions that are difficult to control, cause discomfort, or have a detrimental impact (Kellett et al., 2017). Hypersexual behaviors tend to persist and solidify into patterns due to their propensity to regulate internal mental conditions, such as reducing anxiety or enhancing excitement (Montaldi, 2002). It is possible that hypersexuality functions as a method of coping with adversity and therefore, we expected to observe higher rates of hypersexuality in adults who experienced more early traumatic events.

A second research question we explored concerns potential protective variables that may enhance coping with ACEs. A robust literature indicates that more successful coping with early trauma is associated with strong support from one's social network (Tucker et al., 2020). For example, perceived social support from family and friends has been shown to minimize the damaging effects of adverse events and promote healthy functioning (Cohen & Willis, 1985; Taylor, 2011). In contrast, low levels of social support from family and friends has been linked to isolation, anxiety, misconduct, and low self-esteem (Gariépy et al., 2016; Hartup & Stevens, 1997). Furthermore, according to Lester et al. (2020), social support from peers enhances coping with ACEs by creating a beneficial sense of relatedness and solidarity. In regard to support from community members, nonparental adults serving as mentors promote coping by offering tangible aid, imparting knowledge and skills, and increasing self-esteem of children who experienced ACEs (Southwick et al., 2006).

Given the potential beneficial effects of coping resources for those who experience early trauma, investigation of other variables that may serve a protective role is warranted. One promising line of inquiry is examining the link between post-traumatic growth (PTG) and coping with ACEs. PTG is conceptualized as the propensity of individuals to function at a healthier level in the aftermath of traumatic events, as a result of discovering meaning in their traumatic experiences (Tedeschi & Calhoun, 1996). PTG is demonstrated by a greater appreciation for life, better relationships, improved sense of personal strength, and even spiritual growth (Tedeschi & Calhoun, 1996). It is possible that PTG may mitigate some of the harmful long-term consequences of ACEs. Specifically, if individuals are able to process their trauma in an adaptive way and find meaning in their suffering, they may eventually be equipped to move beyond prior adversities by leveraging their experiences in a beneficial way. This notion poses possible solutions for the mitigation of symptoms stemming from childhood trauma and other traumatic events throughout life and will be further explored in our study.

The aim of our research was to examine links between ACEs, destructive sexual behavior, social support and PTG. We hypothesized that experiencing ACEs would be associated with more risky sexual behavior and higher rates of hypersexuality. We also hypothesized that having strong social support and experiencing PTG would be associated with lower rates of risky sexual behavior and less hypersexuality.

Method

Participants

An anonymous online survey was completed by 102 participants. Participants were recruited from college classrooms, social media, and personal contact. The gender distribution was as follows: 14% were men, 78% were women, one percent were transgender women, six percent were non-binary, and two percent of individuals chose not to identify their gender. The race/ethnicity distribution was as follows: 60% of participants were Caucasian, 33% were African-American, and three percent were Asian or Asian Indian, one percent were American Indian or Alaska Native, two percent reported other, and one percent chose not to identify their race/ethnicity. The mean age was 20 (*SD* = 2.90). In addition, 62% of participants identified as heterosexual, six percent were homosexual, 22% were bisexual, nice percent identified as other, and two percent of individuals chose not to identify their sexuality. Some participants were given extra course credit for participation. All participation was voluntary, and the project was deemed as exempt from oversight by the University Institutional Review Board.

Procedure

Interested participants were directed to an online system where they first encountered the informed consent form. Continuing into the survey was taken as an indication of consent. Participants had the option to exit the survey at any time, at which point they would see a standardized page thanking them for their participation.

Materials

Adverse Childhood Experiences

To begin, participants were asked to complete the BRFSS Adverse Childhood Experience (ACE) Module (US Centers for Disease Control and Prevention (CDC), 2019). This scale is used to determine the extent to which individuals experienced different adverse childhood experiences during the time period prior to 18 years of age. A total of 11 possible adverse events were assessed. Examples included living with a mentally ill family member, experiencing parental separation, experiencing emotional or physical abuse and living with a family member who abused substances. Respondents indicated either "yes" or "no" to indicate whether or not they experienced the event listed for each item. The published Cronbach's Alpha for this measure is .78 and we obtained a Cronbach's Alpha of .78.

Post-Traumatic Growth

Next, participants were asked to complete the Post-Traumatic Growth Inventory (Tedeschi & Calhoun,

1996). This scale is used to determine the extent to which individuals who experienced adverse events report beneficial changes that occurred in their life as a result of those experiences. They indicated the extent to which they experienced 21 possible areas of growth and change such as "I have a greater appreciation for the value of my own life", "I discovered that I'm stronger than I thought I was", and "I have a greater feeling of self-reliance". Responses were made on a Likert scale ranging from zero (not at all) to five (to a very great degree). The published Cronbach's Alpha for this measure is .90 and we obtained a Cronbach's Alpha of .92.

Social Support

Then, participants responded to a measure designed to determine perceptions of current social support through the Multidimensional Scale of Perceived Social Support (Zimet et al., 1988). This scale consists of three subscales, each with four items, that measure three facets of social support. The first subscale asked participants about their perceived support from family, the second asked participants about their perceived support from friends, and the third asked participants about their perceived support from a significant other. Participants indicated their agreement with statements such as "I get the emotional support I need from my family", "I have friends with whom I can share my joys and sorrows", and "I have a special person who is a real source of comfort to me". Responses were made on a Likert scale ranging from one (very strongly disagree) to seven (very strongly agree). The published Cronbach's Alpha for this measure is .88 and we obtained a Cronbach's Alpha of .89.

Hypersexuality

Next, participants responded to a scale measuring engagement in hypersexual behaviors known as the Hypersexual Behavior Inventory (Reid et al., 2011). They indicated the extent to which they have displayed 19 possible patterns of hypersexual behavior such as "I engage in sexual activities that I know I will later regret", "When I feel restless, I turn to sex in order to soothe myself", and "Sex provides a way for me to deal with the emotional pain I feel". Responses were made on a Likert scale ranging from one (never) to five (very often). The published Cronbach's Alpha for this measure is .95 and we obtained a Cronbach's Alpha of .93.

Risky Sexual Behavior

Then, participants were asked to respond to the Sexual Risk Behavior Scale (Fino et al., 2021). This six-item scale is designed to measure the extent to which individuals participate in sexually risky behaviors or have poor sexual health practices. Respondents indicated the extent to which they engaged in risky sexual behaviors including vaginal, anal and/or oral sex without a condom, sex while under the influence of alcohol or drugs, and unprotected sex with strangers. Responses were made on a Likert scale ranging from one (never) to five (very often). The published Cronbach's Alpha for this measure ranges from .76 to .84 and we obtained a Cronbach's Alpha of .77.

Finally, participants responded to commonly used demographic items including age, race, gender, socioeconomic status, and parental education level.

Results

Means were calculated for each measure for all participants. The average ACE score in our sample was 3.05 (SD = 2.54). The overall mean PTG score was 3.38 (SD = .74). The overall mean Social Support score was 5.33 (SD = .97). The overall mean Hypersexuality score was 1.57 (SD = .64) and the overall Risky Sexual Behavior score was 1.78 (SD = .81). No differences in Hypersexuality or Risky Sexual behavior were found across any of the demographic variables and thus, these variables were not included in subsequent analyses.

We conducted a multiple regression to examine the combined effects of ACEs, PTG and social support in predicting risky sexual behavior. The overall model was a good fit [F (3, 95) = 3.30, p = .024]. Furthermore, ACEs contributed significantly to the model and accounted for a unique portion of the variance in risky sexual behavior scores (β = .31, p < .01), while both PTG (β = -.04, p = .695) and social support (β = .13, p = .16) did not. Next, we conducted a multiple regression to examine the combined effects of ACEs, PTG and social support in predicting hypersexuality scores. The overall model was a good fit [F (3, 92) = 8.52, p < .001]. Furthermore, ACEs contributed significantly to the model and accounted for a unique portion of the variance in hypersexuality (β = .377, p < .01). PTG also contributed significantly to the model and explained a unique portion of variance in hypersexuality (β = -.28, p < .01), while social support did not (β = .112, p = .27).

We conducted additional analyses to test the relationship between social support and PTG. Pearson's correlations yielded a positive association between these variables [r (101) = .39, p < .001]. Those with strong social support also reported more beneficial psychological changes as a result of experiencing trauma.

Discussion

As has been documented in prior research (e.g., Green et al., 2005; Hillis et al., 2001), we hypothesized that experiencing more ACEs would predict more risky sexual behavior. We also expected ACEs to predict

greater hypersexuality. Both of these hypotheses were supported. Replicating prior findings, participants in our sample who reported more adverse events in childhood were also more likely to report engaging in risky sexual behaviors ranging from having sex while under the influence of drugs and/or alcohol to participating in unprotected sex with strangers. Extending this work, we also found that those who experienced more ACEs were more likely to experience hypersexuality, involving excessive or uncontrollable sexual thoughts, urges, or behaviors. One possible explanation for the link between ACEs and hypersexuality is that childhood trauma can disrupt the development of healthy attachment and bonding between caregivers and children (Shonkoff & Garner, 2012). This can have a variety of detrimental effects, such as difficulty regulating or controlling one's emotions and coping with stress (Anda et al., 2006). Therefore, hypersexuality can be a way of seeking intimacy, pleasure, or a sense of control, and may serve as a temporary escape from the negative emotions associated with trauma.

We also hypothesized that PTG would emerge as a protective variable, reducing the risk of risky sexual behavior and hypersexuality. Our findings provided partial support for this hypothesis. As expected, PTG emerged as a protective variable in relation to hypersexuality. Essentially, those who reported undergoing significant and beneficial psychological changes in the aftermath of their trauma were less likely to report engaging in excessive or compulsive sexual thoughts, feelings, and behaviors. However, PTG did not emerge as a protective variable for risky sexual behavior. One possible reason for these differential findings could be that hypersexuality and risky sexual behavior represent different patterns of sexual behavior. Hypersexuality is characterized by overwhelming sexual fantasies, desires, and conduct, while risky sexual behavior involves engaging in sexual activities that have the potential to result in negative consequences such as sexually transmitted diseases or unwanted pregnancy. It is possible that PTG may be more protective against hypersexuality than it is of risky sexual behavior because hypersexuality may be a coping mechanism for individuals who have experienced trauma, whereas risky sexual behavior may reflect other underlying factors such as impulsivity or substance use. In other words, those who have experienced trauma may become hypersexual as a way of coping with feelings of anxiety or depression while risky sexual behavior may be a sign of more impulsive or sensation-seeking inclinations.

Furthermore, we hypothesized that social support would operate as a protective variable with respect to risky sexual behavior and hypersexuality. Our results did not confirm this hypothesis, as social support did not emerge as a significant predictor of either risky sexual behavior, or hypersexuality, after controlling for ACEs. This suggests that destructive sexual patterns of behavior are more strongly influenced by early childhood trauma and less so by having strong social support in adulthood. These findings are consistent with research and theory that highlights the power of early childhood events to shape the future lives of individuals, including a variety of emotional, physical, and social impacts, such as distress, illness, and anxiety (Davis et al., 2002; Chang et al., 2019; Maroney, 2020). It is possible that had we measured social support experienced in childhood rather than currently in adulthood, this variable may have been more influential.

Finally, we found evidence that social support and PTG were positively correlated. This suggests that social support may play an indirect role in preventing negative long-term effects of ACEs. Perhaps receiving social support from home, school, teachers, or mentors can help facilitate post-traumatic growth, thereby teaching people how to process their trauma in more productive ways. This could also help reduce the risk of negative outcomes such as destructive sexual behavior later in life. Future research should explore these possibilities.

Our study had limitations. To begin, our sample lacked diversity on a variety of levels, differing from the broader population of college students in some ways. As the demographics of the sample show, more than three-fourths of the sample consisted of women (78%), while in the broader population of U.S. college students, approximately 60% are women (West, 2021). Similarly, while over half of our participants identified themselves as White (60%), about 52% of the broader college population in the U.S. identify as White (Barshay, 2023). However, the demographic numbers in our sample are in line with the proportions of demographic categories found at the university from which many of the participants were recruited. Another limitation concerns the measure of social support utilized in our study. Specifically, the scale only measured current, perceived social support, excluding received social support or social support in childhood as potential predictive variables. Our findings would be more nuanced if we had measured both components of social support and tested their unique significance at different points in the lifespan.

This study also gave rise to ideas for future research. Future researchers may want to measure and compare the impacts of social support received during childhood in the aftermath of ACEs versus social support

received in adulthood to see whether it operates as a more influential protective variable when experienced during childhood. Similarly, future researchers may want to measure and compare the significance of PTG achieved during childhood in the aftermath of ACEs versus PTG achieved in adulthood to see whether its protective effects are more prominent during childhood. With a larger, more diverse sample, researchers could also examine whether race, ethnic background, culture, or religion predict the level and impact of perceived social support for survivors of childhood trauma. For example, do customs and beliefs influence individuals' sense of community and support, especially in the context of such a sensitive topic? In addition, future research could specifically compare the influence of received social support and perceived social support on patterns of hypersexuality in the wake of ACEs. Lastly, researchers could examine whether religiosity predicts the degree to which individuals with ACEs experience hypersexuality and achieve PTG. For example, does religious conviction impact susceptibility to hypersexual behavior, and does faith in a higher power give individuals a greater sense of purpose regardless of the traumas they faced in adolescence?

The findings of our study increase our understanding of the impact of ACEs and potential protective factors. Our findings also suggest potential avenues for mitigating some of the devastating effects of adverse childhood experiences, such as developing PTG interventions to promote beneficial psychological changes following trauma. Discovering ways to reduce victims' risk of developing hypersexuality can have significant mental health implications because those who experience hypersexuality are often further traumatized in adulthood due to social rejection, disapproval, stigmatization, degradation, and negative evaluation (Reid et al., 2012). On the bright side, by addressing and mitigating the negative impacts of ACEs, these unnecessary, diminishing and destructive effects surrounding hypersexuality can be avoided and survivors of childhood trauma can heal and find peace in looking towards a better, more promising future.

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PSYCHOLOGY'S UNSUNG HERO: HERMANN EBBINGHAUS

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Abstract – Ebbinghaus revolutionized psychology by unlocking the study of higher mental processes. Nonsense syllables created the foundation of the first research in memory, and his meticulous records and preparation opened the door for future studies. Ebbinghaus is best known for his forgetting curve and his discovery of the spacing effect. His work sparked debates in the usefulness of associations and serial learning. Ebbinghaus's contributions also include mapping the history of psychology, being the first to use the literature review, methods, results, discussion format, and he addressed confirmation bias as well as the capacity of short-term memory. Critics of Ebbinghaus frequently employ a hindsight bias that does not align with Ebbinghaus's intentions, or they misrepresent his work.

Keywords: Hermann Ebbinghaus, memory, history of psychology, savings during relearning, associations, spacing effect, forgetting curve

Hermann Ebbinghaus did not believe lack of information on a subject should constitute a lack of effort to experiment with it (Ebbinghaus, 1885/1913). Ebbinghaus (1885/1913) was the earliest pioneer in the study of human memory because he knew that someone had to be the first. His work set the standard for all future experiments on the higher mental processes (Fuchs, 1997), and it confirmed that memory could be studied (Murdock, 1985). Many people know of Ebbinghaus, but very few have taken the time to read his book (Roediger 1985; Slamecka, 1985a). Due to this lack of knowledge, many people do not fully understand what Ebbinghaus accomplished. This is of particular concern when his work is misrepresented and or criticized. Greater knowledge of Ebbinghaus is required to fully understand the gravity of all he discovered and to develop personal opinions on Ebbinghaus's work. After closer inspection, one may conclude that Ebbinghaus is the unsung hero of psychology.

In 1885, Ebbinghaus wrote his most famous book, *Memory: A Contribution to Experimental Psychology*. This work was the compilation of multiple experiments on memory conducted by Ebbinghaus between the years of 1879-1880 and 1883-1884 (Ebbinghaus, 1885/1913). It changed psychology by confirming that studying the higher mental functions was possible (Ebbinghaus, 1885/1913; Fuchs, 1997; Murdock, 1985; Slamecka, 1985b). Ebbinghaus (1885/1913) based his experiments on multiple series of approximately 2,300 nonsense syllables that he created. A nonsense syllable is a three-letter word, that has no meaning, consisting of a consonant-vowel-consonant (Ebbinghaus, 1885/1913). Xat would be an example of a nonsense syllable using this formula, but cat would not. He chose nonsense syllables for his experiments because he did not want interest level to affect the results between different series as would have been the case with poetry (Ebbinghaus, 1885/1913). In addition, nonsense syllables were useful for Ebbinghaus's study because he wanted memory at its simplest (Roediger, 1985) along with the ability to numerically record his results (Ebbinghaus, 1885/1913). Ebbinghaus (1885/1913) made multiple lists of different numbers of nonsense syllables. The number of nonsense syllables he included on a particular list was determined by what he was studying about memory at the time. He proceeded to study these repeatedly until he had faultlessly memorized them and could repeat a list twice consecutively without a mistake (Ebbinghaus, 1885/1913).

Ebbinghaus was so thorough that after initially completing his experiment, in 1880, he replicated it from 1883-1884 (Ebbinghaus, 1885/1913; Fuchs 1997). This was, at least partially, because he wanted to clear his mind of any training that may have occurred before

beginning the second series of experiments (Ebbinghaus, 1885/1913). While the earlier experiment required two correct repetitions, the second rendition only required one repetition without error (Ebbinghaus, 1885/1913). The basic model for most of his experiments was that he would learn a set of nonsense syllables and then document the number of repetitions required later to get back to the point of "first possible reproduction" (Ebbinghaus, 1885/1913, p. 10).

A review of Ebbinghaus's study of memory cannot be complete without an emphasis on how meticulous he was. Ebbinghaus precisely kept track of all the data from his experiments (Ebbinghaus, 1885/1913). This included how long it took to say a nonsense syllable, approximately four-tenths of a second; this mattered because he tracked how many repetitions were required to learn a set by timing himself (Ebbinghaus, 1885/1913). He even tried to keep a consistent tone in repeating the syllables (Ebbinghaus, 1885/1913). When he determined that keeping the same accent was impossible, he decided to purposefully accent every set number of syllables (Ebbinghaus, 1885/1913). Foremost, he cared about experimentation over conjecture (Postman, 1968); therefore, he carefully controlled all variables in his experiment, and his results verified that the study of memory was possible (Ebbinghaus, 1885/1913; Murdock, 1985). Ebbinghaus only wanted to publish refined thoughts based on experiments, and this may have been why his volume of work is not as large as others in the field (Woodworth, 1909).

In *Memory: A Contribution to Experimental Psychology*, Ebbinghaus ran 13 different experiments using himself as the test participant (Ebbinghaus, 1885/1913; Roediger, 1985). In one experiment, Ebbinghaus recited over 15,000 nonsense syllables (Roediger, 1985). Ebbinghaus used his results to measure savings during relearning (Nelson, 1985). This method answers the question of whether what is completely forgotten still exists somewhere in the mind (Ebbinghaus, 1885/1913; Roediger, 1985). To calculate savings during relearning, Ebbinghaus memorized sets of nonsense syllables and then tested how long it took to relearn them after a certain time interval: 20 minutes, one hour, nine hours, one day, two days, six days, and 31 days (Ebbinghaus, 1885/1913). He calculated the amount forgotten by calculating what percentage of the series was remembered and then subtracting that percentage from 100. After displaying the usefulness of his method, Ebbinghaus (1885/1913) proceeded to test many of his questions about memory such as how much a list needs to be studied until it never needs to be reviewed again (Ebbinghaus, 1885/1913). Three major discoveries will be further detailed.

The Forgetting Curve

Ebbinghaus's most famous contribution to psychology is his forgetting curve. Ebbinghaus himself did not graph the forgetting curve (Roediger, 1985), but he supplied the data to make the curve from his 1879-1880 experiments (Ebbinghaus, 1885/1913). Using the savings during relearning method, Ebbinghaus (1885/1913) found that, after 20 minutes, 40% of the list had been forgotten. His lists showed a varying degree of forgetting over time where after one, six, and 31 days about 66%, 75%, and 79% of the lists had been forgotten respectively (Ebbinghaus, 1885/1913).

In fact, after nine hours, the rate of forgetting slowed (Ebbinghaus, 1885/1913). Ebbinghaus's next time gap was 24 hours. From the results of other time intervals less than a day, the number of forgotten items was fewer than Ebbinghaus expected at 24 hours (Ebbinghaus, 1885/1913). Unlike the nine-hour interval, Ebbinghaus (1885/1913) slept between memorization and relearning in the 24-hour period. Even though sleep was a possible explanation for the difference between nine and 24 hours, Ebbinghaus did not accept this hypothesis (Ebbinghaus, 1885/1913). He suggested that others test his results (Ebbinghaus, 1885/1913), and his experiment was repeated with others finding similar irregular intervals between nine and 24 hours (Murre & Dros, 2015). In contrast, Jenkins and Dallenbach (1924) disagreed with Ebbinghaus and created an experiment to test sleep's effect. They confirmed that sleep does slow forgetting (Jenkins & Dallenbach, 1924). Jenkins and Dallenbach (1924) theorized that being awake interferes with old memories because of the continual introduction of new memories.

Associations

The final chapter of Ebbinghaus's book was devoted to associations. Ebbinghaus (1885/1913) articulated and supported the idea that adjacent items on a list will become associated in memory. He decided to test associations further to see whether remote associations, associations between nonadjacent syllables, existed (Ebbinghaus, 1885/1913). His results confirmed the presence of remote associations (Ebbinghaus 1885/1913; Slamecka, 1985a).

Afterward, Ebbinghaus (1885/1913) wondered about the strength of remote associations in comparison to adjacent syllables. He tested many questions such as how different-sized gaps between remote associations affect the ability to relearn newly ordered sets, how reversing a list affects relearning ability with and without a gap, and the effect of repetitions on remote associations

(Ebbinghaus, 1885/1913). He did this by creating a list, learning the list, and then reordering the list to apply to the specific experiment (Ebbinghaus, 1885/1913). Ebbinghaus (1885/1913) was not sure whether he had truly shown the existence of remote associations or whether he had confirmation bias. Therefore, he suggested others test his results (Ebbinghaus, 1885/1913).

His challenge was accepted, and a lively scientific discussion grew out of that last chapter of his book. Ebbinghaus's beliefs were later labeled as part of the chaining hypothesis. This states that neighbors in a series become associated (Murdock, 1985). While the chaining hypothesis is now considered incorrect for memory overall (Postman, 1968; Slamecka, 1985a), its usefulness may still apply to serial learning (Murdock, 1985; Slamecka, 1985a). Slamecka (1985a) admits that more study is still needed on serial learning.

In addition to the chaining hypothesis, many different scientific ideas have arisen on associations. Pavlov's experiments came soon after Ebbinghaus, but not soon enough to have influenced Ebbinghaus. However, research after Ebbinghaus was influenced towards investigating stimulus-response measurements and paired-response learning (Postman, 1968; Nelson, 1985; Slamecka, 1985a). Stimulus-response was not as fruitful as many had hoped regarding serial learning (Slamecka, 1985a). The investigation of stimulus-response in memory was best described by Slamecka (1985a) as "a questionable undertaking" (p. 422). Stimulus-response measures did not translate well from behavioral processes to cognitive processes (Slamecka, 1985a).

Others directly tested Ebbinghaus's experiments on associations. For example, some wondered if Ebbinghaus's original list negatively impacted the newly ordered list of the same syllables. They found that it did (Slamecka, 1985a). Ebbinghaus (1885/1913) thought that he had confirmed and then disconfirmed the number seven as what could be held in short-term memory. However, Slamecka (1985a) argued that because Ebbinghaus's savings during relearning decreased with more remote syllables then the mental confine of short-term memory is not part of the equation. If the capacity of short-term memory was important, then there would not immediately be a difference in forgetting between further associates.

The Spacing Effect

When considering his results, Ebbinghaus made an interesting discovery. In an early experiment, Ebbinghaus (1885/1913) found that the more time spent repeating a list, or the more times it was repeated, the longer it would be remembered. Later, Ebbinghaus experimented with learning sets by heart over a week (Ebbinghaus, 1885/1913). When Ebbinghaus learned sets to perfection, he discovered that relearning those same sets to perfection could be accomplished more quickly a day later (Ebbinghaus, 1885/1913). When he compared the results, he found that it was more efficient to space out the relearning of series.

Today, this is known as the spacing effect, and it is one of Ebbinghaus's largest contributions to psychology (Roediger, 1985). Additionally, he found that increasing repetitions may be damaging to remembering the series the next day (Ebbinghaus, 1885/1913). In a later experiment, Ebbinghaus (1885/1913) attempted to investigate the effect of continued rehearsal after achieving perfection. When compared to learning to the point of the first possible reproduction, he found that quadrupling the number of repetitions, after reaching the first possible reproduction, only increased savings during relearning by about half as much (Ebbinghaus, 1885/1913). Therefore, too much repetition may be detrimental to learning, and spacing out repetitions is better than learning in just one sitting (Ebbinghaus, 1885/1913).

Other Contributions

While the studies noted above are worthy of considerable recognition within psychology, Ebbinghaus does not receive credit for many other ideas he penned in psychology. Ebbinghaus also found that the longer the original series, once learned to perfection, there was less work needed to relearn it (Ebbinghaus, 1885/1913). This could mean that the larger a set of information, the larger return there is for memorizing it. Throughout his monograph, Ebbinghaus is consistently careful of biases. He specifically mentioned trying to eliminate confirmation bias (Ebbinghaus, 1885/1913; Slamecka, 1985a), a bias that would not be labeled for another 92 years by Mynatt et al. (1977). Ebbinghaus should also receive recognition for providing early evidence that the capacity of short-term memory is about seven items (Roediger, 1985). Ebbinghaus discovered this by accident when studying how long it took to learn multiple series of different lengths. He discovered he only needed to repeat a series if it was longer than seven syllables (Ebbinghaus, 1885/1913; Roediger, 1985). Today, psychologists know that short-term memory can hold seven plus or minus two items (Miller, 1956). These findings are worthy of substantial recognition in specific areas of psychology.

Ebbinghaus deserves more respect for his effect on the overarching aspects of psychology. Ebbinghaus (1885/1913) was already identifying the roots of psychology within six years of the founding of Wundt's

lab, what many consider to be the origin of psychology as a distinct field of scientific study (Benjamin, 2019). Ebbinghaus (1885/1913) identified Aristotle as the first psychologist, and he recognized other prior psychologists throughout history such as Helmholtz and Herbart. Therefore, Ebbinghaus laid the foundation for all systems of psychology classes in Greek philosophers, psychophysicists, and philosophers before Wundt.

Not only did Ebbinghaus chart the history of psychology, but he also developed the format for psychological papers (Roediger, 1885). His monograph is now the model for research papers in psychology. He began his book by detailing the problem and why it should be studied (Ebbinghaus, 1885/1913). He continued to explain his method for experimenting with the problem followed by the results. Finally, he discussed his findings (Ebbinghaus, 1885/1913; Roediger, 1985). Today, all psychology researchers follow Ebbinghaus's format. His effect on the field is often understated, but he changed the course of the science.

Critiquing Ebbinghaus

Despite his substantial contribution to the subject, there are many critics of Ebbinghaus and his work. Some criticize his work based on misconceptions. Gilliland (1948) described Ebbinghaus as frequently developing headaches, but Ebbinghaus (1885/1913) only reported headaches in one part of a specific experiment. He did not acquire headaches throughout his research. Others claim that Ebbinghaus only used nonsense material in his monograph (Nelson, 1985). However, Ebbinghaus also used Lord Byron's *Don Juan* for memorization in some experiments (Ebbinghaus, 1885/1913; Nelson, 1985). Both views are misconceptions touted by those claiming to be knowledgeable about Ebbinghaus.

Others criticized techniques or the subject matter of Ebbinghaus's studies. However, many of these criticisms ignore crucial counterpoints. For instance, Gilliland (1948) viewed Ebbinghaus's forgetting curve as too rapid because it only included the use of nonsense syllables. Furthermore, Gilliland (1948) thought that Ebbinghaus should have gone further than just nonsense syllables, but Ebbinghaus was interested in creating a foundation for the study of memory. Nonetheless, Ebbinghaus included results stating that meaningful material probably requires about one-tenth the amount of time as nonsense syllables for memorization (Ebbinghaus, 1885/1913). In addition, others viewed nonsense syllables as a waste of time that directed research toward serial learning and away from more important areas of memory (Kintsch, 1985; Postman 1968). However, nonsense syllables still have some use today for language learning (Postman, 1968).

Gilliland (1948) also thought Ebbinghaus's results were skewed by the length of the series and the introduction of other series during the intervening period before relearning. Slamecka (1985a) agreed with Gilliland that interference between lists could have affected the results, but Slamecka was also critical of Ebbinghaus's method of repeating even learned items. Instead, he suggested that Ebbinghaus should have used a dropout technique where learned syllables were dropped to avoid distorting the results through overlearning (Slamecka, 1985a). Both had valid points, but they forgot to consider that Ebbinghaus was the only test subject. Since Ebbinghaus was the only participant, he could not eliminate interference in the manner that Gilliland (1948) and Slamecka (1985a) suggested. If he had, Ebbinghaus would have never published his research because he would have died before he completed it. Today's memory studies have rectified this problem because they use more than a single participant (Newman & Loftus, 2012).

Slamecka (1985b) further articulated that those taking issue with Ebbinghaus's use of serial learning all wish he had started with something else. For example, Kintsch (1985) criticized Ebbinghaus for theorizing too often and wished Ebbinghaus had started with information processing. Furthermore, Murdock (1985) wanted Ebbinghaus to start with recognition, and Roediger (1985) wished Ebbinghaus had included research on mnemonics. Nonetheless, even though Murdock (1985) claimed that Ebbinghaus should have started with something other than serial learning, he still admitted that it needs more study today. Roediger's (1985) complaint that Ebbinghaus did not include mnemonics and other memorization strategies does not match Ebbinghaus's purpose of having memory at its plainest. In fact, Ebbinghaus (1885/1913) outlawed mnemonics as part of his experiments in his seven rules for memorization. Kintsch's (1985) view that Ebbinghaus theorized too often fails to consider that Ebbinghaus was conducting the first experiments on memory. Further experimentation was the only response to Ebbinghaus's study or it would not have become a field of research.

Postman (1968) criticized Ebbinghaus's savings during relearning. He thought the technique did not capture differences in ease of learning, materials, and chance. Ebbinghaus (1885/1913), however, provided the answer when he wrote that he hoped all other small variables would cancel themselves out. Nelson (1985) came to Ebbinghaus's defense articulating the continued usefulness of savings during relearning as shown by multiple studies.

Conclusion

Ebbinghaus was a forerunner in experimental psychology, and he deserves to be recognized as such (Woodworth, 1909). When 20th-century scholars claimed memory research was a failure, Slamecka (1985a) rebuked them because Ebbinghaus provided evidence that memory could be tested. Ebbinghaus expanded psychology (Postman, 1968). Without him, psychology may have still been focused on the physiological (Shakow, 1930).

It is easy to judge Ebbinghaus for what he did not know (Roediger, 1985; Slamecka, 1985b). Hindsight bias is a danger that many have fallen victim to when reviewing Ebbinghaus's work. However, Ebbinghaus cannot be blamed for the unproductive directions cognitive psychology explored after his death (Slamecka, 1985b). Slamecka (1985b) equated the claim that Ebbinghaus impeded the study of memory to the claim that the Wright brothers hampered the development of the jet. Ebbinghaus made it possible for psychologists to study memory the way they do today. Even if that is all the acknowledgment he receives, Ebbinghaus is still a hero of psychology.

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BLAME AND PUNISHMENT: ROLE OF VARIOUS FAULT ATTRIBUTIONS AND OTHER FACTORS IN PREDICTING PEOPLE'S ORIENTATION TOWARD PUNISHING JUVENILE OFFENDERS

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Abstract – We asked a convenient sample of 155 adults to read two crime reports, presented in a random order, describing the adjudication of one juvenile male charged with assault and one charged with possession of an illicit drug. As a between-subjects factor, participants were randomly assigned to imagine that the juveniles in both crime reports were either a 14-year-old or a 17-year-old. After reading the crime reports, participants were asked to respond to a series of questions assessing their beliefs concerning (a) the extent to which the juvenile, his parents, and society are ultimately responsible for the juvenile being caught up in the juvenile justice system, (b) the likelihood the juvenile would continue to commit crimes again in the future, and (c) the appropriateness of the judge's sentencing decision. Results revealed that while participants attributed the most blame to the juvenile, himself, the extent to which participants attributed blame to other external sources (e.g., his parents or society, generally) depended on the crime. Participants blamed the juvenile, himself, less, and blamed society (and to a lesser degree, the juvenile's parents) more, when evaluating a juvenile convicted of possession of illicit drugs than when evaluating a juvenile who was convicted of assault. Interestingly, each type of fault attribution significantly predicted participants' beliefs concerning the appropriateness of the punishment each juvenile received. Implications and future directions are discussed.

The American public has long held conflicting attitudes on how to handle individuals who break the law, particularly if the individual is under the age of 18. Since its creation over a century ago, the juvenile justice system has consistently wavered between "get tough" policies that are focused on punishment and other, more compassionate, policies focused on rehabilitation (Feld, 2017). Currently, the American public tends to simultaneously believe that while juveniles who break the law should be punished – and, in some cases, quite severely – there should also be a compassionate understanding of juvenile development within the system so that juveniles are not forever harmed by their adolescent indiscretions (Roberts, 2004).

A recent study by Bolin et al. (2021) clearly illustrates the extent to which the American public hold such conflictual cognitions. In their study, Bolin et al. (2021) asked a nationally representative sample of 1,494 U.S. adults to complete a wide range of items assessing, among other things, their views concerning the goals of juvenile justice and their opinions concerning certain sentencing decisions (e.g., blended sentencing). Results revealed that while most of those sampled believed that rehabilitation and child welfare (i.e., looking out for the best interests of the juvenile) should be important goals within the juvenile justice system, a majority (around 60%) *also* believed that deterrence (i.e., punishment as a way to deter crime), retribution (i.e., making sure juveniles get the punishment they deserve), and incapacitation (i.e., locking juveniles up) should also be important goals for the juvenile justice system. Further, a majority of those sampled believed that severe sentences in which juvenile offenders spend at least some of their time in the adult criminal justice system would be much more likely to produce negative consequences for the juvenile (e.g., being beaten or raped by adult criminals). However, depending on the circumstance (e.g., for juveniles convicted of murder), up to 80% of people reported that they favored or strongly favored juveniles serving some of their sentence in the adult criminal justice system.

Despite the general public's conflicting attitudes concerning the goals and appropriate sentencing of juvenile offenders within the juvenile justice system,

people tend to be united in the belief that the age of the offender should be considered in sentencing decisions. For instance, using mixed-methods design, Bradley et al. (2012) found that people tend to understand that younger adolescents may have poor impulse control and, due to ongoing changes in the brain during adolescence, may not fully understand the long-term consequences of their actions. As such, participants who were asked to make judgments concerning the culpability and punishment of a 11-, 14- or 17-year-old male juvenile offender convicted of murder indicated that, all else being equal, they believe that the younger juveniles were less culpable and deserving of punishment than the older juveniles. More specifically, across participants' judgments concerning the culpability of the juvenile and deservingness of punishment, participants indicated that the 11-year-old was less culpable and deserving of punishment than the 14- year-old and, similarly, the 14-year-old was less culpable and deserving of punishment than the 17-year-old. Further, and perhaps most importantly, there was a linear relationship between the age of juvenile offender and participants' beliefs that age should be considered in sentencing such that the older the juvenile offender, the more participants agreed a judge should consider age at sentencing.

The findings from Bradley et al. (2012) demonstrating the importance of the age of a juvenile offender in the general public's orientation toward punishment were not surprising. An impressive volume of research consistently finds that the public is generally less punitive toward younger than older juvenile offenders. For instance, Scott et al. (2006) conducted a series of studies to evaluate the extent to which the general public's perceptions and attitudes about the culpability and appropriate punishment for juvenile offenders are affected by the offender's age, race, and physical appearance. Consistent with results reported by Bradley et al. (2012), Scott et al. (2006) found that the age of a juvenile offender was an important mitigative factor when it comes to people's perceptions of the juvenile offender and recommendations for sentencing. For instance, as compared to those who were told the offender was 15 or 20 years old, participants who were told that the offender was 12 years old believed that the offender was less able to appreciate the consequences of his actions and the impact of his crime on others, and overall believed that he was less responsible for his actions. Further, additional analyses revealed there were stark differences in participants' beliefs concerning the extent to which the juvenile could be rehabilitated and whether he should be tried as an adult. Participants believed the 12-year-old had a better chance of being rehabilitated than either the 15- or 20-year-olds presented, and more strongly disagreed that the 12-year-old should be tried as an adult. Interestingly, and contrary to the authors' expectations, other characteristics of the offender (e.g., race and physical demeanor) failed to produce consistent effects on participants' attitudes or beliefs.

Although prior research has established that the general public tends to believe that the age of the juvenile offender should be considered as an important factor in sentencing decisions, it is important to note that people believe sentencing decisions within the juvenile justice system should also be impacted by a myriad of other factors, such as the type and severity of the crime. For instance, in a seminal study on the topic, Ghetti and Redlich (2001) asked a sample of college students within the U.S. to make a sentencing recommendation for an 11-, 14-, or 17-year-old male who committed a felony crime against a person (firing a gun) or property (arson) that ultimately resulted in personal injury to a victim or death. The researchers found that, regardless of the age of the juvenile, participants prescribed harsher sentences and more punitive views towards a juvenile whose criminal actions killed rather than injured a person, and especially when the crime involved a violent offense (i.e., firing a gun).

Interestingly, while sentencing recommendations in Ghetti and Redlich (2001) appeared to be completely unaffected by the age of the juvenile offender, it is important to note that age of the juvenile offender was still a significant factor impacting participants' judgments concerning the culpability of the juvenile as well as their perceptions concerning the juvenile's competency to stand trial. More specifically, Ghetti and Redlich (2001) found that the older the juvenile, the more participants believed that the juvenile was responsible for his actions, competent to stand trial, and able to understand the legal consequences of his actions. However, it is important to note that the effects of age of juvenile on many of these beliefs were moderated by other crime-related factors such as the type and outcome of the crime. For instance, an 11-year-old who shot and killed the victim was seen as being just as competent to stand trial as an older, 17-year-old who shot but only injured the victim.

Taken together, the results of studies like Ghetti and Redlich (2001) suggest there is a need to have a more nuanced view when it comes to understanding the general public's attitudes and opinions concerning juvenile justice. Clearly, the American public believes that sentencing decisions – and perceptions of individual responsibility – depend on a wide-range of circumstances. Although age of the offender and type or

severity of crime are some well-established factors (Walker & Wooder, 2011), there are potentially a myriad of others that may impact people's opinions concerning juvenile justice.

Current Study

A great deal of attention in the literature has been dedicated to understanding (a) how various characteristics of the offender (e.g., age of the juvenile) and circumstances related to the criminal offence (e.g., type or severity of crime) may impact the general public's perceptions of a juvenile offender (e.g., perceptions of culpability) and (b) how all these factors may relate to or otherwise impact the general public's beliefs concerning the appropriate punishment for juvenile crime. Interestingly, much of this research has only examined the extent to which people believe that juvenile offenders, themselves, are personally responsible or "culpable" for their behavior or fate. Although attributions of personal responsibility are certainly important, there is evidence to believe that people tend to attribute blame to other sources, beyond the juvenile offenders, themselves. For instance, Brank and Weisz (2004) found that the general public believes that various external factors, beyond the juveniles, themselves, contribute to juvenile delinquency. Beyond blaming the juvenile, a majority of the respondents (i.e., nearly 70%) also attributed blame to the juvenile's parents.

A rich and extensive supportive literature within social psychology (see Kelly & Michela, 1980, and Wiener, 1986 for reviews) demonstrates that people can make internal attributions in which they blame individuals, themselves, for an unfortunate circumstance (e.g., blaming the juveniles, themselves, for ending up in the juvenile justice system) *and* external attributions in which they attribute at least some responsibility for an unfortunate circumstance to outside factors (e.g., blaming juveniles' parents for the juveniles ending up in the juvenile justice system). Unfortunately, there exists a paucity of research examining the relative degree to which people attribute responsibility to outside factors (e.g., the juvenile's parents or society, generally) for a juvenile's criminal behavior, and whether these external attributions of responsibility may uniquely predict people's endorsement of relatively harsh sentencing decisions for younger vs. older juvenile offenders. A systematic review of the literature yielded only a handful of studies that have attempted to examine people's endorsement of internal *and* external attributions of fault for juvenile offenders' criminal actions. Although research suggests that people may attribute more responsibility to external forces (e.g., parents and society) for certain crimes (Aizpurua et al., 2020), and perhaps especially for younger rather than older juvenile offenders (Brank et al., 2011), research has yet to systematically examine the extent to which these attributions may uniquely predict people's opinions concerning the sentencing of juvenile offenders. The present study was created to address this gap in the literature.

As an extension of prior work examining the general public's beliefs and opinions concerning the culpability and punishment of juvenile offenders convicted of a crime, the current study was designed with two major goals in mind. First, the current study was designed to examine the extent to which people blame juveniles, their parents, and society, generally for the juvenile ultimately ending up in the juvenile justice system. Second, and perhaps most importantly, the current study was designed to examine the extent to which internal and external attributions of blame uniquely predict people's orientation toward punishing a juvenile offender. In general, we predicted that attributions of responsibility would uniquely predict participants' orientation towards severely punishing the juvenile. More specifically, and consistent with attribution theory (Weiner, 1986), the more participants blame the juvenile, himself, for ultimately ending up in the juvenile justice system, the more they would endorse a harsh sentencing decision. In contrast, the more participants attribute responsibility to outside forces (e.g., the juvenile's parents or society, generally), the less they would endorse harsh sentencing decisions.

Method

Participants

A total of 155 adults[1] (56% female; 44% males), who ranged in age from 18 to 66 years (M_{age} = 30.05, *SD* = 12.76), were recruited to participate in the current study via snowball sampling through advertisements posted on Facebook, LinkedIn, and Instagram. A majority of the sample (i.e., 71%) self-identified as White/European American, with only a small percentage self-identifying as Black/African American (12%), Asian/Pacific Islander (7%), or Hispanic American or LatinX (3%). Approximately 4% identified as belonging

[1]A total of 176 individuals opened the survey link. However, initial screening revealed that 21 of these individuals opened but did not complete even a small portion of the study. Because these individuals did not provide useable data, they were excluded from all analyses.

to more than one racial group, and 3% stated that they preferred not to respond. Approximately 41% of respondents self-identified as moderately to strongly conservative, 18% self-identified as politically moderate, and 25% self-identified as moderately to strongly liberal. Approximately 16% indicated that they would prefer not to state their political orientation.

Materials and Procedure

After providing their consent to participate in the study, and completing a short demographics questionnaire, participants were asked to read two crime reports, presented in a random order, describing the adjudication of a juvenile male[2] charged with assault (i.e., for stabbing a man) and one charged with possession of an illicit drug (i.e., crystal methamphetamine). As a between-subjects factor, participants were randomly assigned to imagine that the juveniles in both crime reports were either a 14-year-old or a 17-year-old. Across both crime reports, participants were told that the judge presiding over the case sentenced the juvenile to 12 months in a juvenile detention center (see Appendix).

Immediately after reading each crime report, participants were asked to respond to seven items that were created to assess their beliefs concerning (a) who (i.e., the juvenile and his parents) or what (i.e., society) were to blame for the juvenile's fate, (b) the likelihood the juvenile would end up back in jail again in the future (i.e., perceptions of recidivism), and (c) the appropriateness of punishment. More specifically, the first three items asked participants to indicate how much they disagreed or agreed that it was (1) the juvenile's fault (2) the juvenile's parents' fault, and (3) society's fault that the juvenile ended up in the juvenile justice system (items were adapted from Wadian et al., 2018), using a 6-point Likert scale that ranged from 1 (*disagree a lot*) to 6 (*agree a lot*). Using the same 6-point scale, participants were asked to respond to another three items that were created to assess their beliefs the juvenile would commit crimes again in the future (e.g., "I believe this juvenile will continue to break the law when he gets older" and "I believe this juvenile will eventually end up in prison"). Participants' responses on these three items demonstrated an acceptable level of internal consistency ($\alpha = .70$). Consequently, participants' responses across the three items were averaged to create an overall likelihood of recidivism index, where higher scores reflected a stronger belief that the juvenile would likely continue to commit crimes in the future. The final item asked participants to evaluate the severity of the judge's sentencing decision using a 101-point sliding scale that ranged from -50 (*the sentence was far too lenient*) to 50 (*the sentence was far too strict*) with a midpoint of 0 (*the sentence was appropriate*).

Results

Attributions of Fault

A 2 (type of crime: assault vs possession) × 2 (age of juvenile: 14-year-old vs 17-year-old) × 3 (source of fault: juvenile vs. parent vs. society) mixed ANOVA was conducted on participants' fault ratings to examine the extent to which they blamed a juvenile, his parents, and society for the juvenile getting caught in the juvenile justice system. Results revealed that the main effect of source of fault was significant, $F(2, 286) = 64.33$, $p < .001$, $\eta_p^2 = .31$. Post hoc analyses revealed that there was a clear hierarchy in who or what participants blamed for the juvenile ultimately ending up in the juvenile justice system. As seen in Table 1, the juvenile was perceived to be most culpable for his current circumstance, followed by his parents and then society, generally. However, this main effect of source of fault was qualified by a significant two-way interaction of type of crime × source of fault, $F(2, 286) = 9.47$, $p < .001$, $\eta_p^2 = .06$.

Table 1
Means (and Standard Deviations) for the Main Effect of Source of Fault

	Juvenile	Parents	Society
Mean	4.81^{c}	3.76^{b}	3.13^{a}
(*SD*)	(1.17)	(1.30)	(1.39)

Note. Means with different superscripts differ at $p < .05$ as determined by post hoc analyses using Bonferroni adjustment for family-wise error.

As depicted in Table 2, simple effects tests probing this interaction revealed that participants blamed the juvenile, himself, more when evaluating a juvenile convicted of assault than when they evaluated a juvenile who was convicted of drug possession. In contrast, when evaluating the extent to which the juvenile's parents and society, generally, are at fault for the juvenile's behavior, participants blamed society, generally – and tended to blame the juvenile's parents –

[2] Considering that (a) a majority of juveniles within the juvenile justice system are males (Ehrmann et al., 2019), and (b) most published work on juvenile delinquency examines people's beliefs and attitudes toward male juvenile offenders, the present study solely focused on examining people's beliefs and attitudes toward male juvenile offenders.

more when evaluating a juvenile that was convicted of possession than one that was convicted of assault. Surprisingly, age of the juvenile offender failed to produce any effects on participants' fault ratings, all *p*s > .16.

Table 2
Results of Simple Effects Tests Probing the Two-Way Interaction of Type of Crime × Source of Fault

	Assault *M* (*SD*)	**Possession** *M* (*SD*)	*F*(1, 143)	η_p^2
Juvenile	4.95 (*1.30*)	4.62 (*1.38*)	10.08**	.07
Juvenile's Parents	3.71 (*1.45*)	3.87 (*1.37*)	2.78+	.02
Society	3.01 (*1.57*)	3.23 (*1.54*)	4.04*	.03

Note. +*p* < .10, **p* < .05, ***p* < .01

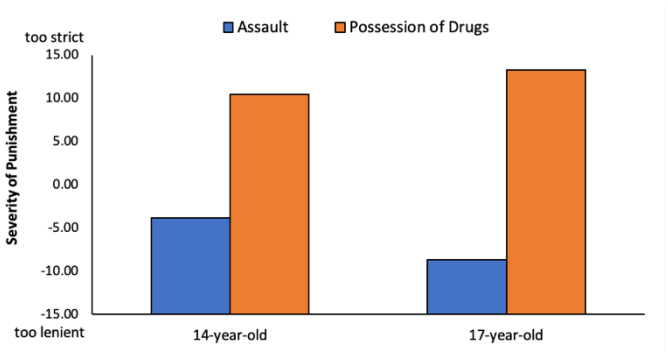

Figure 1
Bar Graph Depicting Participants' Perceptions Concerning the Appropriateness of the Punishment as a Function of Age of Juvenile Offender and Type of Crime.

Note. Higher scores on the perceptions of the punishment measure reflect the belief that a sentence of 12-months was too strict. Lower scores reflect the belief that the punishment was too lenient. A score of 0 reflects the belief that the sentence was appropriate.

Perceptions of the Punishment

Preliminary Analyses

Prior to examining the factors that may predict participants' perceptions concerning the appropriateness of the 12-month sentence the juveniles received, a preliminary 2 (type of crime: assault vs possession) × 2 (age of juvenile: 14-year-old vs 17-year-old) mixed ANOVA was conducted on participants' appropriateness of sentencing rating for both juveniles, depicted in Figure 1. Although there was no main effect of age of juvenile on participants' ratings, $F(1, 138) = .15$, $p = .70$, the main effect of type of crime was significant, $F(1, 138) = 96.18$, $p < .001$, $\eta_p^2 = .41$. Participants believed that a sentence of 12 months was more strict when evaluating a case of possession ($M = 11.79$, $SD = 18.30$) than when evaluating a case of assault ($M = -6.16$, $SD = 19.96$)[3]. However, this significant main effect of type of crime was qualified by a significant interaction between type of crime and age of the juvenile offender, $F(1, 138) = 4.23$, $p = .042$, $\eta_p^2 = .03$. Simple effects tests probing the interaction of type of crime and age of juvenile offender revealed that participants believed that a sentence of 12 months was more strict for possession than assault, $F(1, 138) = 31.38$, $p < .001$, $\eta_p^2 = .19$, particularly when the juvenile was described as being 17 years old, $F(1, 138) = 67.48$, $p < .001$, $\eta_p^2 = .33$,

To more closely examine the interaction, we conducted an additional series of exploratory one-sample *t*-tests to examine whether participants' ratings in each condition significantly varied from 0. Considering that a rating of 0 on the 101-point scale would reflect the belief that the 12-month sentencing decision was appropriate, it stands to reason that a series of one-sample *t*-tests examining how much participants' ratings varied from 0 would yield valuable information about the degree to which participants believed the sentencing decision in each condition was appropriate. Further, by inspecting whether mean scores in each condition were positive or negative, we could more directly identify whether participants believed the sentencing decision was either too strict (indicated by positive values) or too lenient (indicated by negative values). As seen in Table 3, results of this series of exploratory analyses revealed that, regardless of the age of the juvenile, participants uniformly believed that a sentence of 12 months for possession of an illicit drug was too strict. However, when evaluating a case of assault, participants tended to believe that the older juvenile should have been sentenced more harshly for his violent offense than the younger juvenile. That is, while those who evaluated a case in which a 14-year-old was convicted of assault believed a 12-month sentence to a juvenile detention center was appropriate

[3] While positive values on this measure reflect the belief that the sentence was too strict, negative values reflect the belief that the sentence was too lenient.

Table 3
Results of the Series of One-Sample t-tests Examining Participants' Appropriateness of Punishment Ratings

		n	*M* (*SD*)	t	Cohen's *d*
14-year-old	Assault	75	-3.37 (*18.40*)	1.59	.18
	Drug Possession	77	11.29 (*17.81*)	5.56***	.63
17-year-old	Assault	70	-8.74 (*21.15*)	3.46***	.41
	Drug Possession	69	12.87 (*19.19*)	5.57***	.67

Note. ***$p < .001$

Table 4
Results of Regression Analyses Predicting Participants' Appropriateness of Punishment Ratings Toward a Juveniles Convicted of Assault and a Juvenile Convicted of Possession

	Assault			**Possession**		
	b (SE)	β	*t*	b (SE)	β	*t*
Juvenile	-4.71 (1.05)	-.31	4.49***	-2.96 (1.04)	-.22	2.84**
Juvenile's Parents	-2.44 (1.00)	-.18	2.44*	0.82 (1.08)	.06	0.76
Society	4.80 (.92)	.37	5.21***	2.13 (.97)	.17	2.20*
Recidivism	-4.68 (1.31)	-.25	3.57***	-5.69 (1.47)	-.30	3.89***

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

for the crime, those who were told the juvenile was 17 years old believed the sentence was too lenient.

Factors Predicting Participants' Perceptions Of The Punishment

Two linear regressions, one for each type of crime, were conducted to explore the relative extent to which the three fault attributions uniquely predict people's perceptions concerning the appropriateness of the judge's sentencing decision for each juvenile. In each of these regressions, participants' perceptions concerning the appropriateness of the juvenile's punishment ratings were regressed onto their various fault attributions and perceptions concerning the likelihood of recidivism. The regression model was significant for both regressions, indicating that the factors included in each model, as a group, explained a significant proportion of variance in participants' ratings for both the juvenile convicted of assault, $F(1, 140) = 22.35$, $p < .001$, $R = .62$, $R^2 = .39$, $R^2_{adj} = .37$, and the juvenile convicted of possession of an illicit drug, $F(1, 141) = 9.69$, $p < .001$, $R = .46$, $R^2 = .22$,

R^2_{adj} = .19. As seen in Table 4, inspection of the standardized coefficients for each predictor in the model revealed that, for both crimes, the more the participants blamed society for the juveniles' behaviors, the more they believed the 12-month sentence the juveniles received was too severe. In contrast, the more participants blamed the juveniles, themselves, for their behavior and the more they believed the juveniles would likely continue to commit crimes in the future, the more they believed the 12-month sentence the juveniles received was too lenient (i.e., not severe enough). It is important to note that while results revealed that the more participants blamed the juvenile's parents for his behavior, the more they believed the judge's sentencing decision was too lenient – this finding only emerged when participants were evaluating a juvenile who was convicted of assault. This fault attribution, reflecting the extent to which participants attributed responsibility to the juvenile's parents for his unlawful behavior, failed to uniquely predict participants' beliefs concerning the appropriateness of the sentencing decision when evaluating a juvenile convicted of a drug possession.

Discussion

The present study examined the extent to which people blame a juvenile, his parents, and society when a juvenile is convicted of a crime. In addition, we examined the role these three fault attributions uniquely impact people's perceptions concerning the appropriateness of the juvenile's punishment.

Fault Attributions

Overall, results from the present study confirm prior speculation (Brank et al., 2011) that people ultimately blame a juvenile, himself, more for ending up in the juvenile justice system than his parents or society, generally. However, and consistent with conclusions based on public opinion polls (Brank & Weisz, 2004), beyond blaming the juvenile offenders, themselves, participants attribute a great deal of blame to a juvenile's parents when a juvenile is convicted of a crime. More specifically, results from the current study revealed that participants blamed the juvenile's parents more than society generally, regardless of the type of crime (i.e., whether it was a violent crime or not). This finding is consistent with current and historical efforts to punish parents of juvenile offenders for their perceived lack of oversight over their children. Perhaps the clearest example includes parental responsibility laws within the United States and the United Kingdom in which parents can be held financially liable for the misconduct of their child. For instance, Illinois has a law (i.e., the Parental Responsibility Law, 2012) in which parents are held financially responsible for their child's "willful or malicious" behavior that results in property damage or personal injury. Such laws clearly reflect the general public's beliefs that parents are in some way responsible for their children's behavior.

It is important to note that results of the current study suggest that the extent to which people make internal vs external attributions of blame for juvenile crime depends on the type of crime. Overall, participants tended to make much more internal attributions when evaluating a juvenile convicted of a violent crime than one convicted of a nonviolent crime. That is, participants in this study blamed a juvenile convicted of assault much more for his current circumstance, and tended to blame outside forces (e.g., the juvenile's parents and society, generally) less, than one convicted of drug possession. This general pattern of findings is consistent with prior research demonstrating that people tend to make internal attributions for youth's undesirable behavior, especially when that behavior is aggressive or harmful to others (see Wadian et al., 2018). People have strong negative and punitive attitudes towards violent offenders (Ghetti & Redlich, 2001), and view those who commit violent crimes as intentionally causing harm to others.

Surprisingly, and counter to expectations based on existing literature, age of the juvenile offender failed to meaningfully affect participants' fault attributions. Although prior research (e.g., Bradley et al., 2012; Scott et al., 2005; Ghetti & Redlich, 2001) suggests that people tend to believe that younger juveniles convicted of a crime are generally less culpable than older juveniles convicted of the same crime, participants in this study did not blame the older juvenile convicted of a crime more than the younger juvenile – nor did they attribute more blame to external factors. Similar results were found in Warling and Peterson-Badali, (2003). In their study, Warling and Peterson-Badali, (2003) found that participants sentenced younger offenders to shorter sentences than older offenders; age of the offender did not significantly impact guilty verdicts. These and other findings in the literature (e.g., Ghetti & Redlich, 2001) support the growing idea that while the public has some understanding of the cognitive growth during adolescent years, they ultimately place a significant meaning on holding juvenile offenders accountable for their actions regardless of their age.

Perceptions of Punishment

The primary goal of the present investigation was to examine the extent to which people's beliefs concerning who or what is at fault for a juvenile ending up in the juvenile justice system are uniquely predictive of their beliefs concerning the appropriateness of punishing juveniles convicted of a crime. Analyses

examining participants' perceptions concerning the appropriateness of a judge's sentencing decisions of two juveniles, and factors predicting those judgments, revealed several interesting patterns of effects, which will now be discussed in turn.

The first interesting pattern of effects concerns how participants' perceptions were impacted by the circumstances provided. That is, preliminary analyses examining participants' perceptions concerning the appropriateness of a judge's sentencing of the two juveniles suggested that participants believed that a juvenile convicted of a violent crime (i.e., assault) should be punished more severely than one convicted of a nonviolent crime (i.e., drug possession), especially if the juvenile is older (i.e., 17 years old). This finding is consistent with those summarized previously (e.g., Bradely et al., 2012; Ghetti & Redlich, 2001) in which people's perceptions of a juvenile's criminal behavior, and beliefs concerning the appropriate punishment of juvenile offenders, depends largely on the situation or context. Results from the current study clearly support the overarching findings from the existing research literature that the type of crime – specifically the extent to which the crime causes personal harm – and age of the juvenile offender are two major contributing factors impacting the general public's beliefs concerning the appropriateness of sentencing decisions.

It is important to note that although the results of the present study suggest that age of the juvenile offender may play a moderating role in explaining their orientation toward punishing a juvenile offender who was convicted of a violent crime more severely than one convicted of a nonviolent crime, there was no evidence to suggest that age of the juvenile offender produced a direct effect on participants' judgments. That is, participants in the current study did not unilaterally decide that, regardless of the crime, a younger juvenile should be sentenced more leniently than an older juvenile offender. This finding is interesting because it conflicts with other findings from the existing literature demonstrating that younger juveniles are perceived as being less competent, less culpable for their actions, and less deserving of punishment (e.g., Bradley et al., 2012; Scott et al., 2005; Ghetti & Redlich, 2001). It is possible that the manipulation of age in the current study was relatively weak. That is, a 14-year-old may not have been young enough. Prior research (e.g., Ghetti & Redlich, 2001) suggests that the younger the juvenile, the less people will hold the juvenile personally responsible for the crime and the more lenient they would be in terms of punishment. Future research should continue to examine people's beliefs concerning culpability of juvenile offenders, particularly when the juvenile offender is 12 years old or younger.

The second pattern of findings that are worth noting concerns the role that participants' fault attributions play in explaining their support of the punishment the juvenile offender received. Results of the present study clearly demonstrate that while internal attributions of fault uniquely affect people's orientation toward harshly punishing juveniles convicted of a crime, individual differences in the extent to which participants blame external forces (e.g., society, generally) also impact these judgments. More specifically, while an orientation toward harshly punishing the juvenile was predicted by the extent to which participants made internal attributions for the juvenile's behavior (i.e., blamed the juvenile, himself, for ultimately ending up in the juvenile justice system), an orientation toward more leniency was predicted by the degree to which participants made external attributions for his circumstance (i.e., blaming society, generally – and to some extent, the juvenile's parents –for the juvenile ultimately ending up in the juvenile justice system). Importantly, these results further highlight the complex and sometimes conflictual cognitions people hold when it comes to juvenile justice. While people believe that juveniles *should* be punished or otherwise held accountable for their criminal behavior, they are aware that the juvenile is not the only entity or factor contributing to his behavior. People's beliefs concerning the appropriate punishment for a juvenile offender considers both internal and external factors that may have caused the juvenile's behavior.

Conclusion

The results of the present study yielded many interesting findings concerning the extent to which people blame a juvenile, his parents, and society for a juvenile's criminal behavior and how these attributions of fault uniquely impact their beliefs concerning the appropriate punishment for the juvenile's actions. In general, and consistent with prior research (e.g., Brank & Weisz, 2004), people believed that various external factors, beyond the juveniles, themselves, contribute to juvenile delinquency. Most importantly, although results of the current study clearly demonstrate that people believe both internal and external factors ultimately contribute to a juvenile's involvement in the juvenile justice system, the relative degree to which people make internal *and* external attributions for a juvenile's criminal behavior both, in their own right, appear to be important predictive factors contributing to people's beliefs concerning the appropriate punishment for juveniles convicted of a crime. Implications of the current study suggest that, beyond considering the myriad of contextual

factors that can impact public perceptions concerning the appropriate punishment of juvenile offenders convicted of a crime, future research should also consider the myriad of, and often conflicting, cognitions people may hold considering who or what is ultimately to blame.

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Appendix

Violent Crime Scenario
Crime Report: Imagine there was a 14-year-old (17-year-old) male who reportedly stabbed a man and was charged with assault. According to police reports, the juvenile stabbed the man at least two times, causing serious injuries. The judge presiding over the case sentenced the juvenile to spend 12 months at the county Juvenile Justice Center.

Drug Scenario
Crime Report: Imagine there was a 14-year-old (17-year-old) male who was reportedly stopped after Fredericksburg officers were dispatched to Pleasant Valley Apartments for suspicious persons/activity. Police conducted a search of the male which revealed possession of crystal methamphetamine. The judge presiding over the case sentenced the juvenile to 12 months at the county Juvenile Justice Center.

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How message features affect perceptions of the permissibility of medical (and recreational) marijuana

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Abstract – With the recent shift away from prohibition of marijuana in the United States, the acceptability of marijuana seems to be increasing (Pew Research Center, 2015; Pizzorno, 2016). One possible explanation for more accepting attitudes could be an increase in pro-marijuana messaging and marketing (Berg, 2015). Although previous research has revealed that messages powerfully affect individuals' perceptions of a substance, the types of messages and the extent to which messages affect permissibility of marijuana needs more investigation (see Berg, 2015; Huijding, 2004; Stautz, 2017). Consequently, this study examined if two message features – valence (i.e., pro/positive and anti/negative) and source (i.e., fact-based vs. testimonials from hypothetical marijuana users) – affect the perceived permissibility of *medical* marijuana use. This study also examined if the effects of the message features generalize to perceptions of the permissibility of *recreational* marijuana. Using a 2 x 2 between-subjects experimental design, 116 undergraduate students enrolled in psychology courses at a midsized private university read positively or negatively framed information about the use of medical marijuana from a fact-based, data-driven perspective or from hypothetical marijuana users' perspectives. Results revealed that perceptions of the permissibility of medical marijuana were lower when messages framed information negatively compared to positively – but this effect did not generalize to perceived permissibility of recreational marijuana. No significant effects emerged for source of message. The current study contributes to literature on perceptions of medical (and recreational) marijuana and offers meaningful directions for future research on the topic(s).

In recent years, marijuana has become increasingly available for both medical and recreational uses. Although marijuana is known to be a relatively "safe" drug – with most people who use marijuana *not* experiencing clinical or social problems (Eisen et al., 2002; von Sydow et al., 2001; Wagner & Anthony, 2002) – marijuana consumption still carries some risk of adverse consequences, including accidents and poor psychosocial outcomes (Hall, 2009). For example, there are potentially damaging short- and long-term effects associated with marijuana use. Among younger people (i.e., adolescents), marijuana use is associated with impaired thinking and problem-solving, memory declines, learning difficulties, attention issues, and the risk of addiction (Centers for Disease Control and Prevention, 2021). Similarly, marijuana use among adults has been linked to short-term memory impairments, reduced motor-coordination and reaction time, and challenges making sound judgments (Lenné et al., 2010). Due to the potential negative effects of marijuana use, legalization of the substance (for recreational and medical use) has been extremely controversial. Despite the controversy, United States legislation – and the social attitudes that tend to accompany legislation – have shifted away from prohibition towards legalization in recent years. Specifically, recent research has demonstrated that college students' attitudes towards the permissibility of marijuana usage has increased (Pizzorno, 2016). One explanation for these more permissive attitudes reflects the pro-marijuana marketing that has accompanied the legalization of medical marijuana (in 37 of the 50 states) and recreational marijuana (in 21 of the 50 states; National Conference of State Legislatures [NSCL], 2022). Since marketing can powerfully affect individuals' attitudes toward substances, the current study examined if the

features of messages marketed to individuals affect their attitudes toward marijuana. Specifically, the current study examined if pro/positive or anti/negative messages affect the perceived permissibility of medical and recreational marijuana when the source of the information is based on fact or testimonial.

Power of Messages on Attitudes (and Behaviors)

A robust literature in psychological science documents the power of messages to shape individuals' attitudes (and behaviors). For example, in a recent study by Yeh et al. (2021) examining the social and physical consequences of contracting COVID-19, 440 college students – a demographic group highly resistant to mask wearing – reported their attitude towards wearing a mask after being randomly assigned to read a blog containing messages describing the negative physical consequences of having COVID-19, the negative social consequences of having COVID-19, or the struggles that accompany moving into a new home (control condition). Results revealed that individuals who read blogs with messages describing the physical or social consequences of contracting COVID-19 were more in favor of wearing a mask than individuals who read the control-related blog. These findings demonstrate that messages can impact individuals' health-related attitudes, even individuals who seem relatively resistant to attitude or behavior change. Such results have powerful public health implications.

The public health benefits of using messages to change individuals' attitudes are important, because messages can shape public opinion regardless of whether the individuals actively seek or are incidentally exposed to the content. For example, Lewis and Sznitman (2019) examined whether incidental (i.e., unintentional) exposure to positive information about marijuana affected individuals' attitudes towards marijuana use. In the study, 554 individuals reported their attitude toward the legalization of medical marijuana after reporting whether they actively sought information (i.e., searched for information themselves) or had incidentally encountered information about medical marijuana from various media sources in the previous 30 days. The results revealed that intentionally seeking *and* incidental exposure were both associated with positive attitudes toward medical marijuana, and those positive attitudes were predictive of stronger support for pro-marijuana legislation. Such results suggest that individuals do not need to be actively seeking information about a topic for messages to impact their attitudes. In fact, additional research has demonstrated that exposure to anti-marijuana messages reduces individuals' future intentions to use marijuana among those with positive attitudes toward the message (Alvaro et al., 2013). Such research demonstrates why investigating the effects of messages on attitudes has received significant attention in psychological science.

Factors Affecting the Power of Messages on Attitudes

Although a vast literature documents the various features of messages that are associated with individuals' attitudes, two commonly cited features include the credibility of the source and the positive or negative framing of information in the messages. Among researchers examining the credibility of the source, two powerful sources include scientific/fact-based messages *and* narratives/testimonials.

Arguably, the most obvious credible source of information is science, and research demonstrates that fact-based information meaningfully affects individuals' attitudes. For example, in a study examining the educational value of fact-based messages about nicotine, Parker et al. (2021) randomly assigned 543 individuals to read or not read educational messages about nicotine (e.g., "Nicotine is the addictive substance in tobacco products"). All participants then reported their attitudes toward understanding the harmful effects of nicotine. Results revealed that individuals who read the educational messages, as compared to those who did not, reported more accurate knowledge of nicotine and more favorable attitudes toward understanding the harmful effects of nicotine. Such research is consistent with literature, across a wide range of health-related topics, documenting the power of facts to promote knowledge and affect individuals' attitudes.

Although fact-based information can powerfully affect individuals' attitudes, facts can be perceived as "cold" and "distant", lacking the personal, often emotional, nature of human narratives (De Graaf et al., 2016; Sznitman & Lewis 2015). In fact, researchers argue that narratives (i.e., testimonials) exert strong influence on individuals' attitudes, because narratives offer a personal and emotional perspective (De Graaf et al., 2016; Morris et al., 2019). For example, a recent study examined the effects of patient testimonials about marijuana compared with informationally equivalent non-testimonial (i.e., informational/fact-based) messages. The study revealed that exposure to the testimonials led to significantly more positive attitudes toward marijuana than the informational messages, and these effects were explained by participants feeling more emotionally connected to the patient story (Sznitman & Lewis 2015). Such work is consistent with other research on the effectiveness of narratives (Green & Brock, 2000; Slater & Rouner, 2002; Morris et al., 2019), including

work using patient's successful experiences with medical marijuana as a treatment for a variety of stigmatized (e.g., HIV/AIDS) and non-stigmatized illnesses (e.g., cancer; Lewis & Sznitman, 2017).

As described previously, in addition to the credibility of the source, a second important feature of messages that influences individuals' attitudes is the positive or negative valence of information. A vast multidisciplinary literature has been focused on understanding the purpose of framing which, ultimately, serves to convey content in a positive or negative manner; for example, when content is framed positively, outcomes are gains, whereas when content is framed negatively, outcomes are losses (e.g., Levin, Schneider, & Gaeth, 1998; Tversky & Kahneman, 1981). The negativity principle (see Avdagic & Savage, 2021) suggests that humans have a tendency to attend to more readily (and be influenced by) negative compared to positive information (Baumeister et al. 2001; Tversky & Kahneman 1979; Rozin & Royzman 2001). Examples of the negativity principle are found across many topics, including research demonstrating how public perceptions of the economy are more strongly affected by negative than positive economic news coverage (Soroka 2006); how job placement programs tend to be evaluated more negatively when they are framed in terms of their failure rather than their success rates (Davis & Bobko 1986); and how support for government welfare funding diminishes when information about immigrants is framed negatively compared to positively (Avdagic & Savage, 2021). Additionally, negative information has been demonstrated to play a greater role in attitudes toward U.S. presidential candidates and political parties (Holbrook et al. 2001), with individuals more readily remembering negative political advertising than positive advertising (Johnson-Cartee & Copland 1991).

When the negativity principle has been studied in the context of marijuana, the findings are mixed. Some researchers reveal that negative or anti-marijuana messages increase the perceived harm of the substance (Stevens et al., 2019) and reduce consumption (Alvaro et al., 2013; Palmgreen et al. 2001). However, other researchers have revealed that negative or anti-marijuana messages create a "boomerang effect" and inadvertently improve attitudes and increase individuals' intentions to use marijuana (Czyzewska & Ginsburg, 2007; Yzer et al., 2003). Given the mixed findings in the literature, it is important to continue studying the effects of negative (and positive) messages on perceptions of the permissibility of marijuana. Such research may reveal the conditions under which negative (and positive) messages are most effective in shaping attitudes toward the substance.

Current Study

The purpose of the current study was to examine if individuals' perceptions of the permissibility of medical marijuana is affected by positively or negatively valenced messages from two different sources: scientific fact or personal testimonials (from hypothetical marijuana users). Additionally, the current study examined if the effects of these messages generalize to the perceived permissibility of recreational marijuana. Because marijuana is becoming increasingly common – both medically and recreationally – it is important to understand how messages may affect attitudes toward the substance. The findings could potentially help public health campaigns deliver messages that curb problematic marijuana use. We hypothesized that negatively valenced messages will more adversely impact the perceived permissibility of medical marijuana compared to positive messaging, and this effect will be especially true when the message reflects a personal testimonial (compared to messages with solely science-based fact).

Method

Participants

Participants included 116 undergraduate students (75 women, 37 men, 3 non-binary/non-conforming, 1 no response) ranging in age from 18 to 23 (M = 19.93, SD = 1.17) from Xavier University. The majority of students reported identifying as White (79.3%), with smaller percentages identifying as Black/African-American (9.5%), Biracial (4.3%), Asian (3.4%), Hispanic/Latino (2.5%), and Hawaiian/Pacific Islanders (1%). All participants provided informed consent prior to taking part in the study, which was conducted online using Qualtrics survey software and, therefore, completed the study at a time and location convenient to the participant.

Design

The study was conducted as a 2 (Valence of Message about Marijuana: Pro/Positive vs. Anti/Negative) x 2 (Framing of Information about Marijuana: Fact-Based vs. Hypothetical Marijuana Users) between-subjects factorial design. The dependent variables included the Perceived Permissibility of Medical *and* Recreational Marijuana.

Materials

Marijuana Use Messages

Four vignettes, written for the purposes of the current study (see Appendix), positively or negatively framed information about the use of medical marijuana from a fact-based data-driven perspective or from

hypothetical marijuana users' perspectives. Messages reflecting the fact-based, data-driven perspective were written using current information from credible sources (e.g., Centers for Disease Control and Prevention, 2021; Pew Research Center, 2015) and were accompanied by citations to aid the messages perceived credibility. Messages reflecting the perspective of hypothetical marijuana users describe credible real-world-relevant (positive or negative) experiences with medical marijuana. With the exception of operationalizing the manipulated variables (i.e., valence and pro/positive or anti/negative), the vignettes were written to be as similar as possible (e.g., length, style).

Perceived Permissibility of Medical Marijuana Use

To measure the perceived permissibility of medical marijuana, 23 items from the Clinicians' Attitudes about Opioid Scale were adapted (CAOS; see Wilson et al., 2013). As the title of the CAOS suggests, the original measure asked clinicians to rate their beliefs about the prescription use of *opioid*. For the purposes of the current study, items on the measure were revised to replace *opioid* with *medical marijuana*. Additionally, two items asking clinicians about their specific opioid prescribing behavior were removed. Participants in the current study rated the 23 items on a scale ranging from 1 (*Disagree*) to 5 (*Agree*). After reverse scoring seven negatively keyed items, scores across all items were averaged, with higher scores reflecting greater perceived permissibility of medical marijuana use.

Perceived Permissibility of Recreational Marijuana Use

An adapted version of Simons et al.'s (1998) 25-item Marijuana Motives Measure was used to assess participants' perceptions of the permissibility of recreational marijuana use. The original measure asked individuals about their personal use of recreational marijuana. For the purpose of the current study, the items were revised to ask participants about their perceptions of *others'* use of recreational marijuana. All items were rated on a scale ranging from 1 (*Never*) to 5 (*Always*). Scores across all items were averaged, with higher scores reflecting greater perceived permissibility of recreational marijuana use.

Procedure

Xavier University IRB approval was obtained prior to conducting the present study. The study was conducted online using Qualtrics survey software. After volunteering to participate via the School of Psychology's electronic participant pool system, Sona Systems, participants clicked a secure transfer protocol that directed them to complete an informed consent form in Qualtrics. After providing consent, participants were randomly assigned – using features available in Qualtrics – to one of the study's four marijuana message conditions (i.e., pro- or anti-medical marijuana information from fact-based data-driven perspective or from hypothetical marijuana users' perspectives). After reading the messages, participants completed the Perceived Permissibility of Medical Marijuana and Perceived Permissibility of Recreational Marijuana measures. Subsequently, participants completed a demographic form that asked them about their gender identity, racial/ethnic identity, college year, and age. Finally, participants were debriefed and thanked for their involvement in the study.

Results

To test the hypotheses that negatively-valenced messages would more adversely affect the perceived permissibility of medical and recreational marijuana use than positively-valenced messages, particularly when framed from hypothetical marijuana users' perspectives, separate 2 (Valence of Message about Marijuana: Pro/Positive vs. Anti/Negative) x 2 (Framing of Information about Marijuana: Fact-Based vs. Hypothetical Marijuana Users) between-subjects factorial ANOVAs were conducted.

Perceived Permissibility of Medical Marijuana Use

The main effect of Valence of Message about Marijuana was significant, revealing that participants perceived the use of medical marijuana as less permissible when they read negatively valenced information (M = 2.91, SD = .52) compared to positively valenced information (M = 3.39, SD = .57) about medical marijuana, $F(1, 112) = 23.46$, $p < .001$. The main effect of Framing of Information about Marijuana was not significant, revealing that participants' perceptions of the perceived permissibility of medical marijuana did not differ whether they read information framed from facts (M = 3.24, SD = .62) or marijuana users' perspective (M = 3.07, SD = .56), $F(1, 112) = 2.77$, $p > .05$. The interaction between Valence of Message about Marijuana and Framing of Information about Marijuana was not significant, $F(1, 112) = 2.10$, $p > .05$.

Perceived Permissibility of Recreational Marijuana Use

The main effect of Valence of Message about Marijuana was not significant, revealing that participants' perceptions of the perceived permissibility of recreational marijuana did not differ whether they read positively (M = 2.29, SD = 0.74) compared to negatively (M = 2.24, SD

= 0.74) valenced information about medical marijuana, $F(1, 112) = 0.13$, $p = .72$. The main effect of Framing of Information about Marijuana was also not significant, revealing that participants' perceptions of the perceived permissibility of recreational marijuana did not differ whether they read information framed (about medical marijuana) from facts ($M = 2.28$, $SD = 0.77$) or marijuana users' perspective ($M = 2.26$, $SD = 0.71$), $F(1, 112) = 0.01$, $p = .91$. Finally, the interaction between Valence of Message about Marijuana and Framing of Information about Marijuana was not significant, $F(1, 112) = 0.01$, $p = .95$. Such results suggest that any effects of the messages on perceptions of the permissibility of medical marijuana did *not* extend to perceptions of recreational marijuana.

Discussion

Attempting to add to previous research examining if features of messages affect individuals' perceptions, the current study examined if two message features – valence (i.e., pro/positive and anti/negative) and source (i.e., fact-based vs. testimonials from hypothetical marijuana users) – affect the perceived permissibility of medical marijuana use. The study also examined if the effects of the message features generalize to perceptions of the permissibility of recreational marijuana. Results revealed that perceptions of the permissibility of medical marijuana decreased when messages framed information negatively compared to positively – but this effect did not generalize to perceived permissibility of recreational marijuana.

Individuals who read negatively-valenced messages about medical marijuana reported less permissibility for the substance than individuals who read positively-valenced messages. This finding supports previous research (see Avdagic & Savage, 2021) documenting the powerful role of negatively-valenced information on individuals' attitudes. In the current study, negatively-valenced information about medical marijuana clearly communicated the harmful effects of the substance on individuals' health, and when the negative consequences for a behavior are clear (and there is an easy way to avoid those consequences), research suggests that individuals' avoidance orientations tend to be activated (Lang, 2006). Although individuals' motivations to avoid marijuana were not directly measured in the current study, individuals' approach (appetitive) and avoidance (aversive) orientations provide an excellent direction for future research on the topic. It is possible that such future research may reveal that individuals who experience negative information about medical marijuana as particularly aversive (to themselves and others' health) may perceive the substance as highly impermissible.

Although the current study revealed that negatively-valenced messages about medical marijuana were perceived as less permissible than positively-valenced messages, this effect did not directly generalize to the perceived permissibility of *recreational* marijuana. Prior research suggests that attitudes toward medical marijuana may indirectly, rather than directly, influence attitudes toward recreational marijuana (see Lewis & Sznitman, 2018) via individuals' own attitudes, beliefs, and intentions toward marijuana. Such research suggests that future studies may want to examine more closely the factors that promote the generalization of attitudes about medical marijuana to recreational marijuana. One such factor may be personal experience with marijuana, as non-marijuana users report less accepting attitudes than users (Pearson et al., 2017).

Finally, the current study revealed that two sources of information about medical marijuana (i.e., fact-based vs. testimonials from hypothetical marijuana users) did not yield different levels of perceived permissibility of the substance. Such a result might suggest that both fact-based and testimonial-based information may affect individuals' attitudes toward medical marijuana. Although such a conclusion needs to be supported by additional research (particularly research with a control condition) there is existing literature supporting the effectiveness of both fact-based (see Parker et al., 2021) and narrative-based (i.e., testimonials; Kteily-Hawa et al., 2020; Morris et al., 2019) information on individuals' attitudes. Future research could explore the factors that may make a particular source of information – fact or testimonial – more effective. One such factor may be the number of people (negatively or positively) perceived to be affected by the information. Although testimonials offer a personal and emotional perspective (De Graaf et al., 2016; Morris et al. (2019), they may be perceived as limited in scope – affecting fewer individuals – than fact-based information.

Limitations and Future Directions

Although the current study has many strengths, it is important to note a few limitations. Unfortunately, the sample reflected mostly White, college-aged students from a private university in the Midwest, and these responses are likely not generalizable to individuals from other races/ethnicities, ages, or socioeconomic statuses. The directions for future research mentioned previously would benefit from collecting data from a more diverse sample. Additionally, the current study may have lacked mundane realism, such that reading information about medical marijuana in an online research setting (i.e., Qualtrics) does not closely resemble how individuals

obtain information in the real world. Future research should employ a more realistic methodology – such as exposing people to information via the radio, television, or newspapers – to understand the impact of such information more clearly on their attitudes. For example, Zerhouni et al. (2019) revealed that individuals' passive (i.e., unintended) exposure to information promoted consumption. Such passive exposure is likely more consistent with individuals' real-world experiences and may be a fruitful direction for future research.

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Appendix – Positive Fact-Based

Please read through the information below at least twice and use the information provided to evaluate your own perspectives. You will not be able to move to the next page until at least ***three minutes have elapsed****.*

Since 1996, medical marijuana (or cannabis) has been legalized in 36 U.S. states and has been recognized as a legitimate treatment for various medical conditions by credible healthcare professionals (Timmerman 2011). One of the most notable uses of medical cannabis is to manage pain, especially for individuals who suffer from chronic pain due to conditions such as endometriosis (which causes extreme cramps in the pelvic region), multiple sclerosis (which causes severe nerve pain), and fibromyalgia (which causes widespread muscular aches) (Peters 2020). Marijuana can also be used to treat or reduce the symptoms related to Parkinson's Disease, Hepatitis C, epilepsy, diabetes, Alzheimer's Disease, as well as general afflictions of nausea, appetite loss, and muscle spasms (Peters 2020). Additionally, physicians have prescribed marijuana as an effective treatment for alleviating symptoms caused by some mental illnesses, such as reducing obsessive urges or intrusive thoughts for those with Obsessive-Compulsive Disorder, minimizing hypervigilance among those with Posttraumatic Stress Disorder, and managing symptoms associated with autism, depression, anxiety, Bipolar Disorder, and Attention Deficit Hyperactivity Disorder (Chang 2019). Even among people who are not prescribed marijuana as their *main* form of treatment, it has proven to be a valuable substance for lessening side effects from other medications or treatments, such as reducing nausea from chemotherapy in cancer patients (Garcia 2019). Compared to opioids and other types of drug treatments, marijuana is a much safer option because overdosing is *not* possible and it does *not* contain an addictive element, so it is more practical for long-term use (Ochsner 2013). Overall, marijuana has proven to be a very versatile and medically beneficial substance.

Appendix Continued – Negative Fact-Based

Please read through the information below at least twice and use the information provided to evaluate your own perspectives. You will not be able to move to the next page until at least ***three minutes have elapsed****.*

Since 1996, medical marijuana (or cannabis) has been legalized in 36 U.S. states, yet it has been recognized as objectively harmful to the health of its users as well as to the people around them. Scientific evidence has demonstrated that smoking one marijuana joint is as damaging to the lungs as five tobacco cigarettes and can contain up to five times the amount of carbon monoxide and three times the amount of tar that is contained in tobacco, regardless of whether the marijuana is prescribed by a physician or not (Timmerman 2011). Smoking marijuana has also been demonstrated to cause damage to lung tissue and permanent respiratory issues, effects that are also observed through secondhand smoke. Consuming cannabis in any form can contribute to lower bone density, an increased risk of heart disease or heart attacks, and birth defects in fetuses (Chang 2019). Regular long-term marijuana use can similarly lead to illnesses, such as Cannabinoid Hyperemesis Syndrome, which is a condition that causes users to experience regular cycles of severe nausea, vomiting, and dehydration, and can require emergency medical attention and hospitalization (Garcia 2019). Using marijuana can also result in detrimental cognitive effects, including problems with memory, coordination and movement, the ability to think clearly, and the ability to pay attention (Peters 2020). For individuals who are under the age of 25, whose brains are still developing, these side effects can be heightened and lead to irreversible harm to the body (Peters 2020). Marijuana users can also experience intense feelings of anxiety, paranoia, or even thoughts of suicide, and this is more likely among those who have been previously diagnosed with a mental disorder or regularly experience these states (Ochsner 2013). With the increased prevalence of medical marijuana, children, pets, and even some adults have mistakenly consumed marijuana resulting in more frequent trips to the emergency room (Sandre 2021). Overall, marijuana has proven to be a generally harmful substance.

Appendix Continued – Positive Testimonial

Please read through the information below at least twice and use the information provided to evaluate your own perspectives. You will not be able to move to the next page until at least ***three minutes have elapsed****.*

"My uncle smokes weed pretty regularly for his PTSD. He served in Afghanistan and ever since he got back, he's had nightmares and flashbacks that caused panic attacks. He couldn't keep a job and rarely went out because random loud noises triggered his flashbacks. He goes to therapy for it, and he had been taking medicine for a while which helped a little bit, but once he got his medical marijuana card, he got a lot better. The loud noises don't affect him much anymore, and he now only has nightmares occasionally."

- Julie, 22

"I have been on and off different medications for my OCD since I was in middle school, and nothing has worked as well as my prescription marijuana patches. I just put one of them on my arm every day and it seems to be the only way to reduce my urges. One of my main obsessions is thinking that all of my food has expired or has gone bad. It was so bad at one point, that I used to go to the grocery store multiple times a week to replace day-old food in my pantry. It was costing me and my family thousands of dollars and was honestly ruining my life. Since I have started using the patches, I feel like I have more control over my own body, and I only go to the grocery once a week now."

- Mitch, 19

"I have multiple sclerosis and I have a medical marijuana card for the pain. I get these horrible migraines and feel extremely dizzy, and I suffer from other neurological issues as well. Some days, I was so nauseous that I couldn't even eat, so my doctor recommended that I apply for a card because other treatments just weren't working. At first, I was hesitant, but it was so hard being without an appetite for days at a time, so I applied, and I was officially registered within a few weeks. Using cannabis in my treatment has helped a lot with the migraines, and it even seemed to calm down some of my more serious symptoms like trouble speaking and muscle spasms. It isn't a cure-all, but I don't think I could manage the pain without it."

- Suzzanne, 56

Appendix Continued – Negative Testimonial

Please read through the information below at least twice and use the information provided to evaluate your own perspectives. You will not be able to move to the next page until at least ***three minutes have elapsed****.*

"I have been taking standard anxiety medicine for about 5 years, but I was still experiencing a lot of symptoms, so I reached out to my doctor to talk about a medical marijuana card. She agreed that it may help, and I applied for a card and began taking edibles to soothe my anxiety. For the few times I took them, I really just felt more anxious and paranoid than I already was. I remember one-time last year after I ate one, I felt so confused and like I was dying or something, and I just ended up throwing up. I usually just zoned out for a couple of hours because I felt so lazy and unmotivated, and I didn't think it helped with my anxiety either. I stopped taking them a few months ago because I would rather just take my normal anxiety medicine by itself and not have to worry about all of the issues that the edibles caused."

- Sawyer, 20

"I am usually hesitant when prescribing patients medical marijuana. Over the past few years with the legalization of it in different states, it seems to have become more and more acceptable to prescribe a form of cannabis as an initial treatment rather than as a last resort, rather than waiting to understand if other treatment plans are unsuccessful. For many common diseases and disorders, there are clinically tested, efficacious, treatments that have been backed by decades of research, which is not true for medical cannabis, and that is why I am so hesitant to jump on the medical marijuana bandwagon. Not to mention, dispensaries can be careless with their dosages, which is completely unacceptable for any other drug, so it is extremely frustrating as a healthcare professional to see that marijuana isn't held to the same standards as other medicines. Over the past few years, I have seen a lot of adverse reactions within patients that use medical marijuana, often it worsens their symptoms. In patients who have not struggled with anxiety before, I see them coming in with extreme anxiety and paranoia wondering what has happened to them. People that smoke medical marijuana often have issues with asthma and various other lung conditions that can range from mild to severe. With all of these unknown issues and a lack of longitudinal research, I avoid prescribing my patients marijuana.

- Nick, 39

"One of my close friends who had a medical marijuana card frequently hit a dab pen to manage her chronic pain from her arthritis. About a year and a half ago, she was diagnosed with CHS (Cannabinoid Hyperemesis Syndrome) after she went to the ER because she couldn't stop throwing up. Her parents told me that she could have died from dehydration and kidney failure. Even after she quit, she would get these horrible stomach aches and would vomit so

frequently that her throat would burn from too much stomach acid. She doesn't have much of an appetite these days and has lost a lot of weight from her condition. I began to look into CHS because I had never heard of it before, and I found so many stories from others who have had even worse experiences. Now I am terrified of smoking weed after seeing and hearing what she and many others have gone through."

- Claire, 25

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            - Ken Sobel
              Department of Psychology and Counseling
              University of Central Arkansas
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    - Two students work together on different facets of the same issue.
    - Select a controversial issue relevant to an area of psychology.
    - Examples:
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