

Psi Chi
Journal of
**Psychological
Research**

SPRING 2024 | VOLUME 29 | ISSUE 1

ISSN: 2325-7342

Published by Psi Chi,
The International Honor
Society in Psychology





PSI CHI JOURNAL OF PSYCHOLOGICAL RESEARCH
SPRING 2024 | VOLUME 29, NUMBER 1

EDITOR

STEVEN V. ROUSE, PhD
Pepperdine University
Telephone: (310) 506-7959
Email: steve.rouse@psichi.org

ASSOCIATE EDITORS

JENNIFER L. HUGHES, PhD
Agnes Scott College

STELLA LOPEZ, PhD
University of Texas at San Antonio

TAMMY LOWERY ZACCHILLI, PhD
Saint Leo University

ALBEE MENDOZA, PhD
Delaware State University

KIMBERLI R. H. TREADWELL, PhD
University of Connecticut

ROBERT R. WRIGHT, PhD
Brigham Young University-Idaho

EDITOR EMERITUS

DEBI BRANNAN, PhD
Western Oregon University

MANAGING EDITOR

BRADLEY CANNON

DESIGNER

JANET REISS

EDITORIAL ASSISTANT

EMMA SULLIVAN

ADVISORY EDITORIAL BOARD

GLENA ANDREWS, PhD
RAF Lakenheath USAF Medical Center
AZENETT A. GARZA CABALLERO, PhD
Weber State University
MARTIN DOWNING, PhD
Lehman College
HEATHER HAAS, PhD
University of Montana Western
ALLEN H. KENISTON, PhD
University of Wisconsin-Eau Claire
MARIANNE E. LLOYD, PhD
Seton Hall University
DONELLE C. POSEY, PhD
Washington State University
LISA ROSEN, PhD
Texas Women's University
CHRISTINA SINISI, PhD
Charleston Southern University
PAUL SMITH, PhD
Alverno College

ABOUT PSI CHI

Psi Chi is the International Honor Society in Psychology, founded in 1929. Its mission: "recognizing and promoting excellence in the science and application of psychology." Membership is open to undergraduates, graduate students, faculty, and alumni making the study of psychology one of their major interests and who meet Psi Chi's minimum qualifications. Psi Chi is a member of the Association of College Honor Societies (ACHS), and is an affiliate of the American Psychological Association (APA) and the Association for Psychological Science (APS). Psi Chi's sister honor society is Psi Beta, the national honor society in psychology for community and junior colleges.

Psi Chi functions as a federation of chapters located at over 1,180 senior colleges and universities around the world. The Psi Chi Headquarters is located in Chattanooga, Tennessee. A Board of Directors, composed of psychology faculty who are Psi Chi members and who are elected by the chapters, guides the affairs of the Organization and sets policy with the approval of the chapters.

Psi Chi membership provides two major opportunities. The first of these is academic recognition to all inductees by the mere fact of membership. The second is the opportunity of each of the Society's local chapters to nourish and stimulate the professional growth of all members through fellowship and activities designed to augment and enhance the regular curriculum. In addition, the Organization provides programs to help achieve these goals including conventions, research awards and grants competitions, and publication opportunities.

JOURNAL PURPOSE STATEMENT

The twofold purpose of the *Psi Chi Journal of Psychological Research* is to foster and reward the scholarly efforts of Psi Chi members, whether students or faculty, as well as to provide them with a valuable learning experience. The articles published in the *Journal* represent the work of undergraduates, graduate students, and faculty; the *Journal* is dedicated to increasing its scope and relevance by accepting and involving diverse people of varied racial, ethnic, gender identity, sexual orientation, religious, and social class backgrounds, among many others. To further support authors and enhance *Journal* visibility, articles are now available in the PsycINFO®, EBSCO®, Crossref®, and Google Scholar databases. In 2016, the *Journal* also became open access (i.e., free online to all readers and authors) to broaden the dissemination of research across the psychological science community.

JOURNAL INFORMATION

The *Psi Chi Journal of Psychological Research* (ISSN 2325-7342) is published quarterly in one volume per year by Psi Chi, Inc., The International Honor Society in Psychology. For more information, contact Psi Chi Headquarters, Publication and Subscriptions, 651 East 4th Street, Suite 600, Chattanooga, TN 37403, (423) 756-2044. www.psichi.org; psichijournal@psichi.org.

Statements of fact or opinion are the responsibility of the authors alone and do not imply an opinion on the part of the officers or members of Psi Chi.

Advertisements that appear in *Psi Chi Journal* do not represent endorsement by Psi Chi of the advertiser or the product. Psi Chi neither endorses nor is responsible for the content of third-party promotions. Learn about advertising with Psi Chi at <http://www.psichi.org/Advertise>

COPYRIGHT

Permission must be obtained from Psi Chi to reprint or adapt a table or figure; to reprint quotations exceeding the limits of fair use from one source, and/or to reprint any portion of poetry, prose, or song lyrics. All persons wishing to utilize any of the above materials must write to the publisher to request nonexclusive world rights in all languages to use copyrighted material in the present article and in future print and nonprint editions. All persons wishing to utilize any of the above materials are responsible for obtaining proper permission from copyright owners and are liable for any and all licensing fees required. All persons wishing to utilize any of the above materials must include copies of all permissions and credit lines with the article submission.

Psi Chi
Journal of
**Psychological
Research**

SPRING 2024 | VOLUME 29 | ISSUE 1

- 2** **INVITED EDITORIAL: Using Psi Chi eBooks and *Eye on Psi Chi* Articles as Readings When Teaching Career Exploration and Professional Development in Psychology Courses**
Jennifer L. Hughes¹, Kimberli R. H. Treadwell², and Albee Therese O. Mendoza³
¹ Department of Psychology, Agnes Scott College
² Department of Psychological Sciences, University of Connecticut
³ Department of Psychology, Delaware State University
- 8** **Examining Objectification and Dehumanization: The Effects of Race and Sexualization**
Lindsay R. Beaman and Regan A. R. Gurung*
School of Psychological Science, Oregon State University
- 18** **Mental Health Attitudes in Bosnia and Herzegovina**
Andrea Goreta and Susan M. Long*
Department of Psychology, Lake Forest College
- 24** **Effects of an Online Growth Mindset Single-Session Intervention on Hopelessness, Self-Hate, and Perception of Control in Arabic Adolescents**
Alexandra G. Buchlmayer¹, Lucas E. Snyder¹, Ian Sotomayor², Arielle C. Smith³, Laura K. Jans³,
Jessica L. Schleider^{3*}, Myriam El Khoury-Malhame^{4*}, and Cosette Fox^{1*}
¹Department of Psychology, Holy Cross College
²Department of Psychology, Stony Brook University
³Department of Medical Social Sciences, Feinberg School of Medicine, Northwestern University
⁴Psychology Program, Social and Education Sciences Department, Lebanese American University
- 35** **Can I Still Trust You? Late Trust Violations Hinder Subsequent Cooperation**
Megan A. Gerges
Department of Psychology and Neuroscience, Duke University
- 47** **The Classic Stroop Asymmetry Works for Spoken as Well as Written Words**
Stephanie Benitez, Jon Rowe, and Kenith V. Sobel*
Department of Psychology and Counseling, University of Central Arkansas
- 59** **"Not Liking the Look of This": Examining the Relationship Between COVID-Related Social Media Exposure and Mental Health Symptoms**
Pooja Punjabi, Anna Jensen, Ashley Mota Ortega, and Aleksandria Perez Grabow*
Psychology Department, California State University San Marcos
- 70** **A Model of Students' COVID-19 Stress and Burnout at a Minority Serving College**
Jeanie K. Cox¹, Lorinda B. Camparo^{1*}, and C. Nathalie Yuen^{2*}
¹Department of Psychology, Whittier College
²Psychology, Health, and Community, The Evergreen State College
- 80** **Reviewer Appreciation**

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

INVITED EDITORIAL: Using Psi Chi eBooks and *Eye on Psi Chi* Articles as Readings When Teaching Career Exploration and Professional Development in Psychology Courses

Jennifer L. Hughes¹, Kimberli R. H. Treadwell², and Albee Therese O. Mendoza³

¹Department of Psychology, Agnes Scott College

²Department of Psychological Sciences, University of Connecticut

³Department of Psychology, Delaware State University

ABSTRACT. The *APA Guidelines for the Undergraduate Psychology Major*, now on version 3 (APA, 2023), includes personal and professional development as its fifth goal. Because of this, faculty are increasingly being asked to teach about career exploration and professional development in their psychology courses (Halonen & Dunn, 2018; Spencer, 2019). This article covers readings developed by Psi Chi, the International Honor Society in Psychology, which can be useful for instructors when selecting content about career exploration and professional development for their courses. These readings could also be useful for faculty to give to undergraduate psychology students when advising them. In this article, three inexpensive and useful Psi Chi eBooks are discussed, which cover career exploration and joining the workforce, graduate school, and business-related careers. In addition, articles from Psi Chi's magazine, *Eye on Psi Chi*, are presented. Those articles are grouped into the following categories: career exploration and joining the workforce, graduate school, professional development, and specific areas of psychology. These student-friendly and content-rich articles are free to access for students and faculty.

Since the *APA Guidelines for the Undergraduate Psychology Major*, now on version 3 (APA, 2023), included personal and professional development as its fifth goal (e.g., cultivate workforce collaboration skills, demonstrate appropriate workforce technological skills, develop direction for life after graduation, etc.), there has been needed attention placed on this area for undergraduates majoring in psychology (Halonen, 2013). Faculty are increasingly being asked to teach about career exploration and professional development in their psychology courses (Halonen & Dunn, 2018; Spencer, 2019). About a third of undergraduate psychology programs already offer a course dedicated to career exploration (Pfund et al., 2021). This article will cover possible readings that can be useful for instructors when selecting content about career exploration and professional development. These readings could also be useful for faculty to give to undergraduate psychology students when advising them.

When determining the career exploration and professional development material for use in courses,

instructors could use the areas included in the fifth goal of the *APA Guidelines for the Undergraduate Psychology Major* (APA, 2023) as a guide. They also could develop ideas from the example syllabi posted by Division 2 of the APA, the Society of Teaching Psychology (see <http://teachpsych.org/otrp/syllabi/index.php>). Additionally, Divisions 2's journal, *Teaching of Psychology*, has articles that could generate ideas for designing course materials and assignments (e.g., Ciarocco, 2018; Halonen & Dunn, 2018; Lawson, 2018; Maynard et al., 2004; Nauta, 2002). Finally, as for content and readings, Psi Chi, the International Honor Society in Psychology, provides excellent resources.

Readings for Courses

When selecting readings, psychology faculty should focus on helping students who plan to attend graduate school and those who intend to enter the workforce directly after their undergraduate study. Halonen and Dunn (2018) noted that there are often false perceptions

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

by faculty that students cannot get a job in psychology without going to graduate school. Halonen (2013) warned that this also can set up a two-tiered culture within a psychology department where those going to graduate school receive preferential treatment. She argued that “both tracks offer perfectly legitimate choices because society needs people who understand behavior and mental processes in a multitude of contexts” (p. 11). It should also be noted that most of the psychology graduates in the United States (86%) do not earn a graduate degree, and the ones who do mostly earn a master’s degree (National Science Foundation, 2017).

Psi Chi has published two eBooks that would be useful to use in courses when covering career exploration and graduate school. These eBooks are inexpensive and easily accessible from Psi Chi (<https://store.psichi.org/digital-downloads>). We believe that adopting both would be beneficial for faculty and students alike.

Psi Chi eBook About Career Exploration and Joining the Workforce

The first eBook, *An Eye on the Workplace: Achieving a Career with a Bachelor’s in Psychology* was published in 2020 by Hettich et al. The eBook includes 30 short and student-friendly articles written by 18 authors that were published in the *Eye on Psi Chi* magazine. The articles are written for those who plan to go directly into the workforce after their undergraduate education. The sections of the eBook include:

- Demystifying the College-to-Workplace Transition
- Preparing for the Workforce During College
- The Skills and Experiences Employers Seek
- Resumes and Letters of Reference
- Acing Interviews
- Special Topics

Psi Chi eBook About Graduate School

The second eBook, *An Eye on Graduate School: Guidance Through a Successful Application* by Sleight et al. (2017), gives advice for those who plan to apply to graduate school. The eBook has 19 short and also student-friendly articles written by multiple professors grouped into the following sections:

- Preparing for and Selecting a Graduate Program
- The Application Process
- Preparing for the GRE
- Soliciting Letters of Recommendations
- Writing the Personal Statement
- Interviewing
- Choosing a Program and Succeeding in Graduate School

Eye on Psi Chi Articles

Since the eBooks written by Hettich et al. (2020) and Sleight et al. (2017) were published, Psi Chi’s magazine, *Eye on Psi Chi*, has included many new articles about career exploration and graduate school that also could be added to courses. These articles are about topics that are timely and would appeal to undergraduate students. They are free to access, and the titles, authors, years published, and links are provided below.

Articles About Career Exploration and Joining the Workforce.

- [Adjusting Expectations for Recent Graduates Entering the Workforce \(Parker, 2023\)](#)
- [Embarking on Career Exploration? Start a Career Conversation \(Safer, 2023a\)](#)
- [IQ vs EQ for Career Success \(Safer, 2023b\)](#)
- [Building Your Brand: Assessing Your Personal Strengths and Communicating Your Value to Others \(Safer, 2022\)](#)
- [COVID-19 Is Changing the Competencies You May Need to Obtain a Job \(Hettich, 2021a\)](#)
- [What Skills Do Employers Seek? Four Perspectives \(Hettich, 2021b\)](#)
- [Contemplating a Career as a Psychologist or Professor? Career Psychology in a Challenging Workworld \(Crespi & Oquendo, 2020\)](#)

Articles about Graduate School.

- [The Online Graduate PhD Degree: Questions, Answers, and Case Analysis \(Crespi & Amico, 2023a\)](#)
- [Virtual Graduate Education? Possibilities and Probabilities for a Virtuous PhD Degree \(Crespi & Amico, 2023b\)](#)
- [Gap Year\(s\) Before Graduate School: Pros, Cons, and Unknowns \(Norcross et al., 2023b\)](#)
- [Obtaining Letters of Recommendation for Graduate School \(Norcross et al., 2023a\)](#)
- [Questions \(and Answers\) Every Student Should Know When Preparing for Graduate School \(Radico et al., 2023\)](#)
- [Questions \(and Answers\) About Acquiring Research Experiences Before Applying to Graduate School \(Turner-Musa et al., 2023a\)](#)
- [Questions \(and Answers\) About Communicating Your Research Experiences When Applying to Graduate School \(Turner-Musa et al., 2023b\)](#)
- [The Hidden Costs of Applying for Graduate School and Suggestions to Reduce Them \(Weiss & Tamura, 2023\)](#)
- [Four Upheavals in Doctoral Admissions in Clinical and Counseling Psychology \(Carachilo et al., 2022\)](#)

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

- Graduate Degrees and Post Degree Licensure: Charting Your Course to Employment (Crespi & Amico, 2022)
- Scary Stories of Applying to Graduate School!? (Radico et al., 2022b)
- Your Secret Decoder to Graduate School and/or Career Success (Cannon, 2021)
- Tips, Tricks, and Insight to Ace Your Interview for Doctoral Psychology Admission (Prinstein, 2021)
- Questions (and Answers) About Preparing to Apply to Graduate School (Radico et al., 2021c)
- Questions (And Answers) About Returning to Graduate School After a Gap Year (Radico et al., 2021a)
- Questions (And Answers) About Whether to Take Time Off Before Graduate School (Radico et al., 2021b)
- Questions (and Answers) About What to Leave Off of Your Graduate School Résumé/CV (VanderStoep et al., 2021)
- Graduate Education in Contemporary Society: Traditional and Distance Education Options and Opportunities (Crespi & Amico, 2020)
- Questions (and Answers) About Graduate School Fit (Handelsman et al., 2020b)
- Questions (and Answers) About Your Acceptance into Graduate School (Handelsman et al., 2020a)
- Questions (and Answers) About Your First Semester in Graduate School (Landrum et al., 2020)
- An Honest Look into the Life of Psychology Graduate Students (Stone et al., 2020)
- Questions (and Answers) About What to Include on Your Graduate School Résumé/CV (VanderStoep et al., 2020)
- Dreaming of a Graduate Degree: Options and Opportunities in a Dynamic Market (Crespi & Alicandro, 2019)
- Do You Have the Research Experience Necessary for a Competitive Graduate School Application? (Hughes, 2019)
- Making Your Way Through Graduate School to Financial Security (McClain & Fletcher, 2019)
- Student Internships in Psychology: Thinking Outside the Box (McMahon, 2019)

Articles About Professional Development. Some of the following topics would interest students, but they were not covered in the eBooks or articles listed above. Those include finding mentors, completing study abroad or study away programs, LinkedIn, and dealing with financial concerns while in college.

These recent *Eye on Psi Chi* articles may be useful to include in class discussions or reading lists.

- Surround Yourself With Support: The Importance of Mentors, Advocates, and Sponsors (Safer, 2023c)
- Study Abroad—Your Future Self Will Thank You (Afful et al., 2022)
- LinkedIn*: Advice for Students and Faculty (Morgan et al., 2021)
- Everything I Needed to Know About Money I Didn't Learn in College (Sleigh et al., 2018)
- Why Study Abroad? What Psychology Students Have to Gain from Study Abroad Opportunities (Earnest, 2015)

Articles About Specific Areas of Psychology and Areas Outside of Psychology. Many psychology students are interested in specific fields of psychology, but others are interested in fields outside of psychology where a psychology degree can be very useful (Appleby, 2018). The following recently published *Eye on Psi Chi* articles (from 2014 to the present) could be helpful to include in courses or could be given to advisees who are interested in specific fields. Halonen (2013) noted that presenting diverse options to majors helps to legitimize different pathways to career success.

The following *Eye on Psi Chi* articles are about areas within psychology:

- Drifting Into the World of Work: Complementing Your Psych-Related Education With Organizational/Consulting Psychology Training (Crespi, 2023)
- What a Psychometrist Job Is Really Like (Fawaz, 2022)
- People With a Fully Functioning Frontal Lobe Are More Agreeable . . . or Things We Learned From Biopsychology (McMahan, 2022)
- Counseling Psychology: Making Everyday Life Bearable (McMahan, 2021a)
- Environmental Psychology: Not Just for Hippies (McMahan, 2021b)
- Personality Psychology: For the Snowflakes (McMahan, 2021c)
- School Psychology . . . For Those Who Are Not Faint of Heart (McMahan, 2021d)
- Decisions, Decisions: What Are the Real Differences Between Clinical Psychology and Counseling Psychology Programs? (Martin-Wagar et al., 2020)
- Community Psychology—In the Trenches and Advancing the Line Forward (McMahan, 2020a)
- Consumer Psychology: Making Sense of Your Irrational Purchases (McMahan, 2022b)

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

- Cross-Cultural Psychology ... Because Not Everybody Is WEIRD (McMahan, 2022c)
- Everything I Know About People I Learned From a Cat: Comparative Psychology and the Study of Human Behavior Through Research on Nonhuman Species (McMahan, 2020a)
- Health Psychology: Promoting Good Decision Making Since 1969! (McMahan, 2020b)
- Quantitative Psychology: Using Numbers to Bring Order Out of Chaos! (McMahan, 2020c)
- Cognitive Psychology: A Field Dedicated to Determining the Contents of a Box (McMahan, 2019a)
- Introducing Forensic Psychology . . . FYI, It's Not All Criminal Minds and CSI (McMahan, 2019b)
- Contemporary Psychology "An Education in Educational Psychology" or "A Good Excuse to Catch Up With an Old Friend" (McMahan & Renken, 2019)
- An Introduction to Social Psychology (Or, How to Become a Famous Scientist) (McMahan, 2018-2019)
- Developmental Psychology: A Microcosm of General Psychology (McMahan, 2018a)
- Evolutionary Psychology and the Functional Nature of Human Behavior: An Interview with Glenn Geher, PhD (McMahan, 2018b)
- Sport Psychology: Explicitly Linking the Body and the Mind (McMahan, 2018c)

The following Eye on Psi Chi articles are about areas outside of psychology:

- The Challenges That Come When Doing Organization Development Work (Carasco, 2022)
- Applying Your Psych Major Toward a Career in Criminal Justice (Weiss, 2022)
- Leveraging Applied Behavioral Science in Business Settings: The Field of Organization Development (Carasco, 2021)
- Psychology as a Stepping Stone: Opportunity for Further Study in Medicine (Kong, 2017)
- Career Possibilities for Undergraduate Psychology Majors: Spotlight on Public Health (Lee et al., 2017)
- Lessons Learned From a Law School Graduate With a Psychology Degree (Lorenz, 2014)

Psi Chi eBook About Business-Related Careers for Psychology Majors

For students who want to own their own businesses or are interested in the business field, Appleby (2021) wrote an eBook, *Preparing Psychology Majors for Business-Related Careers*. In the text, chapters are titled with different types

of employability (e.g., strategic employability, sustainable employability, etc.) and cover specific business careers, how students can increase their chances of entering the field of business, and how students can promote their skills to employers. This eBook is available to purchase on the Psi Chi website (<https://store.psichi.org/digital-downloads>).

The readings provided in this article would be great additions for many types of psychology courses and also would be useful to give to advisees. For example, a professor could use some of these readings in an introductory psychology course when covering careers in psychology. For faculty teaching courses specifically about career exploration and professional development, these readings could make up most of the content for their course and professors could customize the content to fit their student population. For example, some faculty could have common readings for all students and then students could select additional readings to fit their intended career paths or graduate school aspirations. Student projects, presentations, and assignments could be based on what students learn from the readings. Besides the versatility of the content of the readings listed in this article, another advantage is that the readings are either low cost or free, which allows for easy accessibility for students.

References

- Afful, S., Foushee, R., & Biri, C. (2022). Study abroad—Your future self will thank you. *Eye on Psi Chi*, 27(2), 12–13. <https://doi.org/10.24839/2164-9812.Eye27.2.12>
- American Psychological Association. (2023, August). *APA guidelines for the undergraduate psychology major: Empowering people to make a difference in their lives and communities* (version 3). <https://www.apa.org/about/policy/undergraduate-psychology-major.pdf>
- Appleby, D. C. (Ed.). (2021). *Preparing psychology majors for business-related careers*. Psi Chi, the International Honor Society in Psychology.
- Appleby, D. C. (2018). Preparing psychology majors to enter the workforce: Then, now, with whom, and how. *Teaching of Psychology*, 45(1), 14–23. <https://doi.org/10.1177/0098628317744944>
- Cannon, B. (2021). Your secret decoder to graduate school and/or career success. *Eye on Psi Chi*, 26(1), 40–41. <https://doi.org/10.24839/2164-9812.Eye26.1.40>
- Carachilo, C. B., Norcross, J. C., Rocha, M. N., & Sayette, M. A. (2022). Four upheavals in doctoral admissions in clinical and counseling psychology. *Eye on Psi Chi*, 27(1), 44–45. <https://doi.org/10.24839/2164-9812.Eye27.1.44>
- Carasco, M. (2021). Leveraging applied behavioral science in business settings: The field of organization development. *Eye on Psi Chi*, 26(2), 32–33. <https://doi.org/10.24839/2164-9812.Eye26.2.32>
- Carasco, M. (2022). The challenges that come when doing organization development work. *Eye on Psi Chi*, 26(4), 20–21. <https://doi.org/10.24839/2164-9812.Eye26.4.20>
- Ciarocco, N. J. (2018). Traditional and new approaches to career preparation through coursework. *Teaching of Psychology*, 45(1), 32–40. <https://doi.org/10.1177/0098628317744963>
- Crespi, T. D. (2023). Drifting into the world of work: Complementing your psychology-related education with organizational/consulting psychology training. *Eye on Psi Chi*, 27(3), 32–33. <https://doi.org/10.24839/2164-9812.Eye27.3.32>
- Crespi, T. D., & Alicandro, M. L. (2019). Dreaming of a graduate degree? Options and opportunities in a dynamic market. *Eye on Psi Chi*, 24(1), 22–23. <https://doi.org/10.24839/2164-9812.Eye24.1.22>
- Crespi, T. D., & Amico, M. C. (2020). Graduate education in contemporary society: Traditional and distance education options and opportunities. *Eye on Psi Chi*, 25(1), 26–27. <https://doi.org/10.24839/2164-9812.Eye25.1.26>
- Crespi, T. D., & Amico, M. C. (2022). Graduate degrees and post degree licensure: Charting your course to employment. *Eye on Psi Chi*, 26(3), 26–27.

SPRING 2024

**PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH**

- <https://doi.org/10.24839/2164-9812.Eye26.3.26>
Crespi, T. D., & Amico, M. C. (2023a). The online graduate PhD degree: Questions, answers, and case analysis. *Eye on Psi Chi*, 28(2), 28–29.
<https://doi.org/10.24839/2164-9812.Eye28.2.28>
- Crespi, T. D., & Amico, M. C. (2023b). Virtual graduate education? Possibilities and probabilities for a virtuous PhD degree. *Eye on Psi Chi*, 28(1), 30–31.
<https://doi.org/10.24839/2164-9812.Eye28.1.30>
- Crespi, T. D., & Oquendo, I. (2020). Contemplating a career as a psychologist or professor? Career psychology in a challenging workworld. *Eye on Psi Chi*, 25(2), 42–43. <https://doi.org/10.24839/2164-9812.Eye25.2.42>
- Earnest, D. (2015). Why study abroad? What psychology students have to gain from study abroad opportunities. *Eye on Psi Chi*, 19(2), 8–9.
<https://doi.org/10.24839/1092-0803.eye19.2.8>
- Fawaz, M. S. (2022). What a psychometrist job is really like. *Eye on Psi Chi*, 27(2), 26–27. <https://doi.org/10.24839/2164-9812.Eye27.2.26>
- Halonen, J. S. (2013). The worthies vs. the great unwashed: Overcoming psychology's tier problem. *Eye on Psi Chi*, 17(2), 10–12.
<https://doi.org/10.24839/1092-0803.eye17.2.10>
- Halonen, J. S., & Dunn, D. S. (2018). Embedding career issues in advanced psychology major courses. *Teaching of Psychology*, 45, 41–49.
<https://doi.org/10.1177/0098628317744967>
- Handelsman, M. M., Landrum, R. E., & VanderStoep, S. (2020a). Questions (and answers) about your acceptance into graduate school. *Eye on Psi Chi*, 24(4), 8–9.
<https://doi.org/10.24839/2164-9812.Eye24.4.8>
- Handelsman, M. M., VanderStoep, S., & Landrum, R. E. (2020b). Questions (and answers) about graduate school fit. *Eye on Psi Chi*, 24(3), 12–13.
<https://doi.org/10.24839/2164-9812.Eye24.3.12>
- Hettich, P. I. (2021a). COVID-19 is changing the competencies you may need to obtain a job. *Eye on Psi Chi*, 25(3), 22–23.
<https://doi.org/10.24839/2164-9812.Eye25.3.22>
- Hettich, P. I. (2021b). What skills do employers seek? Four perspectives. *Eye on Psi Chi*, 26(1), 20–21. <https://doi.org/10.24839/2164-9812.Eye26.1.20>
- Hettich, P. I., Iles, S., & Cannon, B. (Eds.). (2020). *An eye on the workplace: Achieving a career with a bachelor's degree in psychology*. Psi Chi, the International Honor Society in Psychology.
- Hughes, J. L. (2019). Do you have the research experience necessary for a competitive graduate school application? *Eye on Psi Chi*, 23(4), 8–11.
<https://doi.org/10.24839/2164-9812.Eye23.4.8>
- Kong, R. (2017). Psychology as a stepping stone: Opportunity for further study in medicine. *Eye on Psi Chi*, 21(3), 6–8. <https://doi.org/10.24839/1092-0803.eye21.3.6>
- Landrum, R. E., VanderStoep, S., & Handelsman, M. M. (2020). Questions (and answers) about your first semester in graduate school. *Eye on Psi Chi*, 25(1), 14–15. <https://doi.org/10.24839/2164-9812.Eye25.1.14>
- Lawson, T. J. (2018). Tapping into alumni as a source of authentic information and advice on careers in psychology. *Teaching of Psychology*, 45(1), 67–74.
<https://doi.org/10.1177/0098628317744967>
- Lee, M. P., Shah, H. J., & Lai, B. S. (2017). Career possibilities for undergraduate psychology majors: Spotlight on public health. *Eye on Psi Chi*, 21(3), 15–17.
<https://doi.org/10.24839/1092-0803.eye21.3.15>
- Lorenz, N. T. (2014). Lessons learned from a law school graduate with a psychology degree. *Eye on Psi Chi*, 18(3), 26–27.
<https://doi.org/10.24839/1092-0803.eye18.3.26>
- Martin-Wagar, C. A., Norcross, J. C., & Sayette, M. A. (2020). Decisions, decisions: What are the real differences between clinical psychology and counseling psychology programs? *Eye on Psi Chi*, 25(2), 38–39.
<https://doi.org/10.24839/2164-9812.Eye25.2.38>
- Maynard, A. M., Maynard, D. C., & Rowe, K. A. (2004). Exposure to the fields of psychology: Evaluation of an introductory psychology project. *Teaching of Psychology*, 31, 37–40. https://doi.org/10.1207/s15328023top3101_9
- McClain, T., & Fletcher, T. (2019). Making your way through graduate school to financial security. *Eye on Psi Chi*, 24(2), 30–31.
<https://doi.org/10.24839/2164-9812.Eye24.2.30>
- McMahan, E. A. (2018a). Developmental psychology: A microcosm of general psychology. *Eye on Psi Chi*, 22(4), 6–7. <https://doi.org/10.24839/2164-9812.Eye22.4.6>
- McMahan, E. A. (2018b). Evolutionary psychology and the functional nature of human behavior: An interview with Glenn Geher, PhD. *Eye on Psi Chi*, 22(3), 8–9.
<https://doi.org/10.24839/2164-9812.Eye22.3.8>
- McMahan, E. A. (2018c). Sport psychology: Explicitly linking the body and the mind. *Eye on Psi Chi*, 23(1), 6–8. <https://doi.org/10.24839/2164-9812.Eye23.1.6>
- McMahan, E. A. (2018–2019). An introduction to social psychology (Or, how to become a famous scientist). *Eye on Psi Chi*, 23(2), 6–7.
<https://doi.org/10.24839/2164-9812.Eye23.2.6>
- McMahan, E. A. (2019a). Cognitive psychology: A field dedicated to determining the contents of a box. *Eye on Psi Chi*, 24(2), 8–9.
<https://doi.org/10.24839/2164-9812.Eye24.2.8>
- McMahan, E. A. (2019b). Introducing forensic psychology . . . FYI, it's not all Criminal Minds and CSI. *Eye on Psi Chi*, 23(3), 8–9.
<https://doi.org/10.24839/2164-9812.Eye23.3.8>
- McMahan, E. A., & Renken, M. (2019). Contemporary psychology: "An education in educational psychology" or "A good excuse to catch up with an old friend." *Eye on Psi Chi*, 24(1), 6–7. <https://doi.org/10.24839/2164-9812.Eye24.1.6>
- McMahan, E. A. (2020a). Community psychology—In the trenches and advancing the line forward. *Eye on Psi Chi*, 25(2), 14–15.
<https://doi.org/10.24839/2164-9812.Eye25.2.14>
- McMahan, E. A. (2020b). Health psychology: Promoting good decision making since 1969! *Eye on Psi Chi*, 24(3), 10–11. <https://doi.org/10.24839/2164-9812.Eye24.3.10>
- McMahan, E. A. (2020c). Everything I know about people I learned from a cat: Comparative psychology and the study of human behavior through research on nonhuman species. *Eye on Psi Chi*, 24(4), 6–7.
<https://doi.org/10.24839/2164-9812.Eye24.4.6>
- McMahan, E. A. (2020d). Quantitative psychology: Using numbers to bring order out of chaos! *Eye on Psi Chi*, 25(1), 10–11. <https://doi.org/10.24839/2164-9812.Eye25.1.11>
- McMahan, E. A. (2021a). Environmental psychology: Not just for hippies. *Eye on Psi Chi*, 26(1), 16–17. <https://doi.org/10.24839/2164-9812.Eye26.1.16>
- McMahan, E. A. (2021b). Counseling psychology: Making everyday life bearable. *Eye on Psi Chi*, 26(2), 14–15. <https://doi.org/10.24839/2164-9812.Eye26.2.14>
- McMahan, E. A. (2021c). Personality psychology: For the snowflakes. *Eye on Psi Chi*, 25(4), 20–21. <https://doi.org/10.24839/2164-9812.Eye25.4.20>
- McMahan, E. A. (2021d). School psychology . . . For those who are not faint of heart. *Eye on Psi Chi*, 25(3), 18–19. <https://doi.org/10.24839/2164-9812.Eye25.3.18>
- McMahan, E. A. (2022a). Cross-cultural psychology . . . Because not everybody is WEIRD. *Eye on Psi Chi*, 26(3), 12–13. <https://doi.org/10.24839/2164-9812.Eye26.3.12>
- McMahan, E. A. (2022b). Consumer psychology: Making sense of your irrational purchases. *Eye on Psi Chi*, 27(2), 16–17. <https://doi.org/10.24839/2164-9812.Eye27.2.16>
- McMahan, E. A. (2022c). People with a fully functioning frontal lobe are more agreeable . . . or things we learned from biopsychology. *Eye on Psi Chi*, 27(1), 12–13.
<https://doi.org/10.24839/2164-9812.Eye27.1.12>
- McMahon, C. (2019). Student internships in psychology: Thinking outside the box. *Eye on Psi Chi*, 24(2), 34–35. <https://doi.org/10.24839/2164-9812.Eye24.2.34>
- Morgan, B., Bald, K., & Basten, B. (2021). LinkedIn®: Advice for students and faculty. *Eye on Psi Chi*, 25(3), 32–33. <https://doi.org/10.24839/2164-9812.Eye25.3.33>
- National Science Foundation, National Center for Science and Engineering Statistics. (2017). *National survey of college graduates public use microdata file and codebook*. <https://sestat.nsf.gov/datadownload/>
- Nauta, M. M. (2002). A career research project for undergraduate psychology students. *Teaching of Psychology*, 29(4), 288–291.
https://doi.org/10.1207/s15328023top2904_06
- Norcross, J. C., Sayette, M. A., & Burke, J. D. (2023a). Obtaining letters of recommendation for graduate school. *Eye on Psi Chi*, 28(1), 24–25.
<https://doi.org/10.24839/2164-9812.Eye28.1.24>
- Norcross, J. C., Sayette, M. A., & Charneski, A. (2023b). Gap year(s) before graduate school: Pros, cons, and unknowns. *Eye on Psi Chi*, 28(2), 8–9.
<https://doi.org/10.24839/2164-9812.Eye28.2.24>
- Parker, S. L. (2023). Adjusting expectations for recent graduates entering the workforce. *Eye on Psi Chi*, 27(3), 24–25. <https://doi.org/10.24839/2164-9812.Eye27.3.24>
- Pfund, R. A., Hailstorks, R., Stamm, K. E., Christidis, P., Conroy, J. C., & Norcross, J. C. (2021). Careers in psychology course: Prevalence, structure, and timing. *Teaching of Psychology*, 48(1), 63–68. <https://doi.org/10.1177/0098628320959950>
- Prinstein, M. (2021). Tips, tricks, and insight to ace your interview for doctoral psychology admission. *Eye on Psi Chi*, 26(2), 36–37.
<https://doi.org/10.24839/2164-9812.Eye26.2.36>
- Radico, J., Landrum, R. E., & VanderStoep, S. (2021a). Questions (and answers) about returning to graduate school after a gap year. *Eye on Psi Chi*, 26(1), 12–13.
<https://doi.org/10.24839/2164-9812.Eye26.1.12>
- Radico, J., Landrum, R. E., & VanderStoep, S. (2021b). Questions (and answers) about whether to take time off before graduate school. *Eye on Psi Chi*, 25(4), 16–17.
<https://doi.org/10.24839/2164-9812.Eye25.4.16>
- Radico, J., Prinstein, M., & Turner-Musa, J. (2023). Questions (and answers) every student should know when preparing for graduate school. *Eye on Psi Chi*, 28(1), 16–17. <https://doi.org/10.24839/2164-9812.Eye28.1.16>
- Radico, J., Turner-Musa, J., & Prinstein, M. (2022). Scary stories of applying to graduate school!? *Eye on Psi Chi*, 27(2), 22–23.

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

- <https://doi.org/10.24839/2164-9812.Eye272.22>
- Radico, J., VanderStoep, S., & Prinstein, M. (2021c). Questions (and answers) about preparing to apply to graduate school. *Eye on Psi Chi*, 26(2), 20–21. <https://doi.org/10.24839/2164-9812.Eye26.2.20>
- Safer, D. A. (2022). Building your brand: Assessing your personal strengths and communicating your value to others. *Eye on Psi Chi*, 27(2), 20–21. <https://doi.org/10.24839/2164-9812.Eye272.20>
- Safer, D. A. (2023a). Embarking on career exploration? Start a career conversation. *Eye on Psi Chi*, 27(3), 14–16. <https://doi.org/10.24839/2164-9812.Eye273.14>
- Safer, D. A. (2023b). IQ vs EQ for career success. *Eye on Psi Chi*, 28(1), 12–13. <https://doi.org/10.24839/2164-9812.Eye28.1.2>
- Safer, D. A. (2023c). Surround yourself with support: The importance of mentors, advocates, and sponsors. *Eye on Psi Chi*, 27(4), 16–17. <https://doi.org/10.24839/2164-9812.Eye274.17>
- Sleigh, M. J., Iles, S., & Cannon, B. (Eds.). (2017). *An eye on graduate school: Guidance through a successful application*. Psi Chi, the International Honor Society in Psychology.
- Sleigh, M. J., Ritzer, D. R., & Hamric, D. (2018). Everything I needed to know about money I didn't learn in college. *Eye on Psi Chi*, 22(3), 18–23. <https://doi.org/10.24839/2164-9812.Eye22.3.18>
- Spencer, S. M. (2019, October). One course, two courses, three courses, more? Providing career support throughout the undergraduate curriculum: Strategies for promoting career exploration. *Psychology Teacher Network*, 29(4). <https://www.apa.org/ed/precollege/ptn/2019/10/career-support-undergraduate-curriculum>
- Stone, B. M., Chamberlain, A. B., & Bartholomay, E. M. (2020). An honest look into the life of psychology graduate students. *Eye on Psi Chi*, 24(4), 30–31. <https://doi.org/10.24839/2164-9812.Eye24.4.31>
- Turner-Musa, J., Prinstein, M., & Radico, J. (2023a). Questions (and answers) about acquiring research experiences before applying to graduate school. *Eye on Psi Chi*, 27(3), 12–13. <https://doi.org/10.24839/2164-9812.Eye273.12>
- Turner-Musa, J., Prinstein, M., & Radico, J. (2023b). Questions (and answers) about communicating your research experiences when applying to graduate school. *Eye on Psi Chi*, 27(4), 14–15. <https://doi.org/10.24839/2164-9812.Eye274.14>
- VanderStoep, S., Landrum, R. E., & Handelsman, M. M. (2020). Questions (and answers) about what to include on your graduate school resumé/CV. *Eye on Psi Chi*, 25(2), 10–11. <https://doi.org/10.24839/2164-9812.Eye25.2.10>
- VanderStoep, S., Landrum, R. E., & Handelsman, M. M. (2021). Questions (and answers) about what to leave off your graduate school resumé/CV. *Eye on Psi Chi*, 25(3), 14–15. <https://doi.org/10.24839/2164-9812.Eye25.3.14>
- Weiss, R. A. (2022). Applying your psych major toward a career in criminal justice. *Eye on Psi Chi*, 27(2), 30–31. <https://doi.org/10.24839/2164-9812.Eye272.30>
- Weiss, R. A., & Tamura, K. (2023). The hidden costs of applying for graduate school and suggestions to reduce them. *Eye on Psi Chi*, 27(4), 24–25. <https://doi.org/10.24839/2164-9812.Eye274.24>

Author Note.

Jennifer L. Hughes  <https://orcid.org/0000-0002-7978-5650>
 Kimberli R. H. Treadwell  <https://orcid.org/0000-0002-6595-4193>
 Albee Therese O. Mendoza  <https://orcid.org/0009-0003-9366-1157>
 We have no known conflict of interest to disclose.
 Jennifer L. Hughes is the Charles A. Dana Professor of Psychology, Psi Chi Advisor at Agnes Scott College, and an Associate Editor of *Psi Chi Journal of Psychological Research*.
 Kimberli R. H. Treadwell is an Associate Professor of Psychology and an Associate Editor of *Psi Chi Journal of Psychological Research*.
 Albee Mendoza is an Assistant Professor of Psychology and an Associate Editor of *Psi Chi Journal of Psychological Research*.
 Correspondence concerning this article should be addressed to Jennifer L. Hughes, Department of Psychology, Agnes Scott College, 141 E. College Ave., Decatur, GA, 30030, United States. Email: jhughes@agnesscott.edu

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

Examining Objectification and Dehumanization: The Effects of Race and Sexualization

Lindsay R. Beaman and Regan A. R. Gurung*
School of Psychological Science, Oregon State University

ABSTRACT. Dehumanization and objectification have been linked to a variety of harmful consequences. Because such concepts have primarily been explored in relation to singular categories (e.g., race alone), the present study focused on the intersection between sexualization and race. Participants completed measures of objectification, dehumanization, perceived moral worth, and behavioral intentions regarding a model. In Study 1 ($N = 104$), we used a 2 sexualization (sexualized, nonsexualized) $\times$ 2 race (Black, White) mixed factorial design. We found a significant interaction between race and sexualization on all dependent variables (e.g., objectification, $F[1, 99] = 5.04$, $p = .03$, $\eta^2 = .05$). Sexualized White women were the most objectified and animalistically dehumanized, nonsexualized White women were the most mechanistically dehumanized, and sexualized Black women were perceived to have the least moral worth. In Study 2, we employed a 2 sexualization (sexualized, nonsexualized) $\times$ 2 race (White, Black) between-groups factorial design ($N = 114$) using the same dependent variables as Study 1. We found a main effect of race on multiple outcomes (e.g., animalistic dehumanization, $F[1, 107] = 10.94$, $p = .001$, $\eta_p^2 = .09$). Participants dehumanized White models to a greater extent than Black models. Sexualized models were more objectified compared to nonsexualized models, $F(1, 107) = 4.71$, $p = .03$, $\eta_p^2 = .04$, and animalistically dehumanized to a greater degree, $F(1, 107) = 15.25$, $p < .001$, $\eta_p^2 = .13$. We discuss the practical implications of these findings for race and gender relationships.

Keywords: objectification, dehumanization, intersectionality, prejudice against women, sexualization and race



Diversity badge earned for conducting research focusing on aspects of diversity.

The institutionalization of male dominance is a fundamental piece of American history that has resisted resolution, continuing to inflict harm against women (Golash-Boza et al., 2019; Rothe & Collins, 2019). Although great strides have been made toward gender equality, the consequences of the patriarchy still persist (Adams & Lott, 2019). Women (more so than men) are sexualized across virtually every media platform (American Psychological Association,

2007), objectified (Bernard et al., 2020; Fredrickson & Roberts, 1997), and dehumanized (Loughnan et al., 2013; Riemer et al., 2019). Although female sexualization in connection to objectification and dehumanization has been well-studied (Bernard et al., 2020; Loughnan et al., 2013; Riemer et al., 2019), the intersectional nature of this issue needs further clarification.

To fill these gaps, we investigated the influence of race and sexualization on how people objectify and

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

dehumanize women, extending the focus to predict behavioral intentions and moral worth. Incorporating perceptions of moral worth—defined as moral concern and value of another person—in relation to both dehumanization and objectification has yet to be done, but has previously been connected to the objectification of women (Loughnan et al., 2013). Analyzing potential connections between perceptions of a target person's moral worth, dehumanization, and objectification may further aid understanding of the complex nature of unique forms of prejudice against women. Furthermore, investigating behavioral intentions in this context poses prospective new insight into how people may behave toward others on the basis of prejudice. By considering prejudice against women in many forms, within the context of race and sexualization, we can better understand how the dynamics of these issues may vary on the basis of identity and appearance.

Objectification

Objectification theory posits that women may be seen as objects or bodies rather than as human beings, and valued for use by others—specifically for the pleasures and sexual desires of men (Fredrickson & Roberts, 1997). Objectification occurs through sexualized media representations and interpersonal exchanges (e.g., nonreciprocated gazes from men, sexual commentary), resulting in self-objectification and a variety of problematic outcomes, such as negative mental health and decreased performance (Szymanski et al., 2011). Objectified women are viewed as less competent, less worthy of moral treatment, more responsible for being raped, and less deserving of help when being mistreated (Heflick & Goldenberg, 2009; Holland & Haslam, 2016; Loughnan et al., 2013). The adversity that objectification inflicts on women makes it a crucial phenomenon to further understand, address, and to create effective intervention methods against it. However, to address the unique negative impacts of objectification, it is crucial to understand it in contrast to another harmful perception imposed on women: dehumanization.

Dehumanization

Dehumanization refers to the cognitive processes that deny humanness to others (Haslam et al., 2005). Dehumanization is not solely restricted to intergroup conflict, but also occurs in everyday interpersonal interactions. Dehumanization occurs both implicitly and explicitly, revealing the significance of unconscious thought processes in denying others full humanity (Anderson et al., 2018; Goff et al., 2008). This negation of humanity can exist in two forms: a denial of human nature (equating someone to a machine) and a denial of human uniqueness (equating someone to an animal; Haslam

et al., 2005; Haslam et al., 2013); with this understanding, dehumanization can manifest mechanistically or animalistically. Furthermore, dehumanization can bring disturbing consequences. Individuals who dehumanize others have been found to justify harmful actions toward others who they viewed as “subhuman” (Bandura et al., 1975). Dehumanization is linked to greater willingness to torture victims, willingness to engage in discriminatory behaviors, increased endorsement of violence against criminal justice suspects, heightened risk of state sanctioned execution, and tolerance for sexual assault (Goff et al., 2008; Viki et al., 2013).

Whereas objectification and dehumanization are associated in certain situations (Loughnan et al., 2013; Riemer et al., 2019), it is crucial to recognize the differentiation between the two. Objectification emphasizes restricting a person's value to their body, viewing them in terms of their sexual use and equating their worth in terms of sexual pleasure (Fredrickson & Roberts, 1997; Gurung & Chrouser, 2007). Dehumanization focuses on the denial of uniquely human attributes, as well as the association of a person analogous to animals (Anderson et al., 2018; Goff et al., 2008). This distinction is important, as dehumanization and objectification are associated with different harmful outcomes. Dehumanization poses the potential for uniquely harmful outcomes on the basis that someone is subhuman, whereas objectification, while still harmful, still preserves the perception of human status. Although objectification and dehumanization are entirely separate processes, two additional factors, sexualization and race, are also important.

Sexualization

According to the American Psychological Association (2007), sexualization relates to an emphasis on a person's sexual appeal, equating their physical attractiveness to sexiness, perceiving someone as a sexual item, and/or inappropriately imposing sexuality upon them. In this study, we focused on sexualization in terms of sexual appeal and appearance. Under this delineation, the term “sexualization” refers to any style of dress that emphasizes sexual body parts (e.g., buttocks).

The easiest way to sexualize a person is to portray them in revealing clothes or with few clothes on. This use of clothing cut and style is perhaps the primary way sexualization is seen in society and the media and is also how most studies on this topic manipulate and operationalize sexualization (e.g., Bernard et al., 2020; Hietanen & Nummenmaa, 2011). Although certain types of clothing can be considered a form of sexualization, individuals do not necessarily dress to sexualize themselves. Rather, others impose sexualization upon them by focusing on certain parts of their body.

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

The link between sexualization and objectification is well-established (e.g., Loughnan et al., 2013). Sexualized individuals are more likely to be viewed in terms of sexual utility, equated to objects, and dehumanized by others (Bernard et al., 2020). For example, sexualized women are not only objectified to a greater extent, but are also rated lower on characteristics of competency when presented without directly exhibiting capability (e.g., holding a trophy, doing a math problem; Johnson & Gurung, 2011). In fact, objectification has been identified as a mediator between the sexualization of women and dehumanization in social drinking contexts (Riemer et al., 2019). It is important to note that sexualization is distinct from sexism. Sexism has typically been seen as a reflection of hostility toward women (Glick et al., 1996) and has roots in social and biological conditions such as the patriarchy. The dynamics of sexualization and harmful perceptions toward women have also been associated with negative ramifications for moral perceptions of women and behavioral intentions toward them, which makes it crucial to consider the role of moral worth and behavior as additional factors (Loughnan et al., 2013).

Moral Worth and Behavior

A person's moral worth, in its most simplistic form, is the idea that a person or entity is deserving of others' moral consideration, often on the basis of their perceived moral virtues (Rivera-Castro, 2014). Previous research has found that persons subjected to objectification or dehumanization are also perceived to possess less moral worth (Bastian et al., 2011; Loughnan et al., 2013). Although such phenomena have been explored separately, there remains a need to explore moral worth in the context of objectification and dehumanization simultaneously. Additionally, perceptions of a person's moral virtues—which inform moral worth—have been found to be a primary predictor of the perceiver's prosocial behavioral intentions toward said person (e.g., help them, cooperate with them; Cuadrado et al., 2020). Recent research has pointed to the importance of the social target's identities, demonstrating that race and ethnicity has been found to impact a person's perceived moral virtues, leading to decreased prosocial behavioral intentions (Cuadrado et al., 2021). However, existing literature on the dynamic of moral worth and behavioral intentions in the context of identity characteristics, must be built upon further. Therefore, the pursuit of understanding potential links between moral worth, prosocial behavioral intentions, and harmful perceptions in the context of appearance and identity poses great importance.

Race and Gender

The selective denial of Black humanness is an undeniable

part of history that sustains contemporary forms of racism (e.g., Goff et al., 2008; Owusu-Bempah, 2017). During the era of slavery in America, the Jezebel stereotype was constructed by White men to warrant the rape and sexual assault of Black women, depicting them as a promiscuous and sexually aggressive deviant (West, 1995). Even today, Black women are objectified and hypersexualized in media to a far greater extent and are subjected to increased sexualization compared to White women (Anderson et al., 2018; Turner, 2011). In addition, Black women have been found to be more implicitly associated with animals and objects, thus being dehumanized to a greater extent (Anderson et al., 2018). Race has been shown to significantly affect the patterns of stereotype endorsement against women, as well as the behaviors of others toward women (Biefeld et al., 2021; Leath et al., 2021). Therefore, a better understanding of harmful perceptions related to such intersectional identity aspects—including objectification and dehumanization—in relation to sexualization requires further exploration.

Intersectionality's theoretical frameworks have conceptual roots in Black feminist activism (Carbado et al., 2013; Cho et al., 2013). The term intersectionality describes the ways that various marginalized identity aspects, such as race, gender, class, sexual orientation, “interlock and intersect” to create unique dynamics of oppression (Crenshaw, 1989, p. 149). This is evident in Black women stereotypes, as it strays from the conventional assumption of submission and modesty placed upon women of other races, portraying Black women as distinctly domineering and licentious (Rosette et al., 2018). Intersectionality is relevant in understanding the disproportionate rates of sexualization and sexual harassment. For example, Black women have been found to be subjected to increased levels of sexualization compared to White women, and have also reported higher rates of harassment stemming from amalgamated sexual and racial harassment (Anderson et al., 2018; Berdahl & Moore, 2006).

The Present Studies

In both of our studies, we sought to provide evidence for the differences between objectification and dehumanization, as well as how these different perceptions may be imposed onto women distinctly based on race and sexualization. Furthermore, we aimed to identify factors that may be related to these harmful perceptions. Existing studies have indicated that Black women are subjected to differential racial stereotypes (West, 1995), hypersexualized media representation (Turner, 2011), and increased implicit dehumanization compared to White women in modern society (Anderson et al., 2018). Additionally, dehumanization and objectification has been linked with discriminatory behaviors toward

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

dehumanized/objectified individuals (i.e., Goff et al., 2008; Heflick & Goldenberg, 2009). Other factors also influence perceptions. We aimed to control for major confounds: views relating to women as a whole (e.g., sexism) and the perceiver's gender. We opted to control for sexist attitudes toward women, as certain forms of sexism have been associated with denying women uniquely human emotions (Viki & Abrams, 2003), which may pose implications for objectification and dehumanization. Furthermore, gender has been found to influence perceptions. For example, men and women have been found to judge faces significantly differently (Reid et al., 1997), which could influence how participants perceive others.

The present studies examined the intersection of sexualization and race, analyzing both of these concepts in regard to their effect on objectification and dehumanization. We had three main hypotheses. First, we hypothesized that sexualized Black women would be dehumanized and objectified to a greater extent than sexualized and nonsexualized White women. Additionally, we anticipated that greater sexualization and dehumanization would be associated with women being viewed to have less moral worth. We also speculated that sexualized Black women would be subjected to more avoidant, exclusionary, and mistrustful behavioral intentions.

Study 1

Method

Participants

Undergraduate students ($N = 104$) at a midsized, western university in the United States enrolled in introductory psychology courses, participated in this study. Participants' ages ranged from 18–54 ($M = 25.20$, $SD = 9.74$). The sample was 85.56% women, and 14.42% men, 39.42% first-year students, 18.27% second-year students, 16.35% third-year students, 20.19% fourth-year students, and 5.77% students of another year. Two-thirds (65.38%) of the sample identified as European American, 13.46% as Asian or Asian American, 12.50% as Hispanic or Latino, 6.73% as African American, 0.96% as Native Hawaiian or Pacific Islander, and 0.96% as another race/ethnicity. Participants' political views were 35.1% extremely liberal, 43.9% slightly liberal, and 12.3% slightly conservative.

Materials

Visual Stimuli. We used four different models pretested to be equivalent in attractiveness and body shape from a previous study conducted by Anderson et al. (2018). All models were pictured standing in front of a plain white background and looking directly at the camera, showing the entire body from the knees up. Both models in the

“sexualized” condition were shown in a bikini, while both models in the “nonsexualized” condition were shown in a casual tank top and slacks (images in Anderson et al., 2018). Within each of the sexualization conditions, one model was Black and the other model was White.

Measures.

Objectification. To measure objectification, participants rated the models based on a set of six descriptor terms: attractive, desirable, promiscuous, sexy, self-respecting, likely to use her body to get what she wants (Johnson & Gurung, 2011). We included five distractor words (i.e., appropriateness of outfit, fit/healthy, high self-esteem, shallow, vain) to obscure the intent of the study. Participants rated models using a 5-point Likert scale ranging from 1 (*strongly agree*) to 5 (*strongly disagree*). Greater levels of objectification were indicated by a higher score. Reliability for the scale was acceptable, Cronbach's $\alpha = .69$.

Dehumanization. We measured dehumanization with the Perceived Human Qualities Scale (PHQS, Riemer et al., 2019). The PHQS measured the extent to which participants denied each target's overall human qualities, with two subscales to analyze distinct patterns of animalistic and mechanistic dehumanization. This 8-item measure consisted of four human uniqueness traits (e.g., This person appears refined and cultured), which equated with animalistic dehumanization, and four human nature traits (e.g., This person appears superficial, like she has no depth), which equated with mechanistic dehumanization. Models were rated on each attribute using a 5-point Likert scale ranging from 1 (*strongly agree*) to 5 (*strongly disagree*). Greater levels of dehumanization were indicated by a higher score. Reliability for the scale was high, Cronbach's $\alpha = .80$ (animalistic) and .79 (mechanistic).

Moral Worth. To measure perceptions of moral worth regarding the model, we used a Morality Scale (adapted from Loughnan et al., 2013) with 8 total items regarding moral concern and perceptions of moral value in relation to the target (e.g., How badly would you feel if this person had been taken advantage of). Participants responded on a 5-point scale ranging from 1 (*a great deal*) to 5 (*none at all*). Equating someone with greater moral worth was indicated by a higher score. Reliability for the scale was acceptable, Cronbach's $\alpha = .70$.

Avoidant, Exclusionary, and Mistrustful Behavioral Intentions. We evaluated participant avoidant, exclusionary, and mistrustful behavioral intentions using items from Xia (2021), with changes made to the third behavioral subscale to focus on trust behaviors instead of relational hostility. The measure was also shortened, consisting of 3 questions per subscale to avoid participant

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

survey fatigue while gaining concise information about basic forms of social hostility. Participants rated their likelihood to engage in certain types of behavioral conduct on 9 items, which included questions pertaining to inclusion/exclusion (e.g., Invite this person to hang out with your group of friends), acknowledgement/avoidance (e.g., To talk to this person while waiting for a ride), and trust/mistrust (e.g., Ask this person to keep an eye on your things while you use the restroom) regarding the target. Participants used a 5-point scale ranging from 1 (*extremely likely*) to 5 (*extremely unlikely*). More negatively oriented behavioral intentions were associated with a higher score. Reliability for the scale was high, Cronbach's $\alpha = .80$.

Sexism. We used the Ambivalent Sexism Inventory (ASI; Glick & Fisk, 1996) to assess participants' attitudes of hostile and benevolent sexism toward women as a covariate. The ASI consists of a 22-statement list that the participants rated each term on a 7-point Likert scale rating from 1 (*strongly agree*) to 7 (*strongly disagree*). The two subscales of the ASI are hostile sexism and benevolent sexism. Hostile sexism is outright prejudice and discrimination toward women. Benevolent sexism is a combination of attitudes toward women that come off as positive, prosocial, and seeking intimacy, yet are based on stereotypes and restrictive social roles of the female gender. Cronbach's alpha for each subscale showed acceptable internal reliability, Cronbach's $\alpha = .78$ (hostile sexism) and .62 (benevolent sexism).

Procedure

Oregon State University institutional review board approval was received prior to data collection. We used a 2 sexualization (sexualized, nonsexualized) x 2 race (Black, White) mixed factorial design. We presented

participants with separate images of two women: one Black and one White model, both of whom were either wearing sexualized or nonsexualized clothing. We randomly assigned consenting participants to a condition, where they completed measures pertaining to a sexualized Black and a sexualized White model, or a nonsexualized Black and a nonsexualized White model. With the target remaining on the page, participants completed all measures. Each dependent measure was completed for the Black model, and the White model presented in random order. Participants then completed the ASI, followed by a brief survey for a separate study. Finally, participants completed a block of demographic questions (i.e., age, year in school, gender, race/ethnicity, political views) and read a debriefing form. We recruited participants through the department's research signup website (SONA software). Participants received course credit for their participation, and instructions told them that "this study's purpose is to examine various presentations of women through the perceptions of others" and they were to "fill out a short questionnaire about your own opinions and perceptions of a woman." We used Qualtrics to design and administer the surveys.

Results and Discussion

To test our primary hypotheses, we conducted a series of repeated-measures multivariate analyses of covariance (MANCOVA) using sexualization (sexualized, nonsexualized) as a between-subjects factor and race (White, Black) as a repeated factor. We tested for differences in objectification, two forms of dehumanization (animalistic and mechanistic), perceived moral worth of the model, as well as avoidant, exclusionary, and mistrustful behavioral intentions. We used gender and sexism subscale scores (hostile sexism, benevolent sexism) as covariates.

Multivariate analyses showed no main effect of race or sexualization in any analyses but significant interactions between race and sexualization. For objectification, $F(1, 99) = 5.04, p = .03, \eta^2 = .05$, participants objectified sexualized White women the most, followed by sexualized Black women, nonsexualized Black women, and nonsexualized White women. No covariates were significant in the analyses. See Table 1 for means and standard deviations.

We found a significant interaction between race and sexualization, $F(1, 99) = 10.86, p = .001, \eta^2 = .10$, on animalistic dehumanization, with benevolent sexism a significant covariate, $F(1, 99) = 8.13, p = .005, \eta^2 = .08$. Sexualized White women and nonsexualized White women were the most animalistically dehumanized, followed by sexualized Black women and nonsexualized Black women. Likewise, we found a significant interaction predicting mechanistic dehumanization,

TABLE 1

Means and Standard Deviations of Model Ratings Study 1

	Black				White			
	Sexualized		Nonsexualized		Sexualized		Nonsexualized	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Objectification	18.30 ^a	2.93	17.92 ^a	3.03	18.72 ^a	3.02	17.35 ^b	2.92
Mechanistic dehumanization	10.26 ^a	3.43	7.75 ^b	2.49	11.30 ^a	1.23	11.59 ^a	1.87
Animalistic dehumanization	9.11 ^a	3.24	6.67 ^b	2.29	11.17 ^a	1.88	10.86 ^a	1.63
Moral worth	30.85 ^a	4.56	32.88 ^b	4.12	31.28 ^{ab}	4.80	31.06 ^{ab}	4.67
Behavioral intentions	35.18 ^a	5.91	37.42 ^b	6.02	38.04 ^b	5.09	36.34 ^a	6.96

Note. Independent variables are race (Black, White) and sexualization (sexualized, nonsexualized). Means with different superscripts are significantly different from each other.

$F(1, 99) = 19.21, p < .001, \eta^2 = .16$, with both benevolent sexism, $F(1, 99) = 10.01, p = .002, \eta^2 = .09$, and hostile sexism, $F(1, 99) = 5.13, p = .03, \eta^2 = .05$, as significant covariates. Participants mechanistically dehumanized nonsexualized White women the most, followed by sexualized White women, sexualized Black women, and nonsexualized Black women. To explore the nature of the significant covariates, we performed a post-hoc partial correlational analysis between the two sexism scales and dehumanization controlling for condition. Participants high in benevolent sexism dehumanized Black models less, $r = -.21, p = .04$ (animalistic), and $r = -.22, p = .02$ (mechanistic). Participants high in hostile sexism dehumanized White models more, $r = .25, p = .01$ (animalistic), and Black models more, $r = .30, p = .002$.

For perceived moral worth, there was a significant interaction between race and sexualization, $F(1, 99) = 12.69, p < .001, \eta^2 = .11$, with no covariates significant. Contrasts showed that sexualized Black women were perceived as having the least moral worth, followed by nonsexualized White women, sexualized White women, and nonsexualized Black women.

Finally, for avoidant, exclusionary, and mistrustful behavioral intentions, there was a significant interaction between race and sexualization, $F(1, 99) = 15.99, p < .001, \eta^2 = .14$, with no covariates significant. Participants expressed the least avoidant, exclusionary, and mistrustful behavioral intentions toward sexualized Black women, followed by nonsexualized White women, nonsexualized Black women, and sexualized White women.

In contrast to past research, we did not find a main effect of sexualization or race, but we did find a significant race by sexualization interaction. These results both follow and stray from the existing literature. Whereas we did find that objectification was related to sexualized clothing, in many of our analyses, Black women were rated more positively than White women. It is no surprise that sexualized clothing increased the objectification of women, but our results did not find differences in objectification or dehumanization by race, which fails to align with the general consensus of recent research. For example, Anderson et al. (2018) found that Black women are subjected to increased objectification and dehumanization compared to their White counterparts. Given that this study was conducted in the wake of George Floyd's murder, it is possible that participants worked consciously to avoid a racial bias, something more likely given the repeated measures decision where both races were visible. Participants could have inferred that we were investigating a racial comparison. We modified our design to a between-group design to better isolate independent variables.

Study 2

Method

Participants

Participants ($N = 114$) included undergraduate students at a midsized, western university in the United States enrolled in introductory psychology courses. Participant ages ranged from 18–53 ($M = 24.75, SD = 8.59$). The sample consisted of 73.6% women, 24.5% men, and 1.8% nonbinary/third gender individuals. Participants' class standing included 27.3% first-year students, 16.4% second-year students, 22.7% third-year students, 23.6% fourth-year students, and 10% students of another year. The sample was 69.1% European American, 18.2% Asian or Asian American, 5.5% Hispanic or Latino, 2.7% African American, and 1.8% Native American or Alaskan Native, 0.9% Native Hawaiian or Pacific Islander, 0.9% Russian, and 0.9% of another race/ethnicity. Participant political views were 25.5% extremely liberal, 51.8% slightly liberal, 17.3% slightly conservative, and 5.5% extremely conservative.

Materials and Procedure

An institutional review board approval was received prior to data collection. This study was a 2 sexualization (sexualized, nonsexualized) $\times$ 2 race (White, Black) between-groups factorial design. We presented participants with separate images of a Black or a White model, who was either sexualized or nonsexualized. We used the same images, measures, and procedure as Study 1.

Results and Discussion

Similar to Study 1, we tested for differences in objectification, two forms of dehumanization (animalistic and mechanistic), moral worth, as well as avoidant, exclusionary, and mistrustful behavioral intentions. We hypothesized that sexualized Black women would be dehumanized and objectified to a greater extent than sexualized and nonsexualized White women. We also anticipated that greater sexualization and dehumanization would be associated with women being viewed to have less moral worth. Finally, we speculated that sexualized Black women would be subjected to more avoidant, exclusionary, and mistrustful behavioral intentions. We used five ANCOVAs with gender, hostile sexism, and benevolent sexism as covariates. Gender was reduced to two categories due to the small number of participants who indicated being nonbinary or a third gender.

Results indicated a main effect of race on animalistic dehumanization, $F(1, 107) = 10.94, p = .001, \eta_p^2 = .09$, mechanistic dehumanization, $F(1, 105) = 23.93, p < .001, \eta_p^2 = .19$, avoidant, exclusionary and mistrustful behavioural intentions, $F(1, 107) = 6.82, p = .01, \eta_p^2 = .06$, and

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

moral worth, $F(1, 107) = 5.01, p = .03, \eta_p^2 = .05$. See Table 2 for means and standard deviations. Participants dehumanized White models to a greater extent than Black models both animalistically and mechanistically, expressing more avoidant, exclusionary and mistrustful behaviors toward White women compared to Black women, and rated White women as having less moral worth compared to Black women.

We also found a main effect of sexualization on objectification, $F(1, 107) = 4.71, p = .03, \eta_p^2 = .04$, animalistic dehumanization, $F(1, 107) = 15.25, p < .001, \eta_p^2 = .13$, and avoidant, exclusionary and mistrustful behavioral intentions, $F(1, 107) = 4.40, p = .04, \eta_p^2 = .04$. Sexualized models were more objectified, dehumanized (animalistic) to a greater degree, and more likely to be avoided, excluded, and mistrusted compared to nonsexualized models.

Hostile sexism was a significant covariate of moral worth, $F(1, 107) = 8.38, p = .005, \eta_p^2 = .07$. We performed post hoc partial correlational analyses between the two sexism scales and avoidant, exclusionary, and mistrustful behavioral intentions controlling for condition. Avoidant, exclusionary, and mistrustful behavioral intentions negatively correlated to both benevolent, $r = -.34, p < .001$, and hostile sexism, $r = -.24, p = .01$. Participants lower in sexism were more positive regarding intentions.

Unlike Study 1, we found both race and sexualization emerge as significant predictors. Our findings on sexualization were consistent with past research demonstrating the negative effects of being seen in revealing clothing. Our findings on race were inconsistent, mostly favoring Black women. Unlike results from Study 1 and counter to our expectations, we did not find a significant interaction between race and sexualization. Research on intersectionality predicted such an interaction but a

failure to find it might have resulted from national events relating to race taking place at the time.

General Discussion

Examining both objectification and dehumanization in the same study revealed the gravity of their important distinction. Together with some evidence for the interaction of race and sexualization, we also see how Black women's perceived moral worth may have ties to more covert forms of contemporary racism (Study 1) and evidence of how race factors into certain types of prejudice against women (Study 2). Harmful biases toward women on the basis of their clothing were also evident, with clear-cut differences in how women in more revealing attire were viewed in comparison to those in more modest clothing.

Our results did not support our first hypothesis, which predicted that sexualized Black women would be dehumanized and objectified to a greater extent than White women. Although we failed to find consistent interactions between sexualization and race across studies, race did demonstrate a main effect regardless of sexualization in Study 2. White women were more dehumanized, which emphasizes the prominent influence of race on perception. Although not entirely reflective of Study 2's results, Study 1 demonstrated that sexualized Black women were judged to have the least moral worth, which underscores how race and sexualization can act as intersecting influences in bias against women.

Our findings regarding objectification and race did not support our hypotheses, yet they did emphasize the important distinction between objectification and dehumanization, and how women can be subjected to unique forms of prejudice when race is considered. Because our results demonstrated a clear difference between objectification and dehumanization, it is possible that Black women were subjected to entirely different harmful perceptions in comparison to White women. It is also possible that our largely White female sample may be why race was not significant in objectification, and that sampling more men—especially men of different races—would alter these results. Men have been found to objectify women more than women objectify other women (Strelan & Hargreaves, 2005). However, existing literature has primarily centered on White men and women. Future studies should seek to analyze this phenomenon with a more diverse participant pool to better understand variations in prejudice against women when race and sexualization is considered.

Our second hypothesis—that sexualized Black women would be subjected to more avoidant, exclusionary, and mistrustful behavioral intentions—was contradicted by our results. Our findings in Study 2 indicated that participants demonstrated more avoidant

TABLE 2

Means and Standard Deviations of Model Ratings Study 2

	Black				White			
	Sexualized		Nonsexualized		Sexualized		Nonsexualized	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Objectification	23.28	2.48	20.66	2.79	21.07	4.27	20.68	4.20
Mechanistic dehumanization	9.69	2.35	8.41	2.85	11.56	3.72	11.96	3.08
Animalistic dehumanization	9.38	2.80	6.62	2.35	10.14	2.27	9.07	3.23
Moral worth	30.31	4.41	30.86	4.17	28.68	5.75	28.32	4.75
Behavioral intentions	19.90	5.78	16.03	5.87	22.29	9.37	20.64	6.06

Note. Independent variables are race (Black, White) and sexualization (sexualized, nonsexualized).

and exclusionary behaviors toward White women compared to Black women. In Study 1, sexualized Black women were subjected to most overall positive behavioral intentions. These results, although unexpected, do align with other behavioral studies exploring racial implications on interpersonal interaction. For example, there is evidence of exaggerated positive responses from White participants toward Black participants, which relates to bias (Mendes & Koslov, 2013). White individuals who exhibited more smiling, laughing, and other seemingly positive behaviors also demonstrated the greatest amount of psychological threat from their Black partners. Because our participant sample was predominantly White women, such a phenomenon may explain why we found that Black women were seen as having the least moral worth, yet subjected to more inclusive behavioral intentions by participants. Future research should take a deeper look at these dynamics between women when race and sexualization is involved to better understand relationships between bias and different behaviors.

Our final hypothesis that predicted greater sexualization and dehumanization would be associated with being viewed to have less moral worth was not supported by our findings. We did not find that sexualization nor dehumanization was linked to less perceived moral worth, however, our findings may have implications related to race and sexualization. In Study 1, we found that sexualized Black women were perceived to have the least amount of moral worth. As aforementioned, White people in the United States have historically imposed stereotypes—such as the hypersexualized Jezebel—on to Black women to strategically diminish their moral worth (West, 1995). Such stereotypes may persist, potentially leading to the decreased perceived moral worth of Black women in our studies.

Our results add to the large volume of research showing the effects of objectification and dehumanization as they both interact with sexualization and race (Anderson et al., 2018; Bernard et al., 2020; Riemer et al., 2019). Whereas the majority of the literature has focused on these topics individually, it is critical to examine how these factors may interact. Especially given a growing focus on the effects of having multiple identities and research on intersectionality, combining both gender and race in the equation expands previous studies only looking at one or the other. The complexity of combining these factors is seen in how the direction of our results are not the same for all variables. One race may be objectified more but dehumanized less, or viewed to have less moral worth. Our studies emphasize the need to better understand how these processes work together.

Limitation and Future Directions

It is important to note the limitations that present themselves within the context of these studies. First, our mixed factorial design (Study 1) might have unintentionally introduced the opportunity for participants to make inferences about information we were attempting to collect. We addressed this concern in Study 2 using an independent group factorial design, and found different results urging caution in the interpretation of Study 1 findings. The between-groups factorial design of Study 2 reduced potential issues of participant inferences and racial bias, as they were only presented with an image of one woman. This may be an explanation for the different results between the two studies. Future research should set intentions to consider the social context under which said perceptions may occur, as this may pose implications for chosen experimental design. Furthermore, the number of models used was limited to one woman per condition. More comprehensive results would be better informed by the use of multiple women of the same race and sexualization level for each condition to aid generalizability. It is also important to acknowledge that researchers cannot escape the potential of historical factors influencing the validity of the measure of the dependent measures. Both studies took place within a year of the tragic murder of George Floyd, which might have influenced the results. Conducting the study after more time has passed from that event may yield different findings.

Another important point of consideration across both studies was our predominately White, liberal, female sample of participants. These demographic characteristics may be a contributing factor to our findings given the relationship between White liberalism and patronization on the basis of racial stereotypes (Dupree & Fiske, 2019). Such a shift in self-presentation on the basis of race may be driven by implicit stereotype association within our sample, driving well-intentioned yet performative inclusive behavioral intentions. Furthermore, our skewed sample may also demonstrate dynamics of objectification, dehumanization, and behavior that are unique to liberal White women. Manifestations of these variables may vary participants with different identity characteristics and political beliefs. Future studies should examine these with a more diverse participant sample.

Our findings can serve as a basic step toward the consideration of objectification and dehumanization of women who hold identities outside of the mythical White, cisgender, heterosexual, able-bodied norm that often serves as the focal point of research. Few studies have examined both dehumanization and objectification, and this was one of the first studies to show clear-cut

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

differences in perception across these two related but different variables. Although we only examined race and clothing, future studies should examine the interaction of additional demographic aspects, such as being cis or trans, sexual orientation, darkness or lightness of skin, religious beliefs, disability status, etc., in relation to the unique kinds of harmful perceptions women are subjected to on the basis of identity.

We encourage future research on perceptions regarding the combination of sexualization and other racial categories. Women of different races are often associated with different stereotypes, and this may lead to implications in the distinct types of harmful perceptions imposed on them by others (Biefeld et al., 2021). We hope to see ensuing studies prioritize building on the limited existing literature regarding intersectional identity, perception, and behavior. By amplifying the voices and experiences of marginalized individuals within future work, scholars can further the ambition to create a more equitable culture of representation and consideration in research.

References

- Adams, D. M., & Lott, E. H. (2019). Black women: Then and now. *Women & Therapy, 42*(3–4), 231–250. <https://doi.org/10.1080/02703149.2019.1622900>
- Anderson, J. R., Holland, E., Heldreth, C., & Johnson, S. P. (2018). Revisiting the Jezebel stereotype: The impact of target race on sexual objectification. *Psychology of Women Quarterly, 42*(4), 461–476. <https://doi.org/10.1177/0361684318791543>
- American Psychological Association, Task Force on the Sexualization of Girls. (2007). *Report of the APA task force on the Sexualization of girls*. <http://www.apa.org/pi/women/programs/girls/report.aspx>
- Bandura, A., Underwood, B., & Fromson, M. E. (1975). Disinhibition of aggression through diffusion of responsibility and dehumanization of victims. *Journal of Research in Personality, 9*(4), 253–269. [https://doi.org/10.1016/0092-6566\(75\)90001-X](https://doi.org/10.1016/0092-6566(75)90001-X)
- Bastian, B., Laham, S. M., Wilson, S., Haslam, N., & Koval, P. (2011). Blaming, praising, and protecting our humanity: The implications of everyday dehumanization for judgments of moral status. *British Journal of Social Psychology, 50*(3), 469–483. <https://doi.org/10.1348/014466610X521383>
- Bernard, P., Cogoni, C., & Carnaghi, A. (2020). The sexualization–objectification link: Sexualization affects the way people see and feel toward others. *Current Directions in Psychological Science, 29*(2), 134–139. <https://doi.org/10.1177/0963721419898187>
- Berdahl, J. L., & Moore, C. (2006). Workplace harassment: Double jeopardy for minority women. *Journal of Applied Psychology, 91*(2), 426–436. <https://doi.org/10.1037/0021-9010.91.2.426>
- Biefeld, S. D., Stone, E. A., & Brown, C. S. (2021). Sexy, thin, and White: The intersection of sexualization, body type, and race on stereotypes about women. *Sex Roles, 85*, 287–300. <https://doi.org/10.1007/s11199-020-01221-2>
- Carbado, D. W., Crenshaw, K. W., Mays, V. M., & Tomlinson, B. (2013). Intersectionality: Mapping the movements of a theory. *Du Bois Review: Social Science Research on Race, 10*(2), 303–312. <https://doi.org/10.1017/S1742058X13000349>
- Cho, S., Crenshaw, K. W., & McCall, L. (2013). Toward a field of intersectionality studies: Theory, applications, and praxis. *Signs, 38*(4), 785–810. <https://doi.org/10.1086/669608>
- Crenshaw, K. (1989). Demarginalizing the intersection of race and sex: A Black feminist critique of antidiscrimination doctrine, feminist theory and antiracist politics. *University of Chicago Legal Forum, 1989*, 139.
- Cuadrado, I., Brambilla, M., & López-Rodríguez, L. (2021). Unpacking negative attitudes towards Moroccans: The interactive effect of ethnicity and gender on perceived morality. *International Journal of Psychology, 56*(6), 961–966. <https://doi.org/10.1002/ijop.12794>
- Cuadrado, I., López-Rodríguez, L., & Constantin, A. A. (2020). "A matter of trust": Perception of morality increases willingness to help through positive emotions. *Group Processes & Intergroup Relations, 23*(3), 462–480. <https://doi.org/10.1177/1368430219838606>
- Dupree, C. H., & Fiske, S. T. (2019). Self-presentation in interracial settings: The competence downshift by White liberals. *Journal of Personality and Social Psychology, 117*(3), 579–604. <https://doi.org/10.1037/pspi0000166>
- Fredrickson, B. L., & Roberts, T. A. (1997). Objectification theory: Toward understanding women's lived experiences and mental health risks. *Psychology of Women Quarterly, 21*(2), 173–206. <https://doi.org/10.1111/j.1471-6402.1997.tb00108.x>
- Goff, P. A., Eberhardt, J. L., Williams, M. J., & Jackson, M. C. (2008). Not yet human: Implicit knowledge, historical dehumanization, and contemporary consequences. *Journal of Personality and Social Psychology, 94*(2), 292–306. <https://doi.org/10.1037/0022-3514.94.2.292>
- Golash-Boza, T., Duenas, M. D., & Xiong, C. (2019). White supremacy, patriarchy, and global capitalism in migration studies. *American Behavioral Scientist, 63*(13), 1741–1759. <https://doi.org/10.1177/0002764219842624>
- Gurung, R. A. R., & Chrouser, C. J. (2007). Predicting objectification: Do provocative clothing and observer characteristics matter? *Sex Roles, 57*, 91–99. <https://doi.org/10.1007/s11199-007-9219-z>
- Haslam, N., Bain, P., Douge, L., Lee, M., & Bastian, B. (2005). More human than you: Attributing humanness to self and others. *Journal of Personality and Social Psychology, 89*(6), 937–950. <https://doi.org/10.1037/0022-3514.89.6.937>
- Haslam, N., Loughnan, S., & Holland, E. (2013). The psychology of humanness. In S. J. Gervais (Ed.), *Objectification and (de)humanization: 60th Nebraska symposium on motivation* (pp. 25–51). Springer Science and Business Media. https://doi.org/10.1007/978-1-4614-6959-9_2
- Heflick, N. A., & Goldenberg, J. L. (2009). Objectifying Sarah Palin: Evidence that objectification causes women to be perceived as less competent and less fully human. *Journal of Experimental Social Psychology, 45*(3), 598–601. <https://doi.org/10.1016/j.jesp.2009.02.008>
- Hietanen, J. K., & Nummenmaa, L. (2011). The naked truth: The face and body sensitive N170 response is enhanced for nude bodies. *PLoS ONE, 6*(11), e24408. <https://doi.org/10.1371/journal.pone.0024408>
- Holland, E., & Haslam, N. (2016). Cute little things: The objectification of prepubescent girls. *Psychology of Women Quarterly, 40*(1), 108–119. <https://doi.org/10.1177/0361684315602887>
- Johnson, V., & Gurung, R. A. R. (2011). Defusing the objectification of women by other Women: The role of competence. *Sex Roles, 65*, 177–188. <https://doi.org/10.1007/s11199-011-0006-5>
- Leath, S., Jerald, M. C., Perkins, T., & Jones, M. K. (2021). A qualitative exploration of Jezebel stereotype endorsement and sexual behaviors among Black college women. *Journal of Black Psychology, 47*(4–5). <https://doi.org/10.1177/0095798421997215>
- Loughnan, S., Pina, A., Vasquez, E. A., & Puvia, E. (2013). Sexual objectification increases rape victim blame and decreases perceived suffering. *Psychology of Women Quarterly, 37*(4), 455–461. <https://doi.org/10.1177/0361684313485718>
- Mendes, W. B., & Koslov, K. (2013). Brittle smiles: Positive biases toward stigmatized and outgroup targets. *Journal of Experimental Psychology: General, 142*(3), 923–933. <https://doi.org/10.1037/a0029663>
- Owusu-Bempah, A. (2017). Race and policing in historical context: Dehumanization and the policing of Black people in the 21st century. *Theoretical Criminology, 21*(1), 23–34. <https://doi.org/10.1177/1362480616677493>
- Reid, A., Lancuba, V., & Morrow, B. (1997). Clothing style and formation of first impressions. *Perceptual and Motor Skills, 84*(1), 237–238. <https://doi.org/10.2466/PMS.84.1.237-238>
- Riemer, A. R., Gervais, S. J., Skorinko, J. L., Douglas, S. M., Spencer, H., Nugai, K., Karapanagou, A., & Miles-Novelo, A. (2019). She looks like she'd be an animal in bed: Dehumanization of drinking women in social contexts. *Sex Roles, 80*(9–10), 617–629. <https://doi.org/10.1007/s11199-018-0958-9>
- Rivera-Castro, F. (2014). Moral worth of persons. In D. A. Reidy & J. Mandle (Eds.), *The Cambridge Rawls Lexicon* (pp. 539–540). Cambridge University Press. <https://doi.org/10.1017/CBO9781139026741.139>
- Rosette, A. S., Ponce de Leon, R., Koval, C. Z., & Harrison, D. A. (2018). Intersectionality: Connecting experiences of gender with race at work. *Research in Organizational Behavior, 38*, 1–22. <https://doi.org/10.1016/j.riob.2018.12.002>
- Rothe, D. L., & Collins, V. E. (2019). Turning back the clock? Violence against

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

- women and the Trump Administration. *Victims & Offenders*, 14(8), 965–978. <https://doi.org/10.4324/9781003023302-5>
- Strelan, P., & Hargreaves, D. (2005). Women who objectify other women: The vicious circle of objectification? *Sex Roles*, 52(9), 707–712. <https://doi.org/10.1007/s11199-005-3737-3>
- Szymanski, D. M., Moffitt, L. B., & Carr, E. R. (2011). Sexual objectification of women: Advances to theory and research 1ψ7. *The Counseling Psychologist*, 39(1), 6–38. <https://doi.org/10.1177/0011000010378402>
- Turner, J. S. (2011). Sex and the spectacle of music videos: An examination of the portrayal of race and sexuality in music videos. *Sex Roles*, 64, 173–191. <https://doi.org/10.1007/s11199-010-9766-6>
- Viki, G. T., & Abrams, D. (2003). Infra-humanization: Ambivalent sexism and the attribution of primary and secondary emotions to women. *Journal of Experimental Social Psychology*, 39(5), 492–499. [https://doi.org/10.1016/S0022-1031\(03\)00031-3](https://doi.org/10.1016/S0022-1031(03)00031-3)
- Viki, G. T., Osgood, D., & Phillips, S. (2013). Dehumanization and self-reported proclivity to torture prisoners of war. *Journal of Experimental Social Psychology*, 49(3), 325–328. <https://doi.org/10.1016/j.jesp.2012.11.006>
- West, C. M. (1995). Mammy, Sapphire, and Jezebel: Historical images of Black women and their implications for psychotherapy. *Psychotherapy: Theory, Research, Practice, Training*, 32(3), 458–466. <https://doi.org/10.1037/0033-3204.32.3.458>
- Xia, X. (2022). An alternative measure for attitudes toward bisexual people. *Psychology of Sexual Orientation and Gender Diversity*, 9(3), 321–342. <https://doi.org/10.1037/sgd0000471>

Author Note.

Lindsay R. Beaman  <https://orcid.org/0000-0002-2729-1050>

Regan A. R. Gurung  <https://orcid.org/0000-0002-3542-4378>

We have no known conflicts of interest to disclose. This study was supported by the Oregon State University Undergraduate Research, Scholarship and the Arts Engage Award.

Correspondence concerning this article should be addressed to Lindsay R. Beaman, Reed Lodge, 2950 SW Jefferson Way, OR 97331, USA. Email: beamanli@oregonstate.edu

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

Mental Health Attitudes in Bosnia and Herzegovina

Andrea Goreta and Susan M. Long*

Department of Psychology, Lake Forest College

ABSTRACT. Mental health is not openly discussed in Bosnia and Herzegovina and there is a dearth of research on this topic, particularly related to general mental well-being. A convenience sample recruited online of 281 people from urban, suburban, and rural areas in Bosnia and Herzegovina reported their attitudes and knowledge about mental health and illness. Despite mental health being a publicly taboo topic to discuss, participants had fairly positive attitudes about mental health and illness. These findings differed by religion ($\eta_p^2 = .06$) and nationality ($\eta_p^2 = .14$). Participants who identified as agnostic or Muslim (as opposed to Catholic or Orthodox) had more positive attitudes toward people with mental health. Additionally, Serbian participants (versus Bosnian or Croats) expressed the least positive attitudes about mental health issues. Finally, younger people and more educated people had more positive attitudes about mental health ($R^2_{Adj} = .10$). This suggests cultural and religious differences in the ways that mental health is conceptualized and acknowledged.

Keywords: mental health attitudes, religion and educational correlates, Bosnia & Herzegovina

САЖЕТАК. Ментално здравље се у Босни и Херцеговини не дискутује отворено, што доводи до недостатка истраживања на ову тему, посебно у вези са општим менталним благостањем. Погодан узорак од 281 особе из урбаних, приградских и руралних подручја Босне и Херцеговине, регрутован путем интернета, изразио је своје ставове и знање о менталном здрављу и болести. Иако је ментално здравље табу тема јавне дискусије, испитаници су имали прилично позитивне ставове о менталном здрављу и болести. Резултати показују разлике у зависности од религије ($\eta_p^2 = 0.06$) и националности ($\eta_p^2 = 0.14$). Испитаници који су се идентификовали као агностици или Муслимани (за разлику од Католика или Православаца) су имали позитивније ставове према менталном здрављу и болести. Додатно, српски испитаници (у односу на Бошњаке и Хрвате) су изразили најмање позитивне ставове о проблемима менталног здравља. Коначно, млађи људи и образованији људи су имали позитивније ставове о менталном здрављу ($R^2_{Adj} = .10$). Ово указује на културолошке и религијске разлике у начинима на које се ментално здравље концептуализује и признаје.



Diversity badge earned for conducting research focusing on aspects of diversity.

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

Mental health issues are among the leading causes of disability and suicide in the world. Globally, one in eight people live with a mental disorder, and it is estimated that about 5% of adults suffer from depression (WHO, 2021). These rates vary geographically due to past and current national struggles. War-affected communities in former Yugoslavian countries report anxiety disorder prevalence rates between 15.6% to 41.8%, 12.1% to 47.6% for mood disorders, and 0.6% to 9.0% for substance use disorders (Priebe et al., 2010). Despite large numbers of people being affected, mental health and illness is not frequently discussed publicly (Winkler et al., 2017) and is rarely researched aside from the effects of war. Indeed, mental health is rarely discussed across most of Eastern Europe, where one study found that Christians who need help tend to turn first to their family and friends, then to pastors, and almost never to mental health professionals (Ellens et al., 2000). There is currently no published research on attitudes about mental health in Bosnia and Herzegovina; therefore, for the current study, we sought to begin to fill in this gap.

Bosnia and Herzegovina (sometimes called Bosnia–Herzegovina) is a country in the Balkans. From 1945–1991, it was a part of the Socialist Federal Republic of Yugoslavia. The collapse of communism in Yugoslavia happened in 1991. In the territory of Bosnia and Herzegovina, war started in 1992, and it ended with the signing of the Dayton agreement in 1995 (BBC News, 2018). The war in Yugoslavia began as a quest for independence by many groups. The war itself lasted four years, and thousands of people on all sides died. The topic of the war is still very delicate, and today, six former Yugoslavian countries exist: Bosnia & Herzegovina, Serbia, Montenegro, Macedonia, Slovenia, and Croatia. Although the current study focuses on Bosnia and Herzegovina, ethnically, this country is made up of primarily Bosniaks, Serbs, and Croats.

The war had many effects on politics, the population, and the economy, and one of the main consequences for mental health was posttraumatic stress disorder. Additionally, the war in Yugoslavia focused subsequent mental health research on the effects of trauma (Hasanović et al., 2006). For example, researchers examined the effects on children whose parents survived the war (Krešić et al., 2016), rates of particular disorders, such as depression and anxiety (Hasanović & Herenda, 2008), and effectiveness of a trauma/grief-focused group intervention (Cox et al., 2007).

A thorough review of the research indexed in PsycINFO, SocAbstracts, and Google Scholar revealed that, to date, no research has attempted to understand more recent public perceptions of mental health and illness, which might be less directly affected by the war.

Specifically, no research has focused on mental health attitudes, and no research has examined common understanding of pharmaceutical treatments of mental illness. Treating mental health with medications has not yet been broadly researched in Bosnia and Herzegovina, outside of treating PTSD and anxiety (Hasanović & Herenda, 2008).

More broadly speaking, mental health and mental health issues are not commonly discussed topics in Bosnia and Herzegovina. For example, a brief review of current online newspapers and publications revealed few references to mental health issues. Researchers in neighboring countries have begun exploring how much their populations understand mental health and attitudes about people with mental illness. A study undertaken in Serbia showed statistically significant differences in attitudes about mental health problems by place of residence, history of psychiatric disease, and religion (Marotić et al., 2010.) In this study, high school students from an urban and midsize town reported that participants from urban areas showed higher levels of stigma towards people with mental illness and were less willing to see the mentally ill as equal members of the community. The goal from a study from another neighboring country, Croatia, was to address, stress, and support mutual understanding and creative cooperation between religions and nations in promotion of public and global mental health. They examined important issues from the global and public mental health perspectives, such as radicalism, malignant nationalism, and pathological religiosity, and found that these are huge sources of hate, violence, poverty, and suffering that are also associated with global mental health problems. However, healthy spirituality and religiosity may significantly contribute to public and global mental health (Jakovljević et al., 2019). Researchers from one country in the region, Serbia, began to research the effects of promoting positive mental health via television (Milošević, 2011), but Bosnia and Herzegovina does not have similar intervention research.

Given this backdrop, anecdotal evidence suggests that many people struggle with talking about mental health issues, despite perhaps experiencing them. An examination of prescription drug sales in Bosnia and Herzegovina suggests that pharmaceutical use for mental health is increasing. The Agency for Drugs and Medication of Bosnia and Herzegovina publishes compiled data about the yearly medications sales (Agencija za Lijekove i Medicinska Sredstva BiH, 2011, 2021). The authors of this article compared prescription sales for drugs in the nervous system category across 2010 and 2020 (the most recently published data). Over this time period, nervous system drug sales significantly increased, suggesting that more people might be aware of mental health issues and, accordingly, taking medications to

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

boost their mental health. Because people might be experiencing mental health problems, and because there is a cultural reluctance to discuss mental health issues openly. The current study surveyed participants living in Bosnia and Herzegovina about their general attitudes toward mental health issues and knowledge about mental illness.

Research Question

The overall purpose of this study was to gauge the attitudes toward mental health issues and knowledge about mental health in Bosnia and Herzegovina, and to understand correlates of those variables.

Method

Data were collected online to understand how Bosnia and Herzegovina nationals view mental health, and if differences exist by religion, age, nationality, and educational

level. The study was approved in May, 2022 by the Lake Forest College Human Subjects Review Committee, and data were collected in Summer 2022. As with most studies on delicate topics, there are ethical considerations. Because these topics are not often discussed in Bosnia and Herzegovina, extra care was taken to alert participants that they could skip any question at any time and could exit the survey at any time. The informed consent also normalized these experiences. Special attention was paid so that participants knew this was part of an academic research study and was not sponsored by any government or religious organization.

Participants

Adults from Bosnia and Herzegovina completed an online survey via Qualtrics. This convenience sample was recruited via social media (Facebook, Instagram, Twitter, Gmail) and via personal communication of the first author. Four hundred thirteen people attempted the survey, and 281 (180 men, 99 women) fully consented and completed the survey (two people did not indicate their gender). The highest number of participants were Serbs ($n = 261$), followed by 10 Bosnians, 5 Croats, and 2 people of other nationalities, while 3 people did not choose any listed option. The sample was well-educated: 151 people held university degrees, 104 people earned secondary degrees, and 23 people reported having postgraduate degrees. (Two people did not report their level of education, while one person attended primary school). Out of 281 people, 175 lived in midsize towns, 62 lived in urban areas, 40 in rural areas, and four people did not report their area of living. Most participants ($n = 255$) declared themselves as Orthodox Christians, 10 as Muslims, 9 as Atheists/Agnostics, 4 people did not choose any listed option, and 3 people declared as Catholics. One fifty-four participants were married, 56 participants were single, 50 were dating someone/in a relationship, 20 participants were divorced/widowed, and 1 participant did not report their relationship status. See Table 1.

Variables

All measures were translated from English to Bosnian, Serbian, and Croatian by the first author and another native speaker of all four languages. Participants took the survey in their preferred language.

Mental Health Attitudes and Knowledge. Attitudes toward mental health and mental health issues were measured with a modified teacher mental health attitudes scale (Bella et al., 2011). The scale was developed in Nigeria to understand teachers' opinions and attitudes about mental health and mental health issues. Participants answered 27 items about their attitudes toward people with mental health problems, their own attitudes about

TABLE 1

Sample Demographics

Gender	Man	180
	Woman	99
	Not reported	2
Nationality	Serb	261
	Bosnian	10
	Croat	5
	Other	2
	Not reported	3
Education	University degree	151
	Secondary degree	104
	Postgraduate degree	23
	Primary school	1
	Not reported	2
Area of living	Midsize town	175
	Urban area	62
	Rural area	40
	Not reported	4
Religion	Orthodox Christians	255
	Muslims	10
	Atheists/Agnostics	9
	Catholics	3
	Not reported	4
Relationship status	Married	154
	Single	56
	Dating someone/In a relationship	50
	Divorced/Widowed	20
	Not reported	1

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

mental health problems, and general knowledge about people with mental illness. Example items included, “There is no difference between mental illness and mental health problem” and “I would be disturbed to discover an adult with a mental health problem at my workplace.” Per the original scale, participants indicated their responses on a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Sixteen items were reverse coded, and item scores were summed so that high scores indicated more correct knowledge about mental health and more compassion for people with mental health problems. Internal consistency for this scale was good (Cronbach’s $\alpha = .79$).

Demographics. At the end of the survey, participants answered the following demographic questions: age, gender, level of education, area of habitation, current country of residence, if they have ever lived abroad, religion, nationality, relationship status, if they have any current or past experience with counseling/therapy, and if they currently (or if they have ever) taken medication for mental health.

Procedure. Participants were recruited online via social media and personal communication. The first page of the survey was translated into three languages, and asked participants to choose their preferred language for the survey. Participants could choose between three official languages in Bosnia and Herzegovina: Bosnian, Serbian, and Croatian. The informed consent, questionnaire, and debriefing were translated by the first author and another native speaker. Participants took seven minutes to complete the survey, on average. Participants were debriefed at the end of the survey.

Data Analysis

All data were analyzed using SPSS version 26. Mental health attitudes scores were normally distributed.

Results

First, we compared attitudes between the three Bosnia and Herzegovina nationality groups. A one-way analysis of variance (ANOVA) revealed medium significant differences in levels of attitudes by nationality, $F(3, 267) = 5.86$, $p = .001$, $\eta_p^2 = .06$, where post-hoc tests revealed that Croats have the most positive mental health attitudes ($M = 108.75$, $SD = 4.79$), significantly higher than Serbs ($M = 92.89$, $SD = 9.32$), who have the least positive mental health attitudes. Bosnian’s attitudes ($M = 100.50$, $SD = 12.05$) were not significantly different from either group. These comparisons are exploratory, as there were only four Croats in that group.

A second ANOVA compared attitudes by religion. Again, there were large significant differences in attitudes between groups, $F(3, 266) = 14.40$, $p < .001$, $\eta_p^2 = .14$.

Post-hoc tests showed that, when compared by religion, Atheists/Agnostics had the most positive mental health attitudes ($M = 109.56$, $SD = 7.26$), whereas Orthodox Christians had the least positive mental health attitudes ($M = 92.45$, $SD = 8.95$). Orthodox Christians also had significantly less positive attitudes about mental health and illness than Muslims ($M = 100.70$, $SD = 11.00$). Finally, the two Catholic respondents were not significantly different ($M = 107.00$, $SD = 5.66$) from any other group, probably due to the small sample size.

Next, we examined a series of correlations to understand the relationships between attitudes toward mental health and age and education. There was a medium-small significant negative relationship between age and attitudes, $r(267) = -.24$, $p < .001$, meaning that older participants had less positive mental health attitudes, and younger participants had more positive mental health attitudes. A medium-small significant positive relationship was also found between attitudes and education, $r_s(273) = .23$, $p < .001$. Finally, we ran a linear regression using these variables and substantiated the findings above, where age and education explained a significant proportion of variance in attitudes, $F(2, 263) = 14.10$, $p < .001$, $R^2_{Adj} = .09$.

Discussion

Summary of Findings

This study was the first to examine current attitudes and knowledge about mental health issues in Bosnia and Herzegovina. Overall, participants’ scores suggest they have a fair understanding and attitudes toward mental health issues, but that the range of knowledge is wide. Croats had the most positive mental health attitudes, followed by Bosnians and Serbs, who had the most negative attitudes about mental health in this country. This matches the comparison by religion, because Serbs are most likely to be Orthodox Christians, and this religious group had the most negative mental health attitudes. Perhaps in Orthodox Christian culture, leaders discuss mental health less than Muslim (Bosnians) or Catholic (Croats) cultures. Generally speaking, mental health and mental health issues are not discussed in the media, meaning that people in Bosnia and Herzegovina are not exposed to questions about mental health in their everyday life. Generally speaking, people in Bosnia and Herzegovina do not endorse the efficacy of therapy, there are few therapists per capita (WHO, 2022), and therefore a low number of people seek mental health care. Psychology, especially mental health issues, is something that is considered as a “taboo topic” in Bosnia and Herzegovina. All of these factors might contribute to varying levels of knowledge about mental health and differential tolerance for mental illness.

We noticed that education was negatively correlated with attitudes toward mental health, which confirms

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

that more negative mental health attitudes could be a consequence of a less education in a psychological field. A psychological science course was introduced in secondary schools in Bosnia and Herzegovina only in the 2000s, meaning that older generations did not have any exposure to this science through their education.

Meaning and Implications of Findings

There is a clear gap in the overall understanding of mental health in Bosnia and Herzegovina (WHO, 2022). As mentioned earlier, none of the published articles have focused on general mental health attitudes in Bosnia and Herzegovina, because research has, necessarily, focused on the effects of war and on survivors and their children (Hasanović et al., 2006; Krešić et al., 2016). However, participants in the current study still showed more compassion toward mentally ill people than anticipated. As this topic is not common in discussions, media, and research, it is almost impossible to find a paper or article on this topic. Therefore, this study can be a base for future studies and research related to mental health attitudes, as well as a base for different projects that would work on promotion and education of mental health and mental health issues.

Attitudes about mental health were measured using a modified teacher mental health attitudes scale that was developed for the Nigerian population (Bella et al., 2011). Attitudes about mental health in Nigeria are fairly well known, in that people do not have favorable or informed ideas about mental health and mental health issues (Labinjo et al., 2020). People in Bosnia and Herzegovina might think similarly to people in Nigeria in terms of mental health attitudes. Other European-based measures are similar to USA-based measures, and they do not capture the lack of knowledge behind mental health beliefs. That is, they assume the participant is more sophisticated about mental health than the common person in Bosnia and Herzegovina. Thus, we needed a measure that allowed for “non-politically correct, more colloquial” terms and attitudes. This measure fit those needs, and had already been used in published research, so we wanted to re-apply it in this context. All this being said, we want to emphasize that future research should explore attitudes in Bosnia and Herzegovina much more and develop a new culture specific measure that would be a better fit for the population in this country.

Weaknesses of the Present Research

Several methodological issues might have affected the results. The mental health attitudes measure was not developed for the general population, nor was it developed for Bosnia and Herzegovina culture. Although the current measure did demonstrate good

internal validity, future research should focus on scale development within a culturally relevant context. The convenience sample skewed toward married Orthodox Serbians residing in midsize towns. These demographics are not representative of the full diversity of the country, and importantly, such characteristics might influence one's perceptions and knowledge about mental health. Therefore, additional research is needed to understand the nuanced variations in attitudes across the country and within each demographic group, preferably through a stratified random sampling strategy. This study relied on a convenience sample which gathered unequal, and possibly unrepresentative, numbers of people from different religious and ethnic groups. Perhaps the people who participated in the study had particularly strong attitudes about mental illness and health. A stratified random sample might better capture the full variation in people's attitudes. Additionally, this study suggested potential religious and cultural influences on mental health attitudes. That particular religions or national identities might have specific ideas about what it means to be mentally ill suggests that socially desirable responding might differentially affect responses. Again, random sampling will help in this regard. Finally, future research should assess the presence of socially desirable responses in the Bosnia and Herzegovinian context. What is socially desirable in Bosnia and Herzegovina might differ from traditional constructs measured on widely used socially desirable responding measures in the United States. This should be explored by future research.

Suggestions for Future Research

The first suggestion is to have a more representative sample that would be based on population. If the research is to be based on self-reported surveys again, the survey should contain questions about participants' own mental health and socially desirable responses.

Furthermore, future research should focus more on how to educate people more on mental health. The question that arises is how it would be culturally and religiously appropriate to do this, without degradation of people, their opinions, and attitudes about mental health. Because Bosnia and Herzegovina was formerly the country of Yugoslavia, it would be interesting to see the influence of communism on generational differences, understanding of mental health and education. Furthermore, because religious practice was not a common thing in the time of communism, it would be interesting to examine why different religious groups in this country have various levels of mental health attitudes.

Understanding how postwar generations view mental health differently from those who lived through war is an important next step. As cultures change due to

internal conflict and outside influence, continued research can identify new challenges for citizens' mental health. This study was an important first step.

References

- Agencija za Lijekove I Medicinska Sredstva BiH. (2011, June 22). *Izveštaj o prometu lijekova koji imaju dozvolu za promet u Bosni i Hercegovini u 2010. Godini* [Report on the sales of drugs licensed for sale in Bosnia and Herzegovina in 2010]. Retrieved July 25, 2022, from <http://www.almbih.gov.ba/dokumenti/publikacije/>
- Agencija za Lijekove I Medicinska Sredstva BiH. (2021, September 15). *Izveštaj o prometu lijekova koji imaju dozvolu za promet u Bosni i Hercegovini u 2020. Godini* [Report on the sales of drugs licensed for sale in Bosnia and Herzegovina in 2020]. Retrieved July 25, 2022, from <http://www.almbih.gov.ba/dokumenti/publikacije/>
- BBC News. (2018, October 8). *Bosnia-Herzegovina profile - timeline*. Retrieved July 28, 2022, from <https://www.bbc.com/news/world-europe-17212376>
- Bella, T., Omigbodun, O., & Atilola, O. (2011). *Teachers' Mental Health Knowledge and Attitudes Questionnaire* [Database record]. APA PsychTests. <https://doi.org/10.1037/t43367-000>
- Center for European Studies, the University of North Carolina at Chapel Hill. (n.d.). *Background: Tito's Yugoslavia*. Retrieved July 25, 2022, from <https://europe.unc.edu/background-titos-yugoslavia/>
- Cox, J., Davies, D. R., Burlingame, G. M., Campbell, J. E., Layne, C. M., & Katzenbach, R. J. (2007). Effectiveness of a trauma/grief-focused group intervention: A qualitative study with war-exposed Bosnian adolescents. *International Journal of Group Psychotherapy*, 57(3), 319–345. <https://doi.org/10.1521/ijgp.2007.57.3.319>
- Ellens, B. M., McMinn, M. R., Lake, L. L., Hardy, M. M., & Hayen, E. J. (2000). A preliminary assessment of mental health needs faced by religious leaders in Eastern Europe. *Journal of Psychology and Theology*, 28(1), 54–63. <https://doi.org/10.1177/00916471000280010>
- Hasanović, M., Sinanović, O., Pajević, I., Avdibegović, E., & Sutović, A. (2006). Post-war mental health promotion in Bosnia-Herzegovina. *Psychiatra Danubina*, 18(1–2), 74–78.
- Hasanović, M., & Herenda, S. (2008). Post traumatic stress disorder, depression and anxiety among family medicine residents after 1992–95 war in Bosnia and Herzegovina. *Psychiatra Danubina*, 20(3), 277–285.
- Jakovljević, M., Kurjak, A., Jerković, A., Hasanović, A., & Nikić, M. (2019). Spirituality, religiosity and nationalism from the perspective of public and global mental health. *Psychiatra Danubina*, 31(4), 382–391. <https://doi.org/10.24869/psyd.2019.382>
- Krešić Ćorić, M., Klarić, M., Petrov, B., & Mihić, N. (2016). Psychological and behavioral problems in children of war veterans with Post Traumatic Stress Disorder. *The European Journal of Psychiatry*, 30(3), 219–230.
- Labinjo, T., Serrant, L., Ashmore, R., & Turner, J. (2020). Perceptions, attitudes and cultural understandings of mental health in Nigeria: A scoping review of published literature. *Mental Health, Religion & Culture*, 23(7), 606–624. <https://doi.org/10.1080/13674676.2020.1726883>
- Marotić, V., Miletić, V., & Pejović-Milovancević, M. (2010). Stavovi adolescenata o problemima mentalnog zdravlja [Adolescent's attitude towards mental health problems]. *Psihijatrija Danas*, 42(1), 17–25.
- Milošević, L. (2011). Televizija i promocija mentalnog zdravlja. *Sociologija : Časopis Za Sociologiju, Socijalnu Psihologiju i Socijalnu Antropologiju*, 53(2).
- Priebe, S., Bogic, M., Ajdukovic, D., Franciskovic, T., Galeazzi, G. M., Kucukalic, A., Lecic-Tosevski, D., Morina, N., Popovski, M., Wang, D., & Schutzwahl, M. (2010, May). Mental disorders following war in the Balkans: A study in 5 countries. *Archives of General Psychiatry*, 67(5), 518–528. <https://doi.org/10.1001/archgenpsychiatry.2010.37>
- Winkler, P., Krupchanka, D., Roberts, T., Kondratova, L., Machů, V., Höschl, C., Sartorius, N., Van Voren, R., Aizberg, O., Bitter, I., Cerga-Pashoja, A., Deljkovic, A., Fanaj, N., Germanavicius, A., Hinkov, H., Hovsepian, A., Ismayilov, F. N., Ivezić, S. S., Jarema, M., ... Thornicroft, G. (2017). A blind spot on the global mental health map: A scoping review of 25 years' development of mental health care for people with severe mental illnesses in central and eastern Europe. *The Lancet Psychiatry*, 4(8), 634–642. [https://doi.org/10.1016/S2215-0366\(17\)30135-9](https://doi.org/10.1016/S2215-0366(17)30135-9)
- World Health Organization. (n.d.). *Anatomical therapeutic chemical (ATC) classification*. Retrieved July 25, 2022, from <https://www.who.int/tools/atc-ddd-toolkit/atc-classification>
- World Health Organization. (2021, September 13). *Depression*. Retrieved July 28, 2022, from <https://www.who.int/news-room/fact-sheets/detail/depression>
- World Health Organization. (2022, April 15). *Mental health atlas 2020 country profile: Bosnia and Herzegovina*. Retrieved July 25, 2022, from <https://www.who.int/publications/m/item/mental-health-atlas-bih-2020-country-profile>

Author Note. Funding Acknowledgment: The authors thank the James Rocco Foundation for supporting this research.

Many thanks to Vanja Goreta for help translating the survey and to Vanja Goreta and Jovica Goreta for help recruiting.

Correspondence concerning this article should be addressed to Andrea Goreta at goretaa02@lakeforest.edu

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

Effects of an Online Growth Mindset Single-Session Intervention on Hopelessness, Self-Hate, and Perception of Control in Arabic Adolescents

Alexandra G. Buchlmayer¹, Lucas E. Snyder¹, Ian Sotomayor², Arielle C. Smith³, Laura K. Jans³, Jessica L. Schleider^{3*}, Myriam El Khoury-Malhame^{4*}, and Cosette Fox^{1*}

¹Department of Psychology, Holy Cross College

²Department of Psychology, Stony Brook University

³Department of Medical Social Sciences, Feinberg School of Medicine, Northwestern University

⁴Psychology Program, Social and Education Sciences Department, Lebanese American University

ABSTRACT. Evidence-based single session interventions (SSI) that promote growth mindset have been shown to be associated with improved mental health, particularly in adolescents. Youth in Lebanon suffer from alarmingly high rates of mental illness combined with lack of availability of mental health services and a stigma for seeking help. The present study investigated the effects of a growth mindset of personality SSI on mental health of children and adolescents in Lebanon with most identifying as Syrian refugees. We hypothesized that participation in the growth mindset SSI would lead to a decrease in hopelessness and self-hate and an increase in hope, agency, and perceived control, from pre- to postintervention using a within-subject research design. The intervention was translated into formal Arabic, adapted to the culture, and administered online at a school and a youth center. Within group effect sizes calculations show that the intervention was associated with a decrease in hopelessness ($d_{av} = 0.36$, 95% CI [0.11, 0.61]; $d_z = 0.48$, 95% CI [0.22, 0.73]) and self-hate ($d_{av} = 0.37$, 95% CI [0.09, 0.64]; $d_z = 0.57$, 95% CI [0.28, 0.85]) and an increase in perceived control ($d_{av} = 0.36$, 95% CI [0.10, 0.61]; $d_z = 0.50$, 95% CI [0.24, 0.76]). These changes from pre- to postintervention were significant with small to moderate effect sizes. This study provided the first evidence in the Arab world of the cultural acceptability and feasibility as well as the mental health benefits of a cost-free, Arabic growth mindset SSI.

Keywords: single session intervention, growth mindset of personality, refugees, adolescents, Arab



Diversity badge earned for conducting research focusing on aspects of diversity. Open Data and Open Materials badges earned for transparent research practices. Data and materials are available at <https://www.schleiderlab.org/yes.html>

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

قَصَصُ الْاَلْخ

يَنْهَئِلْ جُؤْمَرُهَا زَرْعُهَا يَتَلَوُهَا فَيَمْلِكُهَا قَدْلَهَا إِذَا تَدَنَّسَ سِلْمَا (SSI) دَوَّلُوهُا هَسْلُهَا تَاذُ تَاخَلْخَتْلُ نَأْ نِي تَبِ
تَالِدَعْمُ نَمْ نَانِبِلْ يَفْ بَابِشْلَا يِنَاعِي. نِي قَهَارْمَا نِي بَصَاخْ قِيلِقْ عَلَا حَصْلَا نِي سِ حَتْبْ قَطْبِي تَرْم
بِلَطْ يَفْ رَا عَلَا قَمُصُورْ قِيلِقْ عَلَا حَصْلَا تَادَمْخْ رَفُوتْ مَدْعْ بِنَاجْ إِذَا قِيَسْغَنَلَا ضَارْمَا نَمْ قَقْلِقْ قَمُورْ عَلَا
قَسْلُجْ دِلَعْ يَنْبِمْ قِيَصْخُشْلَا جَمَانِرْبْ جَمْ جُؤْمَرْ رِي شَاتْ يَفْ قِي قِي حَتْلَا قِيلَا حَلَا هَسْرَا فِدَهْ نَاكْ. دَوَاعِ سِلْمَا
دَدْعْ مَهْمُضْ نَمْ نَانِبِلْ يَفْ نِي قَهَارْمَا لَوَافِطَالْ قِي سِغَنَلَا حَصْلَا دِلَعْ قِي مَانَلَا قِي نَهْزَلَا لِي غَفْتَلْ قِي حَو
يَفْ ضَاغَنَا إِذَا يِدُوتْسْ جَمَانِرْبَلَا اذَهْ يَفْ ظَلَوَاشْمَلَا نَأْ يَهْ قِيلِكْ عَلَا اِنْتِي ضَرْفْ. نِي يِرُوسَلَا نِي جِي جَالَا نَم
،مَهْدِلْ قَرُطِي سِلَابْ رُوحُشْلَا قِيلَا عَافَلَا لَمَالَا قَبْسِنْ قَدَايَزُو نِي قَهَارْمَا دِلْ تَاذَلَا قِي هَارُكُو سَايَلَا يُوْتَسَرْم
قِي هَارُكُو سَايَلَا يُوْتَسَرْمْ يَفْ ضَاغَنَا إِذَا يِدُوتْسْ جَمَانِرْبَلَا اذَهْ يَفْ ظَلَوَاشْمَلَا نَأْ يَهْ قِيلِكْ عَلَا اِنْتِي ضَرْفْ
مَهْتَا يُوْتَسَرْمْ سَبْ قَرَاقَمْ ،مَهْدِلْ قَرُطِي سِلَابْ رُوحُشْلَا قِيلَا عَافَلَا لَمَالَا قَبْسِنْ قَدَايَزُو نِي قَهَارْمَا دِلْ تَاذَلَا
عَمْ أَفْئِي يَكْتْ نَمْ اِنْدَاكَاوْ ،حِصْفَلَا قِي بَرِجْ عَلَا عَغْلَا إِذَا جَمَانِرْبَلَا مَجَرْتْ. هَسْلُهَا لِي بَقْ اَمْ قِي دِرْفَلَا
بَابِشْلَلْ زَكْرُومُو هَسْرَدَمْ يَفْ تَنْزَرْتَنَلَا رُبْعْ مَلَامْ عَتَسَا مَتْ نَمْ. قِيلِكْ حَلَا قَفَا قِي شَلَا
سَايَلَا يَفْ ضَاغَنَابْ أَطْبِي تَرْمْ نَاكْ جَمَانِرْبَلَا نَأْ عَوْمُ حَلَا لَخَادْ رِي شَاتَلَا مَجْجْ تَابِاسْ حْ رَهْطْ

($d_{av} = 0.36$, 95% CI [0.11, 0.61]; $d_z = 0.48$, 95% CI [0.22, 0.73])

تاذلا ةيهاركو

($d_{av} = 0.37$, 95% CI [0.09, 0.64]; $d_z = 0.57$, 95% CI [0.28, 0.85])

قرطيسل اب روعشلا يف ةدايزو

($d_{av} = 0.36$, 95% CI [0.10, 0.61]; $d_z = 0.50$, 95% CI [0.24, 0.76]).

قەس و تەم ئىلا قەرى غەس نەم اھرى ثات ام جاح حواریت مدعب ام ىلا جم انزىل لبق امم قق شولما تارىي غتلا مھ

[illegible]

ة عوم جم ىلإ ة هجوم ةين اجم تاسلج اذكل ةيسفنلا ةحصلل ىل ع دى اوفلا ىلإ ةفاضلإاب يفاقثلا لبقتلا

باب شو نيق هارم

برغل، نوق، هارمل، زوی جاللا، ٲیم نلا ٲین هذا ٲی ص خشل ج نوم، قد حاو ٲسل ج ل خدت: ٲی سی یرلا شامل کلا

Implicit theories of intelligence refer to one's implicit beliefs about their intelligence being stagnant or subject to growth. A fixed mindset is the belief that intelligence cannot be improved over time, and therefore a person with that belief tends to give up when facing challenges, whereas a growth mindset is the belief that intelligence can be improved over time through effort and persistence (Dweck, 2006; Dweck & Leggett, 1988). Acquiring and maintaining a growth mindset of intelligence has been shown to be associated with academic benefits in secondary and postsecondary education (for review, see Dweck & Yeager, 2019). For example, a study with high school students showed that a growth mindset of intelligence intervention improved academic performance (Thompson, 2020). Among college students, the belief in malleable intelligence has shown to increase overall well-being and academic performance (Ortiz Alvarado et al., 2019). In 2017, an online growth mindset of intelligence intervention

also showed an increase in academic achievement in impoverished adolescents (Burnette et al., 2017).

Moreover, the concept of growth mindset applies to traits other than intelligence, such as personality, thoughts, behaviors, and emotions, among others (Schleider & Weisz, 2016; Yeager, Miu et al., 2013). Whereas acquiring a growth mindset of intelligence is beneficial for academic performance, acquiring a growth mindset of personality has been shown to be associated with improved mental health (Schleider et al., 2022; Yeager, Trzesniewski et al., 2013; Yeager et al., 2014). Interventions aimed at promoting a growth mindset of personality have resulted in multiple benefits, including the following: lower levels of hopelessness, increased levels of agency, reduced depressive symptoms, and decreases in both aggression and the tendency toward vengeance in adolescents (Schleider, Abel et al., 2019; Schleider, Dobias, Sung, Mumper et al., 2020; Yeager, Miu et al., 2013). In contrast, adolescents possessing a fixed

mindset of personality experienced relatively greater stress, poorer health, and lower grades (Seo et al., 2022; Yeager et al., 2014). To increase the availability and accessibility of these evidence-based interventions to youth, Schleider and colleagues investigated the effectiveness of these interventions packaged in a single session that would be provided online for free (Schleider et al., 2022).

Single Session Interventions

Mental illness is an ever-growing crisis across the world, especially among adolescents. One of the biggest struggles in helping adolescents with mental health problems is treatment dropout. Forty to sixty percent of children who begin outpatient mental health care only make a few visits to their provider before dropping out of treatment (Harpaz-Rotem et al., 2004). As a response to this, the concept of the single session intervention (SSI) has arisen. An SSI is a specifically targeted intervention that intentionally consists of a single meeting or event (Schleider, Dobias, Sung, & Mullarkey, 2020). SSIs aim to make receiving effective mental health services as easy as possible for those who need them. Adolescents who reported immediate improvement after SSI trials also reported a rapid decline in depressive symptoms over the next 9 months (Schleider, Burnette et al., 2019). If SSIs prove effective in providing a fast, remote solution to mental health issues, it would be a breakthrough for the current mental health crisis (Schleider et al., 2022) and hence it is necessary to research how to effectively maximize such benefits.

An SSI that promotes growth mindset has been shown to decrease depression and anxiety symptoms along with other mental health related short- and long-term benefits in adolescents (Schleider, Abel et al., 2019; Schleider et al., 2022). The goal of a growth mindset SSI is to quickly inform an adolescent on how to develop a growth mindset to effectively cope with their symptoms all in one session. A growth mindset SSI may consist of informing the individual what a growth mindset is, how one can change behavior through cognition, and how the patient could directly apply this new knowledge. For example, the growth mindset SSI for adolescents used in a study by Schleider and Weisz in 2017 included an overview of how behaviors are controlled by thought, testimonials from older children about how people can change themselves and how they have used growth mindset to help themselves cope in the past, an action plan to reinforce how the participants can apply growth mindset strategies to their own lives, and a section for the participants to write notes to younger children about how they could apply growth mindset to their own lives. This kind of growth mindset SSI trial was found to be more effective in treating adolescent depressive

symptoms in the short- and long-term than an SSI of supportive therapy (Schleider & Weisz, 2017).

The global mental health crisis has become a clear and increasingly necessary issue for mental health care providers to find a way to reach and aid children and adolescents (Harpaz-Rotem et al., 2004). The immediate positive results of growth mindset SSIs are indicative of their effectiveness, as ease of access is not the only problem in retention rate of other mental health care options. Harpaz-Rotem and colleagues investigated the retention rate of children in mental health care and found that, even out of those who had full access by means of private insurance, only 22% maintained their treatment for longer than six months. Not only are those without access struggling to gain mental health treatment, but even those who have access go without the necessary prolonged treatment. Evidence-based interventions that are brief and nonpharmacological, such as growth mindset SSIs, have been associated with a decrease in pediatric anxiety, and studies are needed to determine its effectiveness in preventing other disorders as well (Stoll et al., 2020). Mental health services could benefit from adopting the SSI style in which preventative measures are given, both in shortness of length, and their ability to be administered by nonmental health care providers (Stoll et al., 2020). Although there will always be a need for clinician-run therapy sessions, having access to quick and effective treatments could benefit many who are not able to participate in long-term treatments. Online SSIs seem to be an adaptive mode of treatment that can be both a preventative and therapeutic intervention in its brevity and accessibility to those in need, going so far as to be self-guided, and therefore, not requiring any adult to administer it to adolescents (Stoll et al., 2020).

Although these SSIs have been associated with both a reduction in and prevention of psychopathology in children, not enough is known of long-term effects (Schleider, Abel et al., 2019). A recent study reported that, compared to control interventions, online SSIs are associated with a decrease in depressive symptoms, hopelessness, and restrictive eating and an increase in agency immediately post intervention, and for some, maintained up to three months later (Schleider et al., 2022). The long-term benefits of the intervention have been detected even at 9 months follow-up with an improvement in depressive and anxiety symptoms and perceived behavioral control (Schleider & Weisz, 2017). Schleider, Abel et al. (2019) found that those who had greater postintervention advancements displayed a sharper decrease in symptoms throughout their follow-up appointments. Their study concluded that the long-term effects of their growth mindset SSIs are linked to the severity of shifts in perceived control by

their participants, and in fact, these shifts may aid mental health care providers in deciding the next treatment route. They found that those who had smaller immediate shifts in their perceived control were more likely to need a continuous treatment plan, in comparison to those with larger immediate shifts (Schleider, Abel et al., 2019). This information could alter the usage and benefits of SSIs by making them a primary treatment option prior to receiving therapy, as some may find they no longer need therapy after completing it.

Growth Mindset SSI as a Solution to Mental Health Service Barriers

Because online SSIs are effective and accessible, they can overcome many of the barriers that people face when needing mental health services. Schleider et al. (2022) highlighted some typical barriers, including transportation to mental health care services, insurance policies, and cost. Some other barriers that adolescents experience include being placed on a waitlist, parents not consenting to treatment, financial concerns, stigma, and the lack of knowledge of where to find mental health services. A significant number of adolescent girls who live at home with their parents refrain from seeking mental health services (Samargia et al., 2006). This connection seems to identify parents as a particular barrier that many children must face when needing mental health care. These barriers, among many others, obstruct around eighty percent of children and adolescents from gaining access to necessary services. Although many are downloading a myriad of mental health care online applications, evidence-based interventions online are lacking (Schleider, Dobias, Sung, & Mullarkey, 2020). Thus, online SSIs are more beneficial due to their evidence-based elements and their accessibility, in that they can be done all at once, without much burden, at no cost, and can be freely available online (Schleider, Dobias, Sung, & Mullarkey, 2020). Unfortunately, as mentioned above, evidence-based treatments are not common, even among in-person contacts, because many do not make it to a clinician's office. Therefore, online SSIs have potential to shrink the gap between those needing accessible care to those receiving care. There are not many nonclinical trial versions of online SSIs currently available, but based on current evidence, they seem to benefit the youth who have tried them so far and there will likely be more freely offered online in the future. Although they may reduce the gap between those in need and those getting help, these SSIs are not meant to replace in-person clinical therapy; instead, they are intended to offer brief, low-intensive care that is more quickly accessible (Schleider, Dobias, Sung, & Mullarkey, 2020). Online SSIs can offer care to people likely not receiving any help at all.

The Present Study

The aim of the present study was to determine if online growth mindset SSIs can improve the mental health of adolescents in Lebanon, a country marked by trauma due to war and economic collapse. Our hypothesis was that participation in the growth mindset SSI would lead to a decrease in hopelessness and self-hate and an increase in hope and agency, from pre- to postintervention.

Methods

Sample Characteristics and Recruitment

Participants recruited for this study ranged from 10 to 17 years of age with 47.90% being between the ages of 14 to 16 years old ($n = 34$). In terms of gender, 60.60% identified as women ($n = 43$) and 39.40% identified as men ($n = 28$).

TABLE 1

Demographics and Mean Depressive Symptoms

Demographic Characteristic	<i>M (SD) or n (%)</i>	
<i>n</i>	71	
SMFQ ^a	13.06	(6.56)
Ethnicity		
Lebanese	23	(32.40%)
Syrian	47	(66.20%)
Iraqi	1	(1.41%)
Jordanian	0	
None/Not/NA	0	
Born in Lebanon		
Yes	9	(12.70%)
No	39	(54.90%)
N/A	23	(32.40%)
Age		
10 or younger	9	(12.70%)
11 to 13	17	(23.90%)
14 to 16	34	(47.90%)
17 or older	11	(15.50%)
Received Mental Health Support?		
"Yes, I am getting support now"	9	(12.70%)
"Yes, I have gotten support in the past"	14	(19.70%)
"No, but I have wanted to get support before"	39	(54.90%)
"No, and I have not wanted to get support before"	8	(11.30%)
NA	1	(1.41%)
Sex		
Female	43	(60.60%)
Male	28	(39.40%)

Note. SMFQ^a = Mood and Feelings Questionnaire – Short.

SPRING 2024

**PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH**

Participants primarily consisted of refugees from Syria, with 66.20% being Syrian ($n = 47$), 1.41% being Iraqi ($n = 1$), and 32.40% being Lebanese ($n = 23$). Of adolescents who indicated they were non-Lebanese, only 12.70% were born in Lebanon. See Table 1 for complete demographics.

Participants were recruited from a youth center in Beirut and private school in Bhamdoun, Lebanon during October 2022 in collaboration with faculty and students from the Lebanese American University in Byblos, Lebanon. Passive parental consent was obtained prior to testing. Parents received consent forms in Arabic describing the gist of the study and providing Institutional Review Board contact information in case of questions or concerns. Consenting parents were asked to fill in the form, sign it and date it, and return it to school. Nonconsenting parents were instructed to write their name with a "No" marked next to it and to also return the form to school. Prior to testing, research assistants collected verbal assent from participants who chose to participate in the research study. In total, 102 adolescents completed the intervention, but 31 participants were excluded for not completing more than 95% of the survey. Data from the remaining 71 adolescents who completed more than 95% of the study were included in the data analyses.

Design

The research project was approved by the Institutional Review Board of Holy Cross College. Faculty and students from Holy Cross College traveled to Lebanon to conduct the study. This study was a collaboration between Holy Cross College, Stony Brook University's Lab for Scalable Mental Health directed by Jessica Schleider, and faculty from the Lebanese American University in Byblos, Lebanon.

The online SSI used in this study was originally developed in English (Schleider & Weisz, 2016). The intervention was translated into formal Arabic so that participants of all Arabic ethnicities could understand. The translation was accomplished by two Lebanese collaborators on this study who possess a doctoral degree in psychology and who are fluent in formal Arabic and English. A pilot testing of the translation was done at the youth center, among eight members of the staff who are adults fluent in formal Arabic and English, prior to the arrival of the research team to Lebanon. The pilot testing team ensured that the terminology used would be understood by the youth at the center and that the cultural context would be applicable to youth in Lebanon. The Arabic translated intervention was made available on the website of the Lab for Scalable Mental Health (<https://www.schleiderlab.org/yes.html>).

To promote autonomy, adolescents were given the choice to participate in the research project or participate in other academic or extracurricular activities. Upon entering the research room, participants were provided with smart tablets to complete the study. Participants were asked to go to the homepage for Project Yes (<https://www.schleiderlab.org/yes.html>). Participants then took part in the anonymous Arabic online SSI including the pre- and postintervention questionnaires. At the conclusion of the intervention, participants were given the opportunity online to share anonymously their advice with their peers. Data was collected through the Project YES website where the online SSI resides and was stored on the Stony Brook University's secure lab server.

Intervention

The intervention, Project Personality, is an online SSI that promotes, among other things, a growth mindset of personality (Schleider & Weisz, 2016). This is a 30-minute, self-administered program for adolescents, which includes a lesson on the brain, testimonies about neuroplasticity, stories by other youths, and summaries of how and why personalities are malleable. It also includes a section where the participants can write to other young students about what they learned regarding the brain's ability to change. This intervention was translated into formal Arabic and adapted to the Arabic culture. The intervention in Arabic is readily available on the Project YES website (<https://www.schleiderlab.org/yes.html>).

Instruments

All the below questionnaires were translated into formal Arabic.

Demographics

A demographic questionnaire was administered to collect participants' basic demographic information including age, gender, nationality, and school grade. For nationality, the participants chose between Lebanese, Syrian, Iraqi, Jordanian, or other. If they chose anything other than Lebanese, they were asked a follow-up question if they were born in Lebanon or if they immigrated and when they immigrated to Lebanon.

Adverse Childhood Experiences Questionnaire

The Adverse Childhood Experiences Questionnaire (ACE; Felitti et al., 1998) is a 10-item questionnaire (e.g., "Did you feel that you didn't have enough to eat, had to wear dirty clothes, or had no one to protect or take care of you?") that measures childhood trauma. A total of 10 checkboxes, one next to each statement describing an adverse experience, were presented, and participants

were asked to check the box next to each item that they experienced. At the end, each box that was checked signified 1 point, and all points were summed for a total score.

Mood and Feelings Questionnaire–Short

The shortened version of the Mood and Feelings Questionnaire (SMFQ; Angold et al., 1995) is a 13-item questionnaire (e.g., “I felt miserable or unhappy,” “I felt lonely”) that screens for depression. The SMFQ has the participants rate their feelings and actions over the past two weeks on a scale of 0 (*not true*), 1 (*sometimes*), or 2 (*true*). Internal consistency was calculated for the Arabic translated measure and across all SMFQ items was $\alpha = .89$.

Beck Hopelessness Scale-4

A shortened version of the Beck Hopelessness Scale (BHS-4; Beck et al., 1974) is a 4-item scale (e.g., “My future seems dark to me,” “Things just won’t work out the way I want them to”) that measures attitudes of one’s future. Participants rate their feelings on a 4-point scale, ranging from 1 (*absolutely disagree*) to 4 (*Absolutely agree*). The internal consistency of BHS-4 items was calculated for the Arabic translated measure and was $\alpha = .79$ pre-SSI and $\alpha = .85$ post-SSI.

State Hope Scale

A shortened version of the State Hope Scale (SHS; pathways subscale; Snyder et al., 1991) is a 3-item scale (e.g., “I can think of many ways to reach my current goals”) that measures a participant’s perceived agency. Participants rate the 3 statements on an 8-point scale, ranging from 0 (*definitely false*) to 8 (*definitely true*). The internal consistency of SHS items was calculated for the Arabic translated measure and was $\alpha = .41$ pre-SSI and $\alpha = .83$ post-SSI.

Self-Hate Scale

A shortened version of the Self Hate Scale (Turnell, et al., 2019) is a 3-item scale (e.g., “I hate myself,” “I feel ashamed of myself”) that measures self-hate and can predict suicidal ideation. Participants rate the 3 statements on a 7-point scale, ranging from 1 (*not at all true for me*) to 7 (*very true for me*). Internal consistency of Self Hate Scale items was calculated for the Arabic translated measure and was $\alpha = .84$ pre-SSI and $\alpha = .79$ post-SSI.

Perceived Control

A single-item measure of adolescent perceived control was developed for this study. Immediately pre- and postintervention, youths rated their agreement with the statement, “Right now, I feel like things are out of my control” from 0 (*not at all*) to 10 (*a lot*). When analyzing pre- to postintervention changes for this measure, reductions in response scores signify improvement; in other words, a

low score postintervention indicates the participant feels “more in control” after completing the SSI.

Perceived Change in Hopelessness and Problem-Solving Ability

Participants were asked two questions immediately postintervention assessing participants’ perceived change in hopelessness and ability to solve problems. Both questions were developed for the present study based on established guidelines for evaluating subjectively perceived change following an intervention (Anvari & Lakens, 2019). Immediately postintervention, these questions ask, “To what extent are you feeling hopeless right now?” and, “To what extent are you able to solve the problems facing you right now?” when “compared to before doing this activity.” Perceived change in both hopelessness and problem-solving ability were rated on a 5-point scale from 1 (*much more hopeless or much less able to solve problems*) to 5 (*a lot less hopeless or a lot more able to solve problems*). These measures were constructed from previously established methods to examine the “smallest effect size of interest” or the smallest possible effect size with a detectable, subjective change within individuals (Anvari & Lakens, 2019).

Program Feedback Scale

The Program Feedback Scale (PFS) is routinely used to evaluate acceptability and user perceptions of SSIs (Dobias et al., 2023; Schleider, Dobias, Sung, Mumper et al., 2020; Shroff et al., 2023; Sung et al., 2023) and asks participants to rate their level of agreement with seven statements, indicating perceived acceptability and feasibility of their chosen SSI (e.g., “I enjoyed the program”). Ratings are made on a 5-point scale from 1 (*really disagree*) to 5 (*totally agree*). The PFS was adapted from existing, validated acceptability assessments of digital interventions, and items that are inapplicable to web-based SSIs were excluded (e.g., items that reference frequency of use or revisits). The PFS also collects open-response feedback from youth. Item scores can be evaluated individually or across items, via a mean-score. Internal consistency across PFS items was $\alpha = .83$, but mean responses to each PFS item were examined individually to gain insight on the acceptability of specific domains of the SSI (e.g., enjoyability, ease of use, ease of understanding). Internal consistency was calculated for the Arabic translated measure and across all PFS items was $\alpha = .83$.

Analytic Plan

Sample Characterization and Usage Patterns

To examine usage patterns, we calculated the number of youths who began the growth mindset SSI (i.e., Project Personality) and completed it. We also calculated demographics, ACE scores, symptom levels, and subjectively

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

perceived change in hopelessness and problem-solving ability for youth who completed at least 95% of the SSI and a key random question (i.e., gender). When analyzing pre- to post-SSI changes for levels of hopelessness, perceived agency, self-hatred, and perceived control, we only included youths who completed all pre-SSI and post-SSI questions for each respective measure. To assess the acceptability and feasibility of the SSI, item-level and overall means of the Program Feedback Scale were computed. A mean score greater than 3 on any individual item reflected endorsement of that item (e.g., satisfactory acceptability) and a mean overall score of greater than 3, across all items, reflected overall SSI acceptability and feasibility.

SSI Effects on Proximal Outcomes

Changes in hopelessness, perceived agency, self-hate,

and perceived control from pre- to post-SSI were evaluated by computing within-group effect sizes using the R package Measure of Effect (MOTE; Buchanan et al., 2019). Similar to previous trials (Schleider, Dobias, Sung, Mumper et al., 2020), we calculated both Cohen's d_{av} (which provides difference scores as a ratio of the average standard deviation of the outcome at both timepoints) and Cohen's d_z (which provides difference scores as a ratio of the standard deviation of change scores), including 95% confidence intervals (Lakens, 2013) to maximize transparency:

$$\text{Cohen } d_{av} = M_{diff} / ((SD_1 + SD_2) / 2) \quad (1)$$

$$\text{Cohen } d_z = M_{diff} / \sqrt{(\sum((x_{diff} - M_{diff})^2) / (N - 1))} \quad (2)$$

These calculations used a subsample of youth who completed all pre- and post-SSI measures. We also reported the number and percentage of participants who selected each response for the post-SSI perceived change in hopelessness and perceived change in problem solving questions.

All available data from participants who completed at least 95% of the SSI and a key random question (i.e., gender) were used for each test described above. Missing data rates were reported but not imputed, because usage patterns (including attrition) were of direct empirical interest. Anonymized data and code for all analyses are available via the Open Science Framework (<http://osf.io/znp43>).

Results

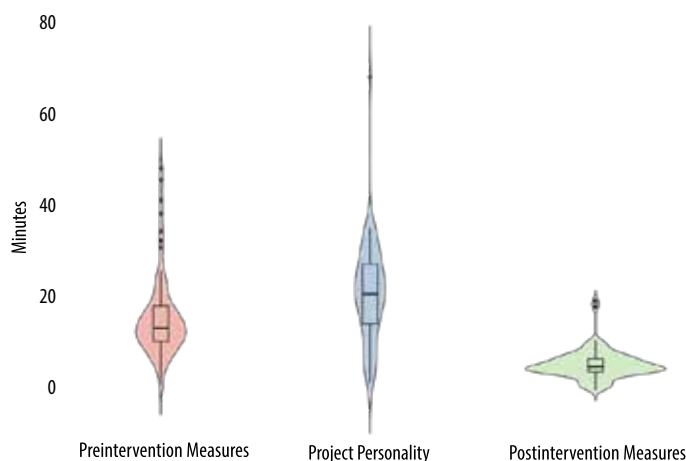
Usage Patterns and Descriptive Statistics

Among participants who completed the survey ($n = 102$), the average number of minutes spent completing the pre-SSI questionnaires, the intervention Project Personality, and post-SSI questionnaires was 15.63 ($SD = 9.18$), 21.06 ($SD = 10.49$), and 5.70 ($SD = 3.10$), respectively (see Figure 1). Among participants who did not complete at least 95% of the survey ($n = 31$), 15 discontinued during the pre-SSI questionnaires, 10 discontinued during the intervention Project Personality, and 6 discontinued during the post-SSI questionnaires.

When examining descriptive statistics of our baseline measures, the SMFQ average for all participants was 13.06 ($SD = 6.56$). The average SMFQ score for Lebanese participants was 10.71 ($SD = 6.29$) and for Syrian participants was 13.98 ($SD = 6.48$). Among all adolescents included, 78.87% endorsed at least one adverse experience, and the overall mean number of adverse experiences reported was 1.89 ($SD = 2.05$). For adolescents who identified as Lebanese and Syrian, the mean number of ACEs reported was 1.30 ($SD = 1.49$) and 2.19 ($SD = 2.24$), respectively. All demographics are reported, alongside baseline average depression level (see Table 1).

FIGURE 1

Usage Patterns for Individuals Completing 95% of the Baseline Survey or Greater



Note. This figure displays the median amount of time (in minutes) participants spent completing the preintervention measures, the intervention (Project Personality), and the postintervention measures. Upper and lower box limits represent the 75th and 25th percentiles, respectively. Individually plotted data points represent outliers.

TABLE 2

Changes in Proximal Outcomes

Outcome	Pre-SSI:		Post-SSI:		Cohen d_{av}		Cohen d_z	
	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	(95% CI)		(95% CI)	
Hopelessness	9.92	(3.39)	8.66	(3.60)	0.36	(.11, .61)	0.48	(.22, .73)
Agency	19.00	(6.11)	20.00	(8.24)	0.14	(-.11, .38)	0.11	(-.13, .36)
Self-Hate	7.38	(4.49)	5.87	(3.69)	0.37	(.09, .64)	0.57	(.28, .85)
Perceived Control	4.78	(3.59)	3.55	(3.32)	0.36	(.10, .61)	0.50	(.24, .76)

Note. Post-SSI (single session intervention) decreases in the measures reflect reductions in hopelessness, reductions in self-hate, and increases in perceived control, respectively. A post-SSI increase in the agency measure reflects improvements in perceived agency.

Intervention Outcomes

Changes in hopelessness, perceived agency, self-hate, and perceived control from pre- to post-SSI completion were calculated by computing within-group effect sizes. We used the R package, Measure of Effect (MOTE; Buchanan et al., 2019), to calculate 95% confidence intervals and Cohen's d_{av} and Cohen's d_z . Change scores were produced for the respondents who completed the pre-SSI and post-SSI questions for a given measure ($n = 65$ for hopelessness, $n = 64$ for perceived agency, $n = 55$ for self-hate, and $n = 64$ for perceived control). There were significant, small-to-medium reductions in hopelessness ($d_{av} = 0.36$, 95% CI [0.11, 0.61]; $d_z = 0.48$, 95% CI [0.22, 0.73]). For perceived agency, small improvements from pre- to post-SSI completion did not reach significance ($d_{av} = 0.14$, 95% CI [-0.11, 0.38]; $d_z = 0.11$, 95% CI [-0.13, 0.36]). For reductions in self-hate, there were significant, small-to-medium effects ($d_{av} = 0.37$, 95% CI [0.09, 0.64]; $d_z = 0.57$, 95% CI [0.28, 0.85]). There were also significant, small-to-medium improvements in perceived control ($d_{av} = 0.36$, 95% CI [0.10, 0.61]; $d_z = 0.50$, 95% CI [0.24, 0.76]; see Table 2).

Additionally, out of the 66 youth who provided responses after completing the SSI, 34.80% ($n = 23$) of respondents reported feeling “a lot less hopeless,” 43.90% ($n = 29$) reported feeling “a little less hopeless,” 9.09% ($n = 6$) felt “the same amount of hopeless,” 4.55% ($n = 3$) felt “a little more hopeless,” and 7.58% ($n = 5$) felt “much more hopeless.” Furthermore, 37.90% ($n = 25$) of respondents reported feeling “a lot more able to solve the problems,” 42.40% ($n = 28$) reported feeling “a little more able to solve the problems,” 3.03% ($n = 2$) felt “the same amount able to solve the problems,” 10.60% ($n = 7$) felt “a little less able to solve the problems,” and 6.06% ($n = 4$) felt “much less able to solve the problems.”

Program Acceptability and Feasibility

Respondents endorsed the acceptability of the intervention Project Personality with the SSI receiving an overall mean score of 4.49/5 ($SD = 0.44$). On the individual item level with a threshold of scores greater than 3, 87.32% of respondents rated the SSI as enjoyable ($M = 4.49$, $SD = 0.82$), 90.14% reported that they understood the content ($M = 4.35$, $SD = 0.76$), 84.51% found it easy to use ($M = 4.29$, $SD = 0.81$), and 88.73% shared that they tried their hardest while using it ($M = 4.30$, $SD = 0.90$; see Table 3). Furthermore, 91.55% of respondents agreed that the SSI would help other youth ($M = 4.65$, $SD = 0.74$), 87.32% would recommend the SSI to a friend ($M = 4.49$, $SD = 0.87$), and 94.37% of youth who completed the SSI agreed with its message ($M = 4.57$, $SD = 0.53$; see Figure 2).

Discussion

In this study, a validated SSI on growth mindset of personality, Project Personality, was disseminated to a sample of Arab adolescents in Lebanon. The SSI was translated into formal Arabic and adapted to Arabic culture. The intervention led to a decrease in hopelessness and self-hate and an improvement in perception of control. Also, our data shows that Arab adolescents endorsed the intervention and its feasibility, enjoyed it, and would recommend it to other youth. This study as such provides the first evidence

TABLE 3

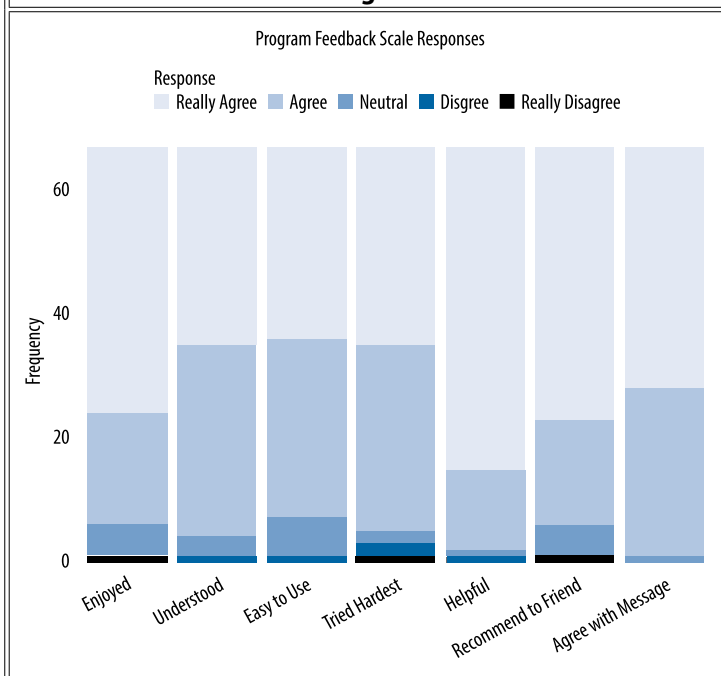
Means and Standard Deviations of Program Feedback Scale Items

Item	<i>M</i>	(<i>SD</i>)
Enjoyed	4.49	(0.82)
Understood	4.35	(0.76)
Easy to use	4.29	(0.81)
Tried hardest	4.30	(0.90)
Helpful	4.65	(0.74)
Recommend to friend	4.49	(0.87)
Agree with message	4.57	(0.53)
Overall	4.49	(0.44)

Note. Ratings are made on a 5-point scale from 1 (*really disagree*) to 5 (*totally agree*).

FIGURE 2

Number of Participants Who Endorsed a Given Rating for Each Item



in the Arab world of the cultural acceptability and feasibility as well as the mental health benefits of an Arabic growth mindset single session cost-free intervention.

Growth mindset interventions, even though domain specific and varying in methods of administration, have been associated with numerous benefits. Studies have shown that, through these interventions, at any developmental stage, notably adolescence, individuals can learn to reclaim control over their thoughts and behaviors and choose more adaptive ways of responding to challenges and stressful situations (for a review, see Dweck & Yeager, 2019). These interventions are primarily based on the framework that brains are plastic and personal attributes are malleable, a concept not well-promoted among Arab teenagers. We thus first and foremost show the cultural acceptability and potential utility of this brief, cost-free, and standardized intervention. This is particularly relevant for the youth in Lebanon due to a history of ongoing armed conflicts, wars, and assassinations for the past few decades (Maalouf, Haidar et al., 2022). Children and teens in Lebanon, whom a substantial percentage are refugees from Syria, were especially vulnerable to these traumatic events resulting in a deterioration of mental health. A recent study showed that one third of children and adolescents residing in Lebanon (86% Lebanese, 16% non-Lebanese) had a probable depressive disorder, half had probable PTSD, and two thirds had a probable anxiety disorder, due to the accumulating adversities brought on by the COVID-19 pandemic, the Beirut port explosion in 2020, and economic collapse, all in a climate of overall political and socioeconomic instability (Maalouf, Alrojolah et al., 2022). These percentages of psychiatric disorders from 2020 among Lebanese and non-Lebanese children and adolescents were substantially higher than the national percentages for that age group in Lebanon measured in 2012 (Maalouf et al., 2016) and in 2018 (Maalouf, Haidar et al., 2022), showing that the recent adversities have added to the decline in mental health among children and adolescents in Lebanon, independent of their nationality. In fact, a recent study reported that 10–15 years old Lebanese and Syrian refugees residing in Lebanon did not differ in mental health measures of feeling perpetually anxious and nervous, having constant fears, or feeling unhappy (Shuayb & Ahmad, 2021). In addition, on average, a third of the children and adolescents in Lebanon suffer from at least one psychiatric disorder, but only about 5–6% of these affected individuals have sought professional help (Maalouf et al., 2016; Maalouf, Alrojolah et al., 2022). This relatively alarming high rate of pediatric mental illness in Lebanon, combined with a large gap in mental health treatment available to that population

and low percentage of seeking treatment (Maalouf et al., 2016; Maalouf, Haidar et al., 2022), calls for urgent, innovative, and preventative interventions for Lebanese and refugee children and adolescents in Lebanon.

Arabic online SSIs, like the one used in this study, that would be readily available to teenagers at no cost can close the mental health treatment gap and act as a preventative and therapeutic tool by teaching these young individuals the value of a growth mindset about their personal attributes. Besides the associated benefits of Project Personality observed in this study as reduction in hopelessness and self-hate and improvement in perceived control, over 70% of the teens surveyed here reported subjectively feeling more hopeful at the end of this brief intervention. Although the effect size of pre- compared to postintervention changes in hopelessness, self-hate, and perception of control were modest in the current study, these findings are in line with previously documented mental health benefits associated with similar interventions (Schleider, Dobias, Sung, Mumper et al., 2020; Schleider et al., 2022). The current study did not measure long-term effects of the SSI, but previous studies using similar growth mindset of personality-based SSIs have reported long-term mental health benefits (Schleider & Weisz, 2017; Schleider et al., 2022), implying that possibly our sample may benefit from the same long-term mental health benefits.

Hope and perception of sense of control are considered protective factors to adolescents' mental health as they have been shown to curb their symptoms of anxiety and depression in a nationwide sample (Schleider et al., 2022). Hope is an important character strength that is known to be a cornerstone, not only of avoiding psychopathology but mostly of enjoying a positive quality of life (Seligman & Csikszentmihalyi, 2000). It echoes the findings that initial trauma and distress can be predictors of growth if individual resources are made available (El Khoury-Malhame et al., 2023). Moreover, the theoretical framework of internal locus of control, reclaiming control over one's mind and body has been systematically evidenced to have psychological and physical advantages for adolescents (Duckworth & Seligman, 2017). As such, improving the hopefulness and perceived sense of control in adolescents following participation in an SSI holds a promising potential to enhance the mental health of this delicate age group, especially in times of crises and uncertainties.

This overall change in perception, in the belief that one's personal traits and thought patterns can change, is conducive of improved mental health, as one recent national longitudinal study in the United States showed that adolescents are more vulnerable to stress and depression when they think they cannot change and the traits of

those around them are fixed (Seo et al., 2022). This belief in flexibility and potential for growth is more importantly related to increased cognitive abilities such as problem solving, whereby in our sample, more than 75% admitted having an improved problem-solving capacity after participating in the intervention. Taken together, these results further evidence that improving adolescent perceptions and thought processes have additional positive repercussions on academic achievements (Sarrasin et al., 2018) and spill over on other mental facilities such as learning efficacy (Burnette et al., 2017), motivation (Sarrasin et al., 2018), and behavioral control as well as safe sex interactions (Armitage & Talibudeen, 2010). SSIs focused on growth mindset have also been documented to not only decrease mental distress but sustainably improve well-being (Burnette et al., 2017). This might be potentiated by teaching adolescents about how the brain, the vital organ for thoughts and behaviors, can be influenced by mindset changes on one hand, and on the other, by reading testimonials of peers and authority figures such as scientists and researchers (Schleider, Dobias, Sung, & Mullarkey, 2020).

This pilot study is to be taken with caution when it comes to generalizability. Translation of the intervention into Arabic was accomplished by bilingual Lebanese professionals in the field but back translation was not performed. Given the limited sample size, no control condition was used to provide between group comparisons. The attrition rate or the participants with incomplete submission could also be considered a drawback. Moreover, the teens were not screened for existing mental health conditions nor were they screened for use of therapy or other mental support facilities. Another limitation is related to effect size as we have reported small to medium effects. Given the context of the intervention and the enormity of the accumulating challenges the country is going through, coupled with the lack of governmental or institutionalized support to teens' mental health and psychosocial well-being, it might be argued that any significant improvement, with even short-term impact, is a gain for this vulnerable population as it provides a beacon of hope.

The modest improvement of the levels of hope and control in adolescents and decrease in levels of self-hate is a major advantage with this computerized intervention as it addresses the shortcomings of most available mental health interventions whereby this is based on a rapid, self-guided online interface easily implementable in large communities with limited financial resources. This intervention was translated into formal Arabic by professionals in the field of psychology providing accessibility of a mental health intervention to Arab youth that may not be fluent in English, such as is the case of many Syrian refugees in Lebanon. It also bypasses the need for

sustained effort to follow-up. It is more meaningful as it has been shown that adolescents with fixed mentalities are more prone to internalization and are at a higher risk for mental disorders, whereas those who display more cognitive flexibility and beliefs in change are foundational for mental health (Seo et al., 2022). It would be interesting to track the positive effect of the intervention on mid- and long-term outcomes to ensure the benefits brought by this SSI are durable in the mindset change induced. This is the first time to the best of our knowledge that a computerized, user-friendly SSI was implemented in Arabic in vulnerable youth in an Arab country. The promising results in improving teens' mental and cognitive function are more significant as this is a cost-efficient intervention, easily scalable at larger community levels.

References

- Angold, A., Costello, E. J., Messer, S. C., & Pickles, A. (1995). Development of a short questionnaire for use in epidemiological studies of depression in children and adolescents. *International Journal of Methods in Psychiatric Research*, 5(4), 237-249.
- Anvari, F., & Lakens, D. (2019). Using anchor-based methods to determine the smallest effect size of interest. *Journal of Experimental Social Psychology*, 96, <https://doi.org/10.1016/j.jesp.2021.104159>
- Armitage, C. J., & Talibudeen, L. (2010). Test of a brief theory of planned behavior-based intervention to promote adolescent safe sex intentions. *The British Journal of Psychology*, 101(1), 155-172. <https://doi.org/10.1348/000712609X431728>
- Beck, A. T., Weissman, A., Lester, D., & Trexler, L. (1974). The measurement of pessimism: The Hopelessness Scale. *Journal of Consulting and Clinical Psychology*, 42(6), 861-865. <https://doi.org/10.1037/h0037562>
- Buchanan, E., Gillenwaters, A., Scofield, J., Valentine, K. (2019). *MOTE: Measure of the effect: Package to assist in effect size calculations and their confidence intervals. R package version 1.0.2*. <http://github.com/doomlab/MOTE>
- Burnette, J. L., Russell, M. V., Hoyt, C. L., Orvidas, K., & Widman, L. (2017). An online growth mindset intervention in a sample of rural adolescent girls. *British Journal of Educational Psychology*, 88(3), 428-445. <https://doi.org/10.1111/bjep.12192>
- Dobias, M. L., Chen, S., Fox, K. R., & Schleider, J. L. (2023). Brief interventions for self-injurious thoughts and behaviors in young people: A systematic review. *Clinical Child and Family Psychology Review*, 26(2), 482-568. <https://doi.org/10.1007/s10567-023-00424-9>
- Duckworth, A. L., & Seligman, M. E. P. (2017). The science and practice of self-control. *Perspectives on Psychological Science*, 12(5), 715-718. <https://doi.org/10.1177/1745691617690880>
- Dweck, C. S. (2006). *Mindset: The new psychology of success*. Random House.
- Dweck, C. S., Chiu, C.-y., & Hong, Y.-y. (1995). Implicit theories and their role in judgments and reactions: A world from two perspectives. *Psychological Inquiry*, 6(4), 267-285. https://doi.org/10.1207/s15327965pli0604_1
- Dweck, C. S., & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review*, 95(2), 256-273. <https://doi.org/10.1037/0033-295X.95.2.256>
- Dweck, C. S., & Yeager, D. S. (2019). Mindsets: A view from two eras. *Perspectives on Psychological Science*, 14(3), 481-496. <https://doi.org/10.1177/1745691618804166>
- El Khoury-Malhame, M., Sfeir, M., Hallit, S., & Sawma, T. (2023). Factors associated with posttraumatic growth: Gratitude, PTSD and distress; one year into the COVID-19 pandemic in Lebanon. *Current Psychology*, 1-10. Advance online publication. <https://doi.org/10.1007/s12144-022-04159-8>
- Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., Koss, M. P., & Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The Adverse Childhood Experiences (ACE) Study. *American Journal of Preventive Medicine*, 14(4), 245-258. [https://doi.org/10.1016/s0749-3797\(98\)00017-8](https://doi.org/10.1016/s0749-3797(98)00017-8)
- Harpaz-Rotem, I., Leslie, D., & Rosenheck, R. A. (2004). Treatment retention among

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

- children entering a new episode of mental health care. *Psychiatric Services*, 55(9), 1022–1028. <https://doi.org/10.1176/appi.ps.55.9.1022>
- Harpaz-Rotem, I., Tsai, J., Pietrzak, R. H., & Hoff, R. (2014). The dimensional structure of posttraumatic stress symptomatology in 323,903 U.S. Veterans. *Journal of Psychiatric Research*, 49, 31–36. <https://doi.org/10.1016/j.jpsychires.2013.10.020>
- Lakens, D. (2013). Calculating and reporting effect sizes to facilitate cumulative science: A practical primer for t-tests and ANOVAs. *Frontiers in Psychology*, 4, 863. <https://doi.org/10.3389/fpsyg.2013.00863>
- Maalouf, F. T., Ghandour, L. A., Halabi, F., Zeinoun, P., Shehab, A. A. S., & Tavitan, L. (2016). Psychiatric disorders among adolescents from Lebanon: Prevalence, correlates, and treatment gap. *Social Psychiatry and Psychiatric Epidemiology*, 51(8), 1105–1116. <https://doi.org/10.1007/s00127-016-1241-4>
- Maalouf, F. T., Alrojalah, L., Akoury-Dirani, L., Barakat, M., Brent, D., Elbejjani, M., Shamseddeen, W., & Ghandour, L. A. (2022). Psychopathology in children and adolescents in Lebanon study (PALS): A national household survey. *Social Psychiatry and Psychiatric Epidemiology*, 57(4), 761–774. <https://doi.org/10.1007/s00127-021-02208-4>
- Maalouf, F. T., Haidar, R., Mansour, F., Elbejjani, M., Khoury, J. E., Khoury, B., & Ghandour, L. A. (2022a). Anxiety, depression and PTSD in children and adolescents following the Beirut port explosion. *Journal of Affective Disorders*, 302, 58–65. <https://doi.org/10.1016/j.jad.2022.01.086>
- Ortiz Alvarado, N. B., Rodríguez Ontiveros, M., & Ayala Gaytán, E. A. (2019). Do mindsets shape students' well-being and performance? *The Journal of Psychology*, 153(8), 843–859. <https://doi.org/10.1080/00223980.2019.1631141>
- Sarrasin, J. B., Nenciovici, L., Foisy, L.-M. B., Allaire-Duquette, G., Riopel, M., & Masson, S. (2018). Effects of teaching the concept of neuroplasticity to induce a growth mindset on motivation, achievement, and brain activity: A meta-analysis. *Trends in Neuroscience and Education*, 12, 22–31. <https://doi.org/10.1016/j.tjine.2018.07.003>
- Samargia, L., Saewyc, E. M., & Elliott, B. A. (2006). Foregone mental health care and self-reported access barriers among adolescents. *The Journal of School Nursing*, 22(1), 17–24. <https://doi.org/10.1177/10598405060220010401>
- Seo, E., Lee, H., Jamieson, J., Reis, H., Josephs, R., Beevers, C., & Yeager, D. (2022). Trait attributions and threat appraisals explain why an entity theory of personality predicts greater internalizing symptoms during adolescence. *Development and Psychopathology*, 34(3), 1104–1114. <https://doi.org/10.1017/S0954579420001832>
- Schleider, J. L., & Weisz, J. R. (2016). Reducing risk for anxiety and depression in adolescents: Effects of a single-session intervention teaching that personality can change. *Behaviour Research and Therapy*, 87, 170–181. <https://doi.org/10.1016/j.brat.2016.09.011>
- Schleider, J., & Weisz, J. (2017). A single-session growth mindset intervention for adolescent anxiety and depression: 9-month outcomes of a randomized trial. *Journal of Child Psychology and Psychiatry*, 59(2), 160–170. <https://doi.org/10.1111/jcpp.12811>
- Schleider, J. L., Abel, M. R., & Weisz, J. R. (2019). Do immediate gains predict long-term symptom change? Findings from a randomized trial of a single-session intervention for youth anxiety and depression. *Child Psychiatry and Human Development*, 50(5), 868–881. <https://doi.org/10.1007/s10578-019-00889-2>
- Schleider, J. L., Burnette, J. L., Widman, L., Hoyt, C., & Prinstein, M. J. (2019). Randomized trial of a single-session growth mind-set intervention for rural adolescents' internalizing and externalizing problems. *Journal of Clinical Child & Adolescent Psychology*, 49(5), 660–672. <https://doi.org/10.1080/15374416.2019.1622123>
- Schleider, J. L., Dobias, M., Sung, J., Mumper, E., & Mullarkey, M. C. (2020). Acceptability and utility of an open-access, online single-session intervention platform for adolescent mental health. *Journal of Medical Internet Research*, 7(6), e20513. <https://doi.org/10.2196/20513>
- Schleider, J. L., Dobias, M. L., Sung, J. Y., & Mullarkey, M. C. (2020). Future directions in single-session youth mental health interventions. *Journal of Clinical Child & Adolescent Psychology*, 49(2), 264–278. <https://doi.org/10.1080/15374416.2019.1683852>
- Schleider, J. L., Mullarkey, M. C., Fox, K. R., Dobias, M. L., Shroff, A., Hart, E. A., & Roulston, C. A. (2022). A randomized trial of online single-session interventions for adolescent depression during COVID-19. *Nature Human Behaviour*, 6(2), 258–268. <https://doi.org/10.1038/s41562-021-01235-0>
- Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist*, 55(1), 5–14. <https://doi.org/10.1037/0003-066x.55.1.5>
- Seo, E., Lee, H. Y., Jamieson, J. P., Reis, H., Josephs, R. A., Beevers, C. G., & Yeager, D. S. (2022). Trait attributions and threat appraisals explain why an entity theory of personality predicts greater internalizing symptoms during adolescence. *Development and Psychopathology*, 34(3), 1104–1114. <https://doi.org/10.1017/S0954579420001832>
- Shroff, A., Roulston, C. A., Fassler, J., Dierschke, N. A., San Pedro Todd, J., Rios, Á., Plastino, K., & Schleider, J. L. (2022, September 29). A digital single-session intervention platform for youth mental health: Cultural adaptation, evaluation, and dissemination. <https://doi.org/10.31234/osf.io/65qwt>
- Shuayb, M., & Ahmad, N. (2021). The psychosocial condition of Syrian children facing a precarious future. *Refuge (Toronto, English Edition)*, 37(1), 27–37. <https://doi.org/10.25071/1920-7336.40654>
- Snyder, C. R., Harris, C., Anderson, J. R., Holleran, S. A., Irving, L. M., Sigmon, S. T., Yoshinobu, L., Gibb, J., Langelle, C., & Harney, P. (1991). The will and the ways: Development and validation of an individual-differences measure of hope. *Journal of Personality and Social Psychology*, 60(4), 570–585. <https://doi.org/10.1037/0022-3514.60.4.570>
- Stoll, R. D., Pina, A. A., & Schleider, J. (2020). Brief, non-pharmacological, interventions for pediatric anxiety: Meta-analysis and evidence base status. *Journal of Clinical Child & Adolescent Psychology*, 49(4), 435–459. <https://doi.org/10.1080/15374416.2020.1738237>
- Sung, J., Bugatti, M., Vivian, D., & Schleider, J. (2023). Evaluating a telehealth single-session consultation service for clients on psychotherapy wait-lists. *Practice Innovations*. <https://doi.org/10.31234/osf.io/k7u4r>
- Thompson, M. S. (2020). Growth mindset and constructivism in Irish primary schools: implications of a qualitative study. *Constructivist Foundations*, 15(2), 95–98.
- Turnell, A. I., Fassnacht, D. B., Batterham, P. J., Calear, A. L., & Kyrios, M. (2019). The Self-Hate Scale: Development and validation of a brief measure and its relationship to suicidal ideation. *Journal of Affective Disorders*, 245, 779–787. <https://doi.org/10.1016/j.jad.2018.11.047>
- Yeager, D. S., Johnson, R., Spitzer, B. J., Trzesniewski, K. H., Powers, J., & Dweck, C. S. (2014). The far-reaching effects of believing people can change: Implicit theories of personality shape stress, health, and achievement during adolescence. *Journal of Personality and Social Psychology*, 106(6), 867–884. <https://doi.org/10.1037/a0036335>
- Yeager, D. S., Miu, A. S., & Dweck, C. S. (2013). Implicit theories of personality and attributions of hostile intent: A meta-analysis, an experiment, and a longitudinal intervention. *Child Development*, 84, 1651–1667. <https://doi.org/10.1111/cdev.12062>
- Yeager, D. S., Trzesniewski, K. H., & Dweck, C. S. (2013). An implicit theories of personality intervention reduces adolescent aggression in response to victimization and exclusion. *Child Development*, 84, 970–988. <https://doi.org/10.1111/cdev.12003>

Author Note:

Cosette Fox <https://orcid.org/0000-0003-0006-1033>
 Jessica Schleider <https://orcid.org/0000-0003-2426-1953>
 Laura Jans <https://orcid.org/0000-0003-1812-7555>
 Arielle Smith <https://orcid.org/0000-0003-4679-1808>
 Alexandra Buchlmayer <https://orcid.org/0009-0004-5877-5244>
 Lucas Snyder <https://orcid.org/0009-0007-4657-0657>
 Ian Sotomayor <https://orcid.org/0000-0002-7438-1462>
 Myriam El Khoury-Malhame <https://orcid.org/0000-0002-3397-9337>

Jessica Schleider, Arielle Smith, and Laura Jans are all now at Northwestern University in Evanston, IL. At the beginning of the study in 2022, they were at Stony Brook University.

This study was not preregistered. Materials and data for this study can be accessed at <https://osf.io/znp43/>. Jessica Schleider serves on the Scientific Advisory Board for Walden Wise and the Clinical Advisory Board for Koko; has received consulting fees from UnitedHealth, Woebot, and TikTok; is Co-Founder and Co-Director of Single Session Support Solutions; and receives book royalties from New Harbinger, Oxford University Press, and Little Brown Book Group.

Positionality Statement: Cosette Fox and Myriam El Khoury-Malhame identify as Lebanese of origin and White women. All authors are nondisabled and acknowledge that their perspectives are influenced by their positions within all these dimensions of identity.

Correspondence concerning this article should be addressed to Cosette Fox, Department of Psychology, Holy Cross College, P.O. Box 308, 54515 S.R. 933, Notre Dame, IN 46556 United States. Email: Cfox@hcc-nd.edu

Can I Still Trust You? Late Trust Violations Hinder Subsequent Cooperation

Megan A. Gerges

Department of Psychology and Neuroscience, Duke University

ABSTRACT. Trust is necessary to build and maintain relationships, making the ability to rebuild trust after it has been broken also important. This study explored how the timing of a trust violation (whether it came early in a long-term interaction, before a relationship is established, or later, after a cooperative relationship had been established) impacts subsequent behavioral and attitudinal trust, based on whether the interaction partner is an ingroup or outgroup member (using political ideology). A sample of 208 U.S. participants played 20 rounds of a trust game with either an ingroup member or an outgroup member and were randomly assigned to experience an early trust violation or a late trust violation. Late trust violations were more detrimental than early trust violations. However, there was no significant difference in trusting behaviors and attitudes between ingroup and outgroup pairings, nor a significant difference in how the timing of the trust violation impacted subsequent behavioral trust between ingroup and outgroup pairings. Nonetheless, subsequent trusting attitudes were higher for ingroup pairings after an early trust violation compared to a late one. Moreover, behavioral trust in the first round, before any trust violation had occurred, was higher among ingroup partners, indicating the presence of an ingroup effect, which was nullified over the course of the longer-term interaction. Ultimately, these results suggest that it is important to establish a pattern of trustworthy behavior over time to build relationships. Furthermore, an ingroup bias does not preclude similar kinds of cooperation between outgroup members.

Keywords: trust, trust violations, cooperation, ingroup, outgroup



Open Data and Open Materials badges earned for transparent research practices. Data and materials are available at <https://osf.io/x4ahs/>

Trust is an essential component of successful, cooperative human interactions. Many innovations, new ideas, and successful relationships are the product of two or more people working together to create more than they could have on their own. Rousseau and colleagues (1998) defined trust as “a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior

Faculty mentor: Ashley L. Harrell

of another” (p. 395). Some amount of social uncertainty is necessary to test another’s actions, providing them with the opportunity to act cooperatively and meet those positive expectations, consequently building trust (Schilke et al., 2021). However, there is always a risk that the person trusted will fail to meet those positive expectations, especially in interactions between strangers (Romano et al., 2021). Nonetheless, because of how important cooperation is to a flourishing human society, such risks are inevitable. Therefore, although cooperation

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

can benefit all parties involved, it heavily relies on mutual trust (Romano et al., 2021).

The Impacts of the Timing of Trust Violations

This study sought to explore the impacts of trust violations and how they impact subsequent trusting behavior (i.e., cooperation) between strangers. Previous work has demonstrated that, when a trust violation occurs, it influences later cooperative behavior (Kuwabara et al., 2014; Lount et al., 2008). However, there are competing models and theories regarding whether, in long-term partnerships comprising a series of repeated interactions, trust violations that occur earlier or later in that partnership are more detrimental to later cooperative behavior. Some of the prior work has argued that both the history and context of a relationship influence how trust violations impact individuals. For instance, Morrison and Robinson (1997) suggested that trust violations committed by organizations with a history of integrity and good faith—thus, trust violations that are late in a long-term interaction—provoke greater betrayal than those committed by organizations with a history of bad behavior, because the former scenario creates elevated expectations. Other theories posit that individuals begin with little trust, which must be built through trustworthy behavior (Blau, 1964; Rempel et al., 1985; Rousseau & McLean Parks, 1993). Finally, Sherif and Hovland (1961) argued that, when trust is violated early on, cooperative behavior that occurs thereafter seems relatively and disproportionately more positive. These theories and models suggest that early trust violations occurring in the context of a long-term interaction will be less harmful to subsequent trust than late trust violations. This is because, earlier in an interaction, expectations for being treated justly or trustworthily are relatively low, making trust violations less surprising and hence, less hurtful. Contrastingly, when there is a history of trustworthiness early in an interaction, a greater expectation of subsequent trustworthiness and integrity develops, creating stronger feelings of betrayal when a later trust violation occurs (Morrison & Robinson, 1997).

Other empirical studies using U.S. participants have instead found that, in long-term partnerships comprising a series of repeated interactions, trust violations that occur earlier in that partnership are more detrimental to later cooperative behavior than those that occur later, after a relationship has been solidly established (Kuwabara et al., 2014; Lount et al., 2008). Various theories support this argument as well. For example, in some circumstances, individuals tend to trust others even before the interaction begins (Kim et al., 2004; McKnight et al., 1998), and violating those trust expectations damages these interpersonal impressions (Lount et al., 2008;

Rink & Ellemers, 2007). Other theories suggest that individuals trust others to allow others to demonstrate trustworthiness (Weber et al., 2004). Therefore, a lack of trustworthy behavior early on will be more noticeable and disproportionately affect whether one chooses to trust in the future (Lount et al., 2008). This, combined with the notion that negative first impressions are more impactful than positive first impressions (Skowronski & Carlston, 1989), suggests that early trust violations will reduce trust and cooperation to a greater extent than will later trust violations. This study aimed to arbitrate between these two groups of theories, with a nondirectional hypothesis to test the two arguments:

Hypothesis 1: The timing of a trust violation will differentially impact subsequent levels of trust in long-term interactions.

The Potential Impacts of an Ingroup Bias

One consideration that may be relevant in explaining and understanding the impacts of trust violations and the impacts of the timing of trust violations on subsequent trusting behavior is social identity, or a person's sense of belonging to particular groups. Although individuals enact social behavior, group categorizations based on similarities within each group can have psychological effects that influence social interactions (Tajfel, 1979). For example, many people categorize themselves as being either politically conservative or liberal with other politically conservative and liberal people, respectively, being considered a member of their "ingroup" (and vice versa). This could create psychological and behavioral differences in interactions based on whether someone is interacting with a member of their political ingroup or outgroup.

This work tests whether the conflicting models and studies on the timing of trust violations can be explained by *ingroup bias*—the extent to which participants feel they are part of a group or share an identity with their partner (and hence feel a connection to). Although some models predict that early trust violations will hinder subsequent trust to a greater extent, and others predict the opposite, what seems to underlie them all is the idea that the higher the level of trust, the greater the feelings of hurt or betrayal from a trust violation. The conflict between these theories stems from disagreements about when one's levels of trust are highest. As it relates to the ingroup bias, an abundance of literature has found that people generally favor, trust, expect trustworthiness from, and cooperate more with ingroup members compared to outgroup members (Balliet et al., 2014; Balliet et al., 2018; Fischer & Derham, 2016; Mullen et al., 1992; Romano et al., 2021; Yamagishi et al., 1999). Therefore,

Hypothesis 2: Participants will (a) entrust their

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

resources (demonstrate greater behavioral trust) and (b) demonstrate greater trusting attitudes with ingroup members (those with whom they share a social identity) more often than outgroup members (those with whom they do not share a social identity).

It was also predicted that,

Hypothesis 3: There would be lower levels of trust between ingroup partners that experience an early trust violation compared to a late trust violation, because of the greater trust placed in ingroup members prior to the start of an interaction, making an immediate betrayal feel particularly offensive, especially because individuals expect to be treated favorably by ingroup members (Yamagishi et al., 1999). It is possible that ingroup members are more willing to forgive each other in order to maintain positive expectations about one another or avoid cognitive dissonance. However, there is a distinction between being more willing to forgive an ingroup member for wrongs they have committed in general and wrongs that have been committed against oneself, which would feel especially hurtful given the positive expectations one typically has of those in their ingroup. Therefore, it remains more plausible that an early trust violation will be detrimental to future trust.

Lastly, it was anticipated that:

Hypothesis 4: Participants will show less (a) behavioral trust and (b) attitudinal trust in their outgroup partners if they experience a late trust violation, compared to an early trust violation, because though there is less trust placed in outgroup members prior to the start of the interaction, a history of cooperativeness and trust would have been built by the time a late trust violation occurred.

Political Affiliation as the Instance of Ingroup Bias

Political ideology in the United States, which places conservatives on the right side of the political spectrum and liberals on the left side of the political spectrum, was chosen as the salient social identity and examined whether the effects of trust violations would be impacted based on whether participants were partnered with someone who shared their political ideology or with someone who did not. Because there are differences among different countries in the meaning of different political orientations, this study limited respondents to the United States.

Political ideology was chosen because, as it is a real group categorization (as opposed to artificially created ingroups), there may be legitimate differences in how trust violations impact politically conservative and liberal participants. For example, past research has suggested that those who identify as politically conservative have a preference for stability, hierarchy, and structure, and they tend to be more resistant to change because of a

greater dislike for uncertainty and threats (Carney et al., 2008; Jost et al., 2003). Furthermore, conservative individuals have been found to be more sensitive to danger and hence more likely to create and maintain defense mechanisms against their environments (Hetherington & Weiler, 2018). Finally, there is some evidence that there is a greater association between individualism, pro-self values, self-reliance, and conservatism (Balliet et al., 2018; Chirumbolo et al., 2016; Sheldon & Nichols, 2009; Van Lange et al., 2012).

In contrast, liberal individuals tend to be more prosocial, which is associated with higher levels of cooperation, and they are more willing to cooperate with strangers, regardless of group membership (Romano et al., 2021). Furthermore, liberal individuals tend to be more concerned about equality of outcome than politically conservative people (Balliet et al., 2018), and they tend to be less conscientious (Hetherington & Weiler, 2018). Hetherington and Weiler (2018) suggested that those lower in conscientiousness are likelier to embrace norm violators rather than shun them (as those higher in conscientiousness may be more prone to do). Therefore, this study controlled for political affiliation in supplementary models, in addition to the main models.

The Present Study

To test these various hypotheses about how trust violations impact subsequent trust based on timing and ingroup/outgroup pairings, this study recruited a sample of United States participants, who identified as either politically liberal or politically conservative, to play a 20-round, two-player repeated trust game (Haselhuhn et al., 2015). In this game, participants interacted with a pre-programmed player in which they had the opportunity, in each round, to place their trust in their partner with the expectation and hope that their partner would reciprocate that trust. Specifically, participants could either *give* their tokens to their partner or *keep* them for themselves. Their trust was violated by the pre-programmed player either early in the interaction (within the first two rounds) or later in the interaction (during rounds 10 and 11) to test participants' subsequent behavioral trust reactions (whether they would continue to trust their tokens to their partners) and subsequent trusting attitudes.

Methods

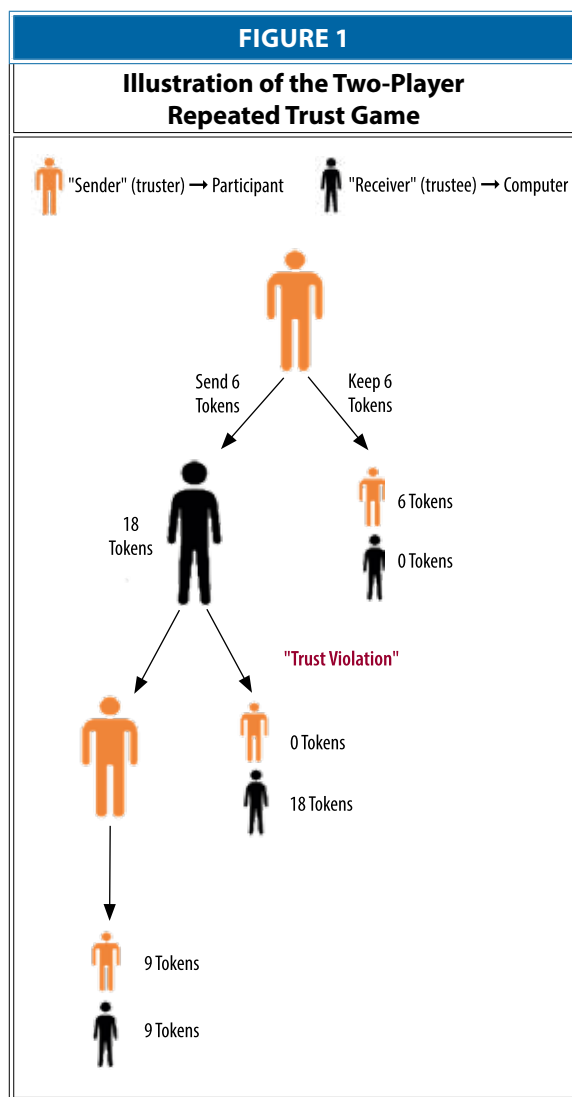
Participants

Following Duke University's Campus IRB approval (protocol #2022-0353), participants were recruited to participate in the study via Mechanical Turk (MTurk), Amazon's crowdsourcing website for participant recruitment. All participants were required to be in the United States and identify as politically liberal or conservative.

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

The final sample consisted of 208 participants, 124 of whom identified as politically liberal (59.62%) and 84 of whom identified as politically conservative (40.38%). In addition, there were 85 (40.87%) women, 121 (58.17%) men, and 2 (0.96%) who preferred not to say. The average age of the participants was 40.3 years ($SD = 12.34$, $min = 20$, $max = 72$). Participants with a household income of less than \$75,000 represented 67.79% of the sample, and participants with a household income of \$75,000 or more represented 29.81% of the sample. 2.4% of participants did not disclose their income.



Demographic Questions

At the start of the study, participants were asked to fill out demographic information, specifically about

their age, gender¹, income bracket, as well as questions about their political orientation. To measure political orientation, participants indicated their level of agreement with three statements on a scale from 1 (*strongly agree*) to 7 (*strongly disagree*). The first statement was, "When it comes to politics, I consider myself politically conservative," and the second was, "When it comes to politics, I consider myself politically liberal." The third statement asked "How would you describe your political orientation?" rated on a scale from 1 (*extremely left*) to 7 (*extremely right*). A score was calculated based on the participants' answers to determine whether they were liberal or conservative. The first statement was reverse coded to produce a total score where 1 was equivalent to very liberal and 7 was equivalent to very conservative. A score greater than 4 indicated that the participant identified as conservative, and a score less than 4 indicated that the participant identified as liberal ($M = 3.45$, $SD = 2.26$, $min = 1$, $max = 7$). A Cronbach's alpha value of $\alpha = .95$ was found.

The Study Design

To test the hypotheses, the study utilized a 2 (early or late trust violation) $\times$ 2 (ingroup or outgroup pairing) between-subjects study design using a repeated, 20-round, two-player trust game adapted from Haselhuhn and colleagues (2015), programmed in z-Tree version 3.4.2 and z-Tree unleashed (Duch et al., 2020; Fischbacher, 2007).

The two players in this trust game were the "sender" and the "receiver." The sender represented the "truster," (the person placing their trust in their partner), and the receiver represented the "trustee" (the person receiving the trust from their partner). The terms "sender" and "receiver" were used to avoid using biased terminology. As demonstrated in Figure 1, the sender had 6 tokens at the beginning of each decision round and could make the binary decision to either (a) send those 6 tokens to the receiver or (b) keep them for themselves. If they kept the tokens, the round ended with the sender earning 6 tokens and the receiver earning 0. If the sender sent the 6 tokens, it tripled, and the receiver received 18 tokens. The receiver then could send half of the tokens back to the sender (9 tokens) or keep all 18 tokens for themselves. Thus, the sender had the opportunity to earn 0, 6, or 9 tokens, and when they did, the receiver would earn 18, 0, or 9 tokens, respectively.

It was best that the sender trust their tokens to the receiver if the receiver would behave in a trustworthy manner (resulting in 9 tokens earned, rather than 6

¹Given research suggests that gender may impact overall levels of trust and trustworthiness (Haselhuhn et al., 2015; Sutter et al., 2009; van den Akker et al., 2020; Wu et al., 2020), this study controlled for gender in the analysis.

tokens by keeping them). However, if the receiver would not be trustworthy, it was in the best interest of the sender to keep their tokens (earning 6 tokens rather than 0 tokens). Likewise, it was best for the receiver if they were trusted and did not behave in a trustworthy manner (earning 18 tokens, rather than earning 0 by not being trusted or 9 by being trusted and sending tokens back to the sender). However, the receiver had to consider the possibility that if they acted in an untrustworthy manner, the sender may choose to stop sending tokens, which would result in the receiver earning 0 tokens instead of 9. Therefore, for both participants to earn 9 tokens, the sender had to place their trust in the receiver and the receiver had to send tokens back. The possible earnings in each round for the sender and the receiver are shown in Figure 2.

Participants were told that they would be randomly assigned to one of these two roles and that another participant would be randomly assigned to the other role. In reality, all participants were assigned to be the sender (the “truster”), and a computer simulated the receiver. Furthermore, they were not told how many rounds they would be playing to avoid endgame effects.

Procedure

This experiment was conducted virtually, and study sessions were posted on MTurk, where participants could enroll in the study either on the half hour or the hour. The study was designed to be live and completed in one sitting, to reduce suspicion that the interaction partner was not a real human. Participants were directed to a Qualtrics link where a tracker ensured that participants were located in the United States and were not using a VPN/VPS/proxy to mask their location. If they successfully passed this check, participants entered their own chat box with the researcher to receive a live study link for the session, which then directed them to the study itself.

First, participants had to read and agree to the informed consent screen. After consenting, participants were asked to fill out the demographic and political orientation questions. Afterward, they were directed to instructions on how to play the game. Each participant answered three quiz questions about how the game worked to test their understanding. Anyone who got less than two quiz questions correct was dropped.

Participants were told that both players would make decisions simultaneously, such that players would learn what their partner would have done regardless of whether the sender sent or kept the 6 tokens. It was necessary for decisions to be simultaneous to ensure that participants experienced a trust violation and saw the receiver's cooperative behavior in the other rounds. For example, if the decisions were not simultaneous and the sender

did not send tokens in a round, they would not have seen that the receiver would also not have sent tokens back. Therefore, the sender would never have truly had their trust violated because they would not have known that the receiver would not have acted in a trustworthy way.

A “trust violation” was operationalized as two rounds in a row of not receiving tokens back based on past research, as one round may be interpreted as a fluke rather than a violation of trust (Haselhuhn et al., 2015; Komorita & Mechling, 1967; Kuwabara et al., 2014; Lount et al., 2008). The preprogrammed receiver violated trust by deciding not to return tokens in rounds 1 and 2 (“early trust violation”) or rounds 10 and 11 (“late trust violation”; Kuwabara et al., 2014). These rounds were chosen to provide enough time between an early trust violation and a late trust violation to detect a possible difference between the two, while also providing enough distance between the end of the late trust violation and the last five rounds so that an effect could be measured. It additionally aligned with existing literature (Kuwabara et al., 2014; Lount et al., 2008). In every other round, the ostensible receiver was programmed to behave trustworthily, sending tokens back.

In the instructions, participants had been told that they and the other participants had been given an identifying letter that would be displayed alongside their political affiliation based on a calculation of their political orientation survey answers. After participants read the instructions, participants were told, “[y]ou have been assigned to the role of Sender and you have been paired with Receiver, ‘Participant W-Liberal/Conservative [which was colored blue if Participant W was liberal and red if Participant W was conservative], with whom you will be paired with throughout the duration of the study.’” Although participants were all assigned to be the sender, the political affiliation of whom they were partnered with was randomly assigned. They had also been told that the study was interested in decision-making as it related to the distribution of valuable resources between themselves and another participant.

For every decision screen (asking whether they wanted to send tokens) and profit screen (showing their earnings for each round), their interaction partner's political ideology was included on the screen to increase ingroup/outgroup salience. Furthermore, random

FIGURE 2			
Possible Earnings Each Round			
		Receiver	
		Trustworthy	Untrustworthy
Sender	Trust	9, 9	0, 18
	Did Not Trust	6, 0	6, 0

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

quizzes were included throughout the rounds to test participants' attention. The random quiz asked, "What was Participant W-Liberal/Conservative's decision in the last round?" Those who scored less than 75% on the random quizzes were dropped for inattention.

Poststudy Questionnaire

Following the completion of the game, to measure attitudinal trust, participants completed a short trust scale with identifying letters added (Lount et al., 2008). They were asked to answer the following questions on a 7-point scale from 1 (*not at all*) to 7 (*very much*): (1) "How trustworthy is Participant W-Liberal/Conservative?" ($M = 5.07$, $SD = 1.51$, $\min = 1$, $\max = 7$); (2) "How much would you trust Participant W-Liberal/Conservative in the future?" ($M = 4.93$, $SD = 1.67$, $\min = 1$, $\max = 7$); and (3) "How honest is Participant W-Liberal/Conservative?" ($M = 5.03$, $SD = 1.55$, $\min = 1$, $\max = 7$). Lount et al. (2008) reported the value of Cronbach's alpha to be $\alpha = .86$, and the present found the value for Cronbach's alpha to be $\alpha = .96$. An average "trust score" was created based on the answers to the three questions with a higher score indicating greater attitudinal trust.

Afterward, participants completed two items measuring their suspicion adapted from Kuwabara and colleagues (2014) to see whether they were suspicious that they had not played against another real participant (the present study found the value of Cronbach's alpha to be $\alpha = .88$). They were first asked, "Did you suspect that

your partner wasn't an actual human" on a scale from 1 (*not at all*) to 3 (*very much*) (mode = 1). If participants answered with a 2 or 3, they were directed to another page that asked, "If you suspected your partner wasn't an actual person, how much did this affect your decisions in the study?" using the same 3-point scale (mode = 1). Participants who answered 3 for both questions were dropped from analyses, following Kuwabara and colleagues (2014).

Finally, participants were debriefed. At the beginning of the study, participants were told that they would have the opportunity to earn a bonus ranging from \$0 to \$2 (in addition to a flat payment of \$2 for completing the 20-minute study) to incentivize them to try and maximize their profit in the game. Because all participants were playing against a computer and not another participant, they were all paid the full \$2 bonus.

Results

All data were analyzed using R (Version 4.2.0) and RStudio (Version 2022.07.2). The significance level (α) was set a priori at .05, two-tailed, to determine statistical significance. Furthermore, although the final sample consisted of 208 participants, the study recruited 316 participants who completed the study and who met the necessary qualifications (i.e., located in the United States and identifying as politically liberal or conservative). The final sample excluded participants who were very suspicious (i.e., those who answered that they were very suspicious that their partner was not human and reported that this suspicion "very much" impacted their responses), and participants who scored less than a two out of the three questions correct on a comprehension quiz about how the game is played or less than 75% on attention check questions during the task. Although very suspicious participants were dropped from all main effects and interaction models, models run with those suspicious individuals included did not significantly impact the results.²

An additional supplementary model that included a term for the political affiliation (conservative or liberal) of the participant was run, though this also did not alter the significance of the results nor improve the fit of an analysis of variance model ($F = 1.01$, $p = .32$). A third supplementary model that considered the participant's political affiliation, not as a binary variable, but as a continuous one, by calculating each participant's political orientation score also did not alter the significance of the results nor improve the fit of the model,

²Two additional models—the first in which anyone who indicated in which anyone who indicated a 3 on the either suspicion question (rather than only those who indicated a 3 on both) was dropped, and the second in which anyone who indicated a 3 on the first question (that they were very suspicious that their partner was not human)—were also run, but they did not impact the significance of the results.

TABLE 1

Summary Results of the Decision in the First Round Based on Ingroup/Outgroup Pairings

Political Affiliation	Ingroup			Outgroup		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Liberal	60	1.00	0	64	0.91	0.29
Conservative	43	0.95	0.21	41	0.93	0.26
Overall	103	0.98	0.14	104	0.91	0.28

Note. $R^2 = .02$

TABLE 2

Summary Results of Average Proportion of Trust in the Last 5 Rounds for all Four Conditions

Trust Violation	Ingroup			Outgroup			Overall		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Early	43	0.93	0.24	65	0.92	0.24	108	0.92	0.24
Late	60	0.77	0.40	40	0.81	0.35	100	0.78	0.38
Overall	103	0.84	0.35	105	0.87	0.29	208	0.86	0.32

Note. $R^2 = .08$

($F = 1.30, p = .26$). Finally, the proportion of trust based on the demographic information that was collected (age, gender, and income) was regressed.

Decision in the First Round

A logistic regression was run to look at decisions in the first round, before participants saw any of their partner's decisions. In this first round, participants only had information about their partner's political affiliation, and they could either trust their tokens to their partner (coded as 1) or keep the tokens for themselves (coded as 0). The summary results can be found in Table 1. For all the following results, political affiliation, age, gender, and income did not impact the significance of the results.

Overall, mean trust was 0.95 ($SD = 0.22$) collapsed across conditions. However, a significant difference emerged between participants partnered with an ingroup member and participants partnered with an outgroup member. Participants more likely to trust their tokens to their partner in the first round if they were partnered with an ingroup member ($\beta = .07, SE = 0.03, p = .03, 95\% CI [.01, .13]$), yielding an odds ratio of 4.73 (see Figure 3).

Interestingly, all 60 liberal participants paired with a liberal receiver gave their tokens in the first round. Moreover, among both liberal and conservative participants, paired with either an ingroup or outgroup member, trust in the initial round was high (ranging from 91% to 100%). This suggests that participants were testing out the relationship in this first round. Participants knew that there would be many rounds (even if they did not know the exact number of rounds) and understood that there was a clear benefit to trusting their partner. Trust being measured as a binary variable might have encouraged greater trusting behavior, especially when participants were partnered with someone who they expected to be more trustworthy (an ingroup member).

Trust in the Last Five Rounds

To determine whether subsequent trust was significantly different between those who experienced an early trust violation and those who experienced a late trust violation, and between those who were partnered with an ingroup member and those who were partnered with an outgroup member, a linear regression using ingroup identity (vs outgroup) and early trust violation (vs late) was run, also testing for their interaction.³ The dependent variable was the average

proportion of trust in the last 5 rounds of the interaction ($\alpha = .94$, modeled after Kuwabara and colleagues (2014)). The proportion of trust ranged from 0 (did not give tokens in any of the rounds) to 1 (gave tokens in all five rounds). The means and standard deviations of average trust in the last 5 rounds are listed in Table 2.

It was predicted that the timing of the trust violation would impact subsequent behavioral trust (Hypothesis 1a), or in other words, that there would be a significant difference in the average proportion of trust in the last five rounds of the interaction between those who were randomly assigned to an early trust violation compared to those randomly assigned to a late trust violation. This prediction was supported. However, the results were the opposite of Kuwabara and colleagues' (2014) and Lount and colleagues' (2008) findings, which had found lower levels of behavioral trust among those who experienced an early trust violation. Instead, those who experienced a late

FIGURE 3

Ingroup Partners Trust More in the First Round

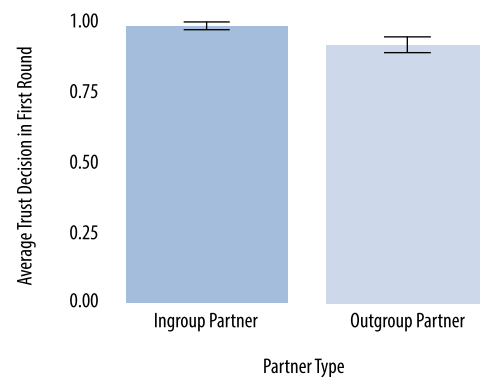
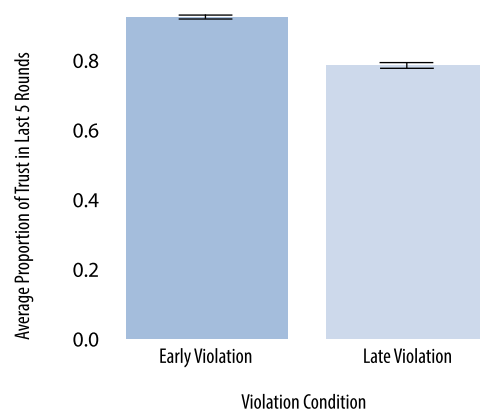


FIGURE 4

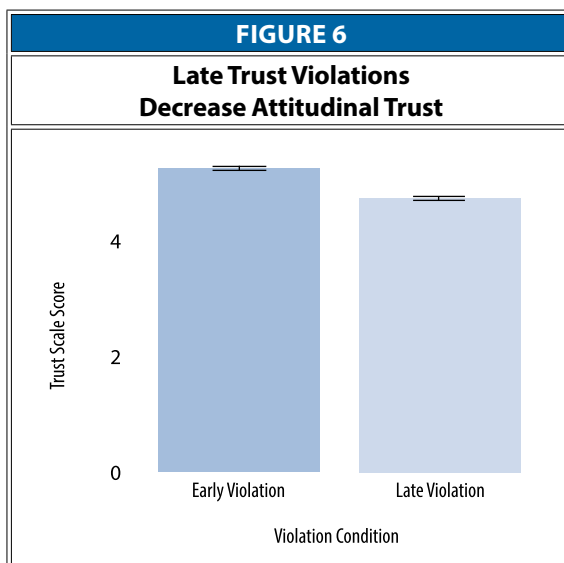
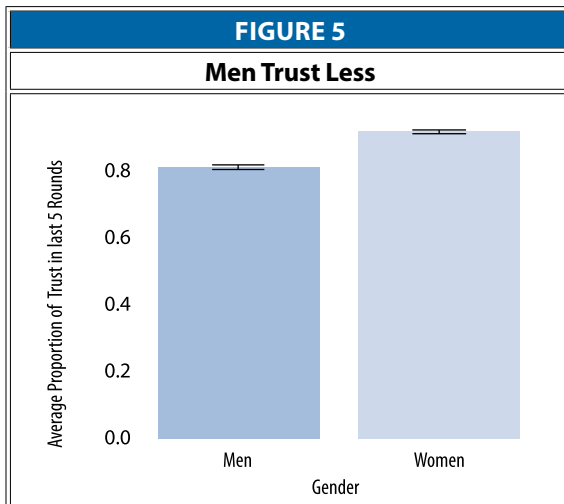
Late Trust Violations Decrease Behavioral Trust



³The group of participants who were randomly assigned to early trust violation were not significantly different demographically (age, income, gender) from the group of participants randomly assigned to a late trust violation. Nor did the group of participants who were partnered with an ingroup member significantly differ demographically from the group of participants who were partnered with an outgroup member.

trust violation were significantly less trusting of their partners in the final five rounds than those who experienced an early trust violation, ($\beta = .85$, $SE = 0.05$, $p = .001$, 95% CI [0.06, 0.23], $f^2 = .09$; see Figure 4). Furthermore, though it was expected that participants would show greater behavioral trust with ingroup members than with outgroup members (Hypothesis 2a), it was not the case that ingroup pairings demonstrated a higher average proportion of trust ($\beta = .00$, $SE = .04$, $p = .95$).

Controlling for age and income did not impact the results, nor did they significantly predict trust ($\beta = .00$, $SE = .00$ and $\beta = -.01$, $SE = .01$ respectively)—or improve the fit of the model ($F = 2.32$, $p = .13$ and $F = 1.33$, $p = .25$). However, as shown in Figure 5, men were significantly less trusting ($M = 0.82$, $SD = 0.36$) than women ($M = 0.92$, $SD = 0.22$; $\beta = -.11$, $SE = 0.04$, $p = .01$, 95% CI [-0.19, -0.02]) which is consistent with some prior work (Haselhuhn et al., 2015).⁴



Thus, overall, only in the timing condition was there a significant difference in the average proportion of trust in the last five rounds of the interaction and it was those who experienced a late trust violation that were significantly less trusting than those who experienced an early trust violation.

A test for an interaction between the timing of the trust violations and whether the participant was partnered with an ingroup member was also conducted. This was looking at whether there were significant differences in trusting behavior between those who experienced an early trust violation versus a late trust violation depending on whether participants were partnered with an ingroup member or an outgroup member. Specifically, it was predicted that ingroup partners would show less behavioral trust if they experienced an early trust violation compared to a late trust violation (Hypothesis 3a) and that outgroup partners would show less behavioral trust if they experienced a late trust violation compared to an early one (Hypothesis 4a). However, the interaction effect was not significant ($\beta = .04$, $SE = .09$, $p = .63$), and therefore, both hypotheses were not supported. Given that the interaction effect was not significant, only the model with the main effects was retained.

Trust Scale

In addition to measuring behavioral trust by looking at the average proportion of trust in the last five rounds, an objective measure of participants' behavior, this study also measured attitudinal trust to gauge participants' subjective sense of trust using a trust scale (Lount et al., 2008), following the completion of the trust game. The higher the trust score, the greater the attitudinal trust. Including control terms for political affiliation, age, gender, and income did not impact the significance of any of the results.

It was expected that there would be a significant difference in trusting attitudes between those who experienced an early trust violation versus those who experienced a late trust violation (Hypothesis 1b). This was the case, and as demonstrated in Table 3 and Figure 6, those who experienced a late trust violation, on average, gave lower ratings of their partner than those who experienced an early trust violation ($\beta = 4.71$, $SE = .20$, $p = .01$, 95% CI [0.11, 0.95], $f^2 = .03$). However, although it was predicted that attitudinal trust would be higher, on average, for those who were partnered with an ingroup member compared to an outgroup member (Hypothesis 2b), there was no significant difference between how participants rated ingroup partners and outgroup partners ($\beta = .05$, $SE = .21$,

⁴Controlling for gender did improve the fit of the model ($F = 9.43$, $p = .002$).

$p = .80$). Thus, only the timing condition produced significant differences in attitudinal trust and the direction of this difference (namely, that trust was significantly lower for those who experienced a late trust violation) matches the direction of the difference between early and late trust violation conditions for behavioral trust (the average proportion of tokens given by participants to their partners in the last five rounds).

A test for an interaction effect between the timing of the trust violation and whether the participant was partnered with an ingroup member for attitudinal trust, looking at whether there were significant differences in trusting attitudes between those who experienced an early trust violation versus a late trust violation based on whether participants were partnered with an ingroup member or an outgroup member, demonstrated that the timing of the trust violation especially impacted trust scores among ingroup members.⁵ Specifically, as shown in Figure 7, participants trusted their partner less when they experienced a late trust violation than when they experienced an early one ($\beta = .89$, $SE = .30$, $p < .001$), contrary to the prediction in Hypothesis 3b (which predicted the opposite). Likewise, Hypothesis 4b was also not supported, as trust scores were lower when there was a late trust violation, but not especially so for outgroup members ($\beta = .17$, $SE = .30$, $p = .57$).

Discussion

This study sought to explore how people's behavioral and attitudinal trust is impacted by the timing of a trust violation (Kuwabara et al., 2014; Lount et al., 2008) by determining whether such responses are impacted based on whether people interact with others whom they know they share a social identity with. Specifically, participants were partnered with an ingroup member, or an outgroup member and their subsequent trusting behaviors and attitudes were measured based on whether they experienced an early or late trust violation, whom they were partnered with, and whether the impacts of the timing of trust violations on subsequent trust is itself dependent on whether one is partnered with an ingroup or outgroup member.

Although it was predicted that there would be an ingroup bias effect, both behaviorally and attitudinally, there were no significant differences in levels of trust between ingroup and outgroup pairings. Although this result on its own suggests that there was no ingroup bias, the significant difference between ingroup and outgroup pairings in the first round suggests that there was some ingroup effect; it just did not last very long. In other words, there may be biases that predispose individuals

⁵Overall, the interaction was not significant ($\beta = .72$, $SE = 0.42$, $p = .09$, 95% CI [-0.11, 1.56], $f^2 = .05$).

to trust an ingroup member more initially, but a history of cooperative (or uncooperative) behavior over time may be enough to overcome these initial biases. If this is true, it implies that ingroup biases are not a limiting factor in cooperative interactions and that trust between outgroup members is possible to a similar extent as between ingroup members. Future research should continue exploring this effect to understand better how experiences of trustworthy behavior overcome an ingroup bias effect. Future research should moreover test this effect with different levels of the salience of the ingroup and outgroup pairings and with different types of ingroups.

There was also no significant effect with regards to whether the effects of the timing of trust violations on subsequent behavioral trust was different based on whether one was paired with an ingroup member or an outgroup member. However, people especially trusted ingroup members more if they experienced an early trust violation compared to a late trust violation. This possibly suggests that these individuals were willing to or tried to forgive their partners early on to maintain positive

FIGURE 7

Ingroup Partners' Trusting Attitudes Are Lower After a Late Trust Violation

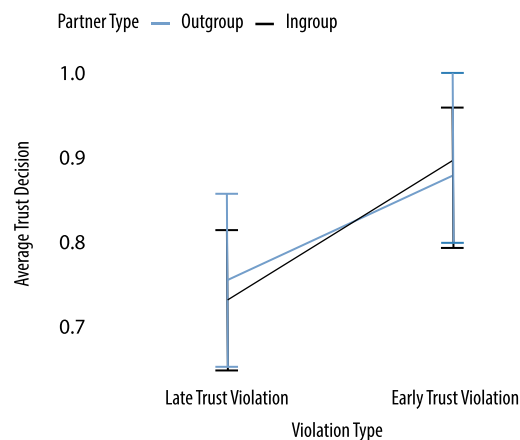


TABLE 3

Summary Results of Average Trust Scale Scores for all Four Conditions

Trust Violation	Ingroup			Outgroup			Overall		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Early	43	5.50	1.31	65	5.10	1.53	108	5.26	1.45
Late	60	4.61	1.57	40	4.93	1.49	100	4.74	1.54
Overall	103	4.98	1.52	105	5.04	1.51	208	5.01	1.51

Note. $R^2 = .03$

expectations about their ingroup partners' willingness to cooperate (Yamagishi et al., 1999) and avoid the cognitive dissonance of their ingroup partner acting in an uncooperative manner. However, for those assigned to a late trust violation, those positive expectations had been compounded by a growing sense of trust over rounds of cooperative behavior by their ingroup partner. This created a more salient sense of betrayal when the violation finally occurred. Thus, even if there were no significant differences in how those paired with an ingroup member acted between an early and late trust violation, there were still differences in how individuals thought about their ingroup member. Attitudes and behavior may similarly track one another, but they are not the same. It is possible that behavior, as an application of attitudinal trust, does not accurately reflect individuals' subjective sense of how much they trust their partner, at least in certain cases. Participants might have wanted to believe that their ingroup partner was a good and trustworthy person, and this was much easier to do when trust was violated early on.

Moreover, some past research suggested that early trust violations hinder subsequent cooperation to a greater extent than late trust violations for United States participants (Kuwabara et al., 2014; Lount et al., 2008), the results here suggest the opposite. Late trust violations were more detrimental to later trusting behavior and attitudes. There are a few possibilities for why late trust violations hinder cooperation to a greater extent. First, a recency effect might have made late trust violations more memorable, especially in a task oriented toward short-term goals, although this study had the late trust violation occur in rounds 10 and 11 to allow multiple rounds of buffer time before trusting behavior was measured in the last five rounds. Second, there may be support for Morrison & Robinson's (1997) theory, which posits that betrayal hurts more when there is a longstanding pattern of cooperativeness than in situations where there is a history of untrustworthiness. It felt worse for those who experienced nine consecutive rounds of cooperative behavior when their trust was betrayed in rounds 10 and 11 because a cooperative relationship had been built over so many rounds. That same history does not exist for those who experienced an early trust violation. Third, if it is true that individuals start with little trust that builds over time (Blau, 1964; Rempel et al., 1985; Rousseau & McLean Parks, 1993), then the early trust violation might not have "stung" as much because there was little trust at the beginning of the relationship. In fact, uncooperative behavior at the very beginning of the interaction might have made the subsequent rounds of consecutive cooperation seem relatively more positive than they otherwise might have

seemed, disproportionately increasing trust by the last five rounds (Sherif & Hovland, 1961).

Still, it is interesting that these results do not align with the findings of Kuwabara and colleagues (2014) or Lount and colleagues (2008). However, there are some notable differences between the samples used in their studies and the sample used in this study. Both Kuwabara and colleagues (2014) and Lount and colleagues (2008) used university students (specifically students at an elite metropolitan university and a large midwestern university, respectively). Psychological studies have historically relied on college students as their sample, although these populations are often much more homogenous than the general public (Henrich et al., 2010; Peterson & Merunka, 2014; Reber & Smith, 2023). Colleges are also disproportionately attended by those of a higher socioeconomic status, women, and Asian American and White individuals (Reber & Smith, 2023).

In contrast, this study utilized a more diverse sample, which was mostly male, liberal, of lower socioeconomic status (with a household income of less than \$75,000), and older (with an average age of around 40 years old). Although racial information was not collected, MTurk's racial demographics are similar to those of the U.S. population (Moss & Litman, 2020). Overall, MTurk is slightly more diverse than the average internet sample but much more diverse than the average university sample (Buhrmester et al., 2011). Furthermore, Lount and colleagues (2008) had 138 participants across four timing conditions, and Kuwabara and colleagues (2014) recruited 93 participants across two timing conditions. This study recruited 208 participants across two timing conditions (and four conditions overall), a significantly larger sample of participants per condition than either of these studies. This sample size of 208 excluded those who were very suspicious and those who were not paying attention during the task to increase the quality of the sample. As a result, there was much greater internal credibility in the present study. Future research should replicate this study with special attention to the sample, particularly the representativeness and demographics of the sample, to better understand the effects that the timing of trust violations has on subsequent trust and cooperation.

Still, this experiment has certain limitations that must be addressed, and that signal a need for more research in this field. First, trust may manifest differently in different types of interaction. This study looked at a particular kind of trust game, but there are many other kinds of situations that require trust, and that should be explored. Specifically, more research should be done utilizing more real-world settings, beyond the kind of trust game in the present study. In conducting an

experiment (the gold standard for establishing causality) with a more demographically diverse sample, this study has high internal validity. Although internal validity and external validity have long been seen as trade-offs, internal validity is a necessary prerequisite to external validity (Gërkhani & Miller, 2022). Therefore, although this study used a trust game to demonstrate trusting behaviors and attitudes in the participants, it is a strong first step in testing a causal theory that future research can do using more real-world settings.

Moreover, this study was conducted completely online using MTurk. Although some have expressed concerns about the quality of MTurk samples, research has shown that, in addition to the greater demographic diversity, MTurk can produce high-quality data (Buhrmester et al., 2011). For example, Wright and colleagues (2021) were able to replicate, using an MTurk sample, the findings of previous research that had utilized a student sample. In addition, this study took steps to increase the quality of the sample, including the addition of attention checks. Nonetheless, individuals' willingness to trust may be different when interacting with others face-to-face, or, at the very least, the sense of realism may be enhanced by playing the game in-person, even without seeing the other players. However, this study took significant measures to heighten the feeling of authenticity, and the results demonstrate that trust can be built—and broken—even when the interactants feel separated via their screens and the added layer of anonymity. This is especially important to consider in the modern world of endless online interactions and communications. Still, future studies should consider whether there are significant differences when conducted in-person versus online, and what the implications of those differences might be.

In addition, interactions over more extended periods may look different than those during a 20-minute experiment, especially if individuals can interact in real-time to a greater extent (such as via a chat function or face-to-face communications). With enough time and enough interactions, even a late trust violation becomes an early trust violation. This study focused on how the timing of a trust violation impacted subsequent trust within a fixed time-interval by comparing the timing conditions relative to one another. However, more prolonged interactions may also provide evidence of recovery times and recovery rates from trust violations. Because this study was conducted over 20 rounds, it did not provide a clear picture regarding the recovery times for early trust violations versus late trust violations nor a complete picture of the recovery rates. Understanding these phenomena may provide more insight into the effects of the timing of trust violations on subsequent

trust. Finally, this study looked at trust as a binary variable. Participants could either trust their tokens to their partner or withhold them. Although there are some situations in which trust is a binary decision, there are other situations in which it is not. In many cases, trust is measured on a continuous scale. Future research should consider how the timing of trust violations, as well as the ingroup bias, may be impacted by the ability to trust only partially.

Ultimately, however, this experiment sheds light on a meaningful topic—trust. The results demonstrate that although early impressions may be influential, maintaining a pattern of trustworthiness and cooperativeness is ultimately more significant in maintaining healthy and mutually beneficial relationships. Even more importantly, the natural and ubiquitous categorization of individuals into ingroups and outgroups does not preclude the ability for people to trust one another or cooperate for mutually beneficial outcomes. It is possible to work together despite differences.

References

- Balliet, D., Wu, J., & De Dreu, C. K. (2014). Ingroup favoritism in cooperation: a meta-analysis. *Psychological Bulletin*, 140(6), 1556–1581. <https://doi.org/10.1037/a0037737>
- Balliet, D., Tybur, J. M., Wu, J., Antonellis, C., & Van Lange, P. A. (2018). Political ideology, trust, and cooperation: In-group favoritism among Republicans and Democrats during a US national election. *Journal of Conflict Resolution*, 62(4), 797–818. <https://doi.org/10.1177/0022002716658694>
- Blau, P. M. (1964). *Exchange and power in social life*. Wiley.
- Buhrmester, M., Kwang, T., & Gosling, S. D. (2011). Amazon's mechanical turk: A new source of inexpensive, yet high-quality, data? *Perspectives on Psychological Science*, 6(1), 3–5. <https://doi.org/10.1177/1745691610393980>
- Carney, D. R., Jost, J. T., Gosling, S. D., & Potter, J. (2008). The secret lives of liberals and conservatives: Personality profiles, interaction styles, and the things they leave behind. *Political Psychology*, 29(6), 807–840. <https://doi.org/10.1111/j.1467-9221.2008.00668.x>
- Chirumbolo, A., Leone, L., & Desimoni, M. (2016). The interpersonal roots of politics: Social value orientation, socio-political attitudes and prejudice. *Personality and Individual Differences*, 91, 144–153. <https://doi.org/10.1016/j.paid.2015.12.001>
- Duch, M. L., Grossmann, M. R. P., & Lauer, T. (2020). z-Tree unleashed: A novel client-integrating architecture for conducting z-Tree experiments over the Internet. *Journal of Behavioral and Experimental Finance*, 28, 1–9. <https://doi.org/10.1016/j.jbef.2020.100400>
- Fischbacher, U. (2007). z-Tree: Zurich toolbox for ready-made economic experiments. *Experimental Economics*, 10(2), 171–178. <https://doi.org/10.1007/s10683-006-9159-4>
- Fischer, R., & Derham, C. (2016). Is in-group bias culture-dependent? A meta-analysis across 18 societies. *SpringerPlus*, 5(70), 1–9. <https://doi.org/10.1186/s40064-015-1663-6>
- Gërkhani, K., & Miller, L. (2022). 17. Experimental sociology. *Handbook of Sociological Science: Contributions to Rigorous Sociology*, 309.
- Haselhuhn, M. P., Kennedy, J. A., Kray, L. J., Van Zant, A. B., & Schweitzer, M. E. (2015). Gender differences in trust dynamics: Women trust more than men following a trust violation. *Journal of Experimental Social Psychology*, 56, 104–109. <https://doi.org/10.1016/j.jesp.2014.09.007>
- Henrich, J., Heine, S. J., & Norenzayan, A. (2010). The weirdest people in the world? *Behavioral and Brain Sciences*, 33(2–3), 61–135. <https://doi.org/10.1017/S0140525X0999152X>
- Hetherington, M., & Weiler, J. (2018). *Prius or pickup?: How the answers to four simple questions explain America's great divide*. Houghton Mifflin.
- Jost, J. T., Glaser, J., Glasl, A. W., & Sulloway, F. J. (2003). Exceptions that prove the rule—Using a theory of motivated social cognition to account for

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

- ideological incongruities and political anomalies: Reply to Greenberg and Jonas (2003). *Psychological Bulletin*, 129(3), 383–393. <https://doi.org/10.1037/0033-2909.129.3.383>
- Kim, P. H., Ferrin, D. L., Cooper, C. D., & Dirks, K. T. (2004). Removing the shadow of suspicion: The effects of apology versus denial for repairing competence- versus integrity-based trust violations. *Journal of Applied Psychology*, 89(1), 104–118. <https://doi.org/10.1037/0021-9010.89.1.104>
- Komorita, S. S., & Mechling, J. (1967). Betrayal and reconciliation in a two-person game. *Journal of Personality and Social Psychology*, 6(3), 349–353. <https://doi.org/10.1037/h0024736>
- Kuwabara, K., Vogt, S., Watabe, M., & Komiya, A. (2014). Trust, cohesion, and cooperation after early versus late trust violations in two-person exchange: The role of generalized trust in the United States and Japan. *Social Psychology Quarterly*, 77(4), 344–360. <https://doi.org/10.1177/0190272514546757>
- Lount Jr., R. B., Zhong, C. B., Sivanathan, N., & Murnighan, J. K. (2008). Getting off on the wrong foot: The timing of a breach and the restoration of trust. *Personality and Social Psychology Bulletin*, 34(12), 1601–1612. <https://doi.org/10.1177/0146167208324512>
- McKnight, D. H., Cummings, L. L., & Chervany, N. L. (1998). Initial trust formation in new organizational relationships. *The Academy of Management Review*, 23(3), 473–490. <https://doi.org/10.5465/AMR.1998.926622>
- Morrison, E. W., & Robinson, S. L. (1997). When employees feel betrayed: A model of how psychological contract violation develops. *The Academy of Management Review*, 22(1), 226–256. <https://doi.org/10.2307/259230>
- Moss, A., & Litman, L. (2020). *Demographics of People on Amazon Mechanical Turk*. CloudResearcher. <https://www.cloudresearch.com/resources/blog/who-uses-amazon-mturk-2020-demographics/>
- Mullen, B., Brown, R., & Smith, C. (1992). Ingroup bias as a function of salience, relevance, and status: An integration. *European Journal of Social Psychology*, 22(2), 103–122. <https://doi.org/10.1002/ejsp.2420220202>
- Peterson, R. A., & Merunka, D. R. (2014). Convenience samples of college students and research reproducibility. *Journal of Business Research*, 67(5), 1035–1041. <https://doi.org/10.1016/j.jbusres.2013.08.010>
- Rink, F., & Ellemers, N. (2007). The role of expectancies in accepting task-related diversity: Do disappointment and lack of commitment stem from actual differences or violated expectations. *Personality and Social Psychology Bulletin*, 33(6), 842–854. <https://doi.org/10.1177/0146167207301016>
- Reber, S., & Smith, E. (2023, January 23). *College enrollment gaps: How academic preparation influences opportunity*. Brookings Institution. <https://www.brookings.edu/2023/01/23/college-enrollment-gaps-how-academic-preparation-influences-opportunity/>
- Rempel, J. K., Holmes, J. G., & Zanna, M. P. (1985). Trust in close relationships. *Journal of Personality and Social Psychology*, 49(1), 95–112. <https://doi.org/10.1037/0022-3514.49.1.95>
- Romano, A., Sutter, M., Liu, J. H., & Balliet, D. (2021). Political ideology, cooperation and national parochialism across 42 nations. *Philosophical Transactions of the Royal Society B*, 376(1822), 1–8. <https://doi.org/10.1098/rstb.2020.0146>
- Rousseau, D. M., & McLean Parks J. (1993). The contracts of individuals and organizations. *Research in Organizational Behavior*, 15, 1–43.
- Rousseau, D. M., Sitkin, S. B., Burt, R. S., & Camerer, C. (1998). Not so different after all: A cross-discipline view of trust. *Academy of Management Review*, 23(3), 393–404. <https://doi.org/10.5465/amr.1998.926617>
- Schilke, O., Reimann, M., & Cook, K. S. (2021). Trust in social relations. *Annual Review of Sociology*, 47, 239–259. <https://doi.org/10.1146/annurev-soc-082120-082850>
- Sheldon, K. M., & Nichols, C. P. (2009). Comparing democrats and republicans on intrinsic and extrinsic values. *Journal of Applied Social Psychology*, 39(3), 589–623. <https://doi.org/10.1111/j.1559-1816.2009.00452.x>
- Sherif, M., & Hovland, C. I. (1961). *Social judgment: Assimilation and contrast effects in communication and attitude change*. Yale University Press.
- Skowronski, J. J., & Carlston, D. E. (1989). Negativity and extremity biases in impression formation: A review of explanations: A Review of explanations. *Psychological Bulletin*, 105(1), 131–142. <https://doi.org/10.1037/0033-2909.105.1.131>
- Sutter, M., Bosman, R., Kocher, M. G., & van Winden, F. (2009). Gender pairing and bargaining—Beware the same sex! *Experimental Economics*, 12, 318–331. <https://doi.org/10.1007/s10683-009-9217-9>
- Tajfel, H. (1979). Individuals and groups in social psychology. *British Journal of Social and Clinical Psychology*, 18(2), 183–190. <https://doi.org/10.1111/j.20448260.1979.tb00324.x>
- Van Den Akker, O. R., van Assen, M. A., Van Vugt, M., & Wicherts, J. M. (2020). Sex differences in trust and trustworthiness: A meta-analysis of the trust game and the gift-exchange game. *Journal of Economic Psychology*, 81, 102329.
- Van Lange, P. A., Bekkers, R., Chirumbolo, A., & Leone, L. (2012). Are conservatives less likely to be prosocial than liberals? From games to ideology, political preferences and voting. *European Journal of Personality*, 26(5), 461–473. <https://doi.org/10.1002/per.845>
- Weber, J. M., Malhotra, D., & Murnighan, J. K. (2004). Normal acts of irrational trust: Motivated attributions and the trust development process. *Research in Organizational Behavior*, 26, 75–101. [https://doi.org/10.1016/S0191-3085\(04\)26003-8](https://doi.org/10.1016/S0191-3085(04)26003-8)
- Wright, R. R., Evans, A., Schaeffer, C., Mullins, R., & Cast, L. (2021). Social networking site use: Implications for health and wellness. *Psi Chi Journal of Psychological Research*, 26(2), 165–175. <https://doi.org/10.24839/2325-7342.JN26.2.165>
- Wu, Y., Hall, A. S., Siehl, S., Grafman, J., & Krueger, F. (2020). Neural signatures of gender differences in interpersonal trust. *Frontiers in Human Neuroscience*, 14, 225. <https://doi.org/10.3389/fnhum.2020.00225>
- Yamagishi, T., Jin, N., & Kiyonari, T. (1999). Bounded generalized reciprocity: Ingroup boasting and ingroup favoritism. *Advances in Group Processes*, 16, 161–197.

Author Note. Material and data for this study can be accessed at <https://osf.io/x4ahs/>.

I have no known conflict of interest to disclose. This study was supported by the Charles Lafitte Foundation Program for Research in Psychology & Neuroscience at Duke University, as well as the Duke Undergraduate Research Support Office's Independent Study Grants. Special thanks to Ashley Harrell for her mentorship, guidance, support, and encouragement during this project.

Correspondence concerning this article may be addressed to Megan Gerges. Email: meganerges@gmail.com

The Classic Stroop Asymmetry Works for Spoken as Well as Written Words

Stephanie Benitez, Jon Rowe, and Kenith V. Sobel*

Department of Psychology and Counseling, University of Central Arkansas

ABSTRACT. In modern versions of the Stroop task, participants view target words presented on a computer screen with pixels that are either congruent (e.g., “Red” in red pixels) or incongruent (e.g., “Red” in blue pixels) with the meaning of the target word. When participants report the target color, the difference in response time between congruent and incongruent targets (i.e., Stroop effect) is typically larger than when they report the target word (i.e., reverse Stroop effect); this is the classic Stroop asymmetry. For decades following Stroop’s experiments, the prevailing explanation for the asymmetry asserted that, for most people, word reading but not color naming has become automatic, so the target word should always become mentally accessible before the target color. Recent studies have argued instead that the advantage for the target word results not from automaticity but from a strong association between the identification task and verbal processing. To test the strength-of-association account, we developed Qualtrics scripts to deliver visual and auditory target words in Stroop and reverse Stroop tasks. The visually presented targets replicated the classic Stroop asymmetry, $p < .001$, $\eta_p^2 = .27$. The auditorily presented targets extended the classic Stroop asymmetry to the auditory domain, $p < .001$, $\eta_p^2 = .18$. These results support the argument that, for an identification task, the target’s semantic features enjoy an advantage over the target’s perceptual features regardless of the sensory modality to which the target is presented. In turn, this shows that task demands are more important than automaticity in mental processing.

Keywords: Stroop effect, reverse Stroop effect, Stroop asymmetry, auditory Stroop effect, online data collection

Most people can walk and chew gum at the same time. Both walking and chewing have been practiced to the point where they no longer require attention, so neither activity hinders the other. In contrast, for a task requiring attentional focus, an irrelevant distraction can leak through the attentional filter to interfere with it (Appelbaum et al., 2014; Linzarini et al., 2017). One of the most widely used experimental paradigms for studying mental interference is the Stroop task (MacLeod, 2005). In a typical modern version of the Stroop (1935) task, participants view a target word on a computer screen written with pixels that are either congruent with the target’s meaning (e.g., “Red” written with red pixels) or incongruent (“Red” written with blue pixels). When the participants’ task is to identify the target’s pixel color, response times (RT) for incongruent targets are generally longer than for congruent targets,

and this RT difference between incongruent and congruent targets is called the Stroop effect (Whitehead et al., 2018). On the other hand, when the participants’ task is to identify the target word rather than the target color, the RT difference between incongruent and congruent targets (i.e., the reverse Stroop effect) is much smaller. This disparity between large Stroop effects and small reverse Stroop effects is called the classic Stroop asymmetry (Melara & Algom, 2003). The reasons for the classic Stroop asymmetry have been widely debated, and here we aim to extend on a recent idea for why it happens.

Horse Race Model: Classic Stroop Asymmetry is Due to Automaticity of Reading

The most prominent early theory of the classic Stroop asymmetry asserted that people who have spent a lifetime reading can identify written words without any need for

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

attentional control, whereas identifying colors has not been practiced as extensively, so it still requires attentional control (Dunbar & MacLeod, 1984). In other words, word reading but not color naming has become automatic. Thus, when participants identify the target color in a Stroop condition, the automaticity of reading makes the identity of the target word mentally accessible more quickly than controlled processing can make the identity of the target color accessible, so an incongruent target word has the opportunity to interfere with identification of the target color. But when participants identify the target word in a reverse Stroop condition, the target color lags behind the target word so an incongruent target color has no opportunity to interfere with identification of the target word. This simple horse race model implies that the target word always beats the target color to the finish line, so the Stroop effect should always be larger than the reverse Stroop effect.

And yet, Uleman and Reeves (1971) described an experiment in which the Stroop effect was smaller than the reverse Stroop effect, thereby undermining the horse race model of the classic Stroop asymmetry. They presented participants with paper cards on which the researchers had written numerous color words with either congruently or incongruently colored ink. Participants scanned the cards for a target word in one condition (i.e., Stroop) or target ink color in the other condition (reverse Stroop) and wrote checkmarks next to the targets. Uleman and Reeves found that interference from incongruent words in the Stroop condition was less than from incongruent colors in the reverse Stroop condition. This result demonstrated that the classic Stroop asymmetry could be inverted, but why was it inverted?

Translation Model: Translation Between Verbal and Visual Codes Can Invert the Classic Stroop Asymmetry

A possible explanation for the classic Stroop asymmetry in traditional Stroop tasks and the inverted asymmetry in Uleman and Reeves (1971) relies on the claim that verbal and visual information are encoded in, and proceed along, two separate mental processing streams (Song & Hakoda, 2015; Virzi & Egeth, 1985). Because traditional Stroop experiments elicited vocal responses, the visually encoded target color in Stroop conditions required translation into a verbal code to generate a vocal response, which allowed the verbally encoded target word to interfere with response generation. In reverse Stroop conditions, the verbally encoded target word did not require translation to generate a vocal response, so the visually encoded target color did not have the opportunity to interfere. That is, in traditional Stroop experiments, the Stroop condition required translation but the reverse Stroop condition did not.

Thus, the translation account can explain why the Stroop effect has traditionally been larger than the reverse Stroop effect, but what about the inverted asymmetry in Uleman and Reeves (1971)? Because the scanning task in Uleman and Reeves required visual processing rather than verbal processing as in traditional Stroop tasks, the advantage switched from the target word to the target color. That is, when participants generated a manual response to report the target's location, the visually encoded target location did not require translation for the visually encoded target color in Stroop conditions, but did require translation for the target word in reverse Stroop conditions. The translation account predicts that when a Stroop condition does not require translation but a reverse Stroop condition does, the Stroop effect should be smaller than the reverse Stroop effect: an inversion of the classic asymmetry. To verify this prediction of the translation account, Durgin (2000) developed a task in which a Stroop color word (e.g., "Red" written with blue pixels) was surrounded by four patches of color (red, green, blue, and yellow). In the Stroop condition, participants moved the cursor from the target location to the patch that matched the target's pixel color (i.e., the blue patch), and in the reverse Stroop condition, participants moved the cursor to the patch that matched the target word (i.e., the red patch). As predicted by the translation account, in this matching task and others that replicated it (Miller et al., 2016; Song & Hakoda, 2015), the Stroop effect was smaller than the reverse Stroop effect.

Alternative Explanations of Inverted Stroop Asymmetry: Strength of Association and Response Modality

Whereas the translation account does explain the inversion of the classic Stroop asymmetry in matching tasks, there are two plausible alternative explanations. First, Blais and Besner (2006) argued that translation may not be necessary to invert the Stroop asymmetry in matching tasks, insofar as the visual nature of the matching task itself may be sufficient to afford an advantage to the target's visual feature (i.e., pixel color). Because a matching task is more strongly associated with visual processing than verbal processing, this is called the strength-of-association account. And second, Grégoire et al. (2019) noted that many studies that have demonstrated significant reverse Stroop effects (Blais & Besner, 2006, 2007; Durgin, 2000; 2003; Miller et al., 2016; Song & Hakoda, 2015; Uleman & Reeves, 1971; Yamamoto et al., 2016) elicited manual responses rather than vocal responses as in traditional Stroop experiments.

Sobel et al. (2020) aimed to test the prediction made by the strength-of-association account (Blais & Besner, 2006) that a task which is strongly associated with visual processing

is sufficient to invert the classic Stroop asymmetry. To do so, they manipulated the task between experiments; in one experiment, participants identified (i.e., using verbal processing) the target word or color, and in another experiment, they localized (i.e., reported the location of, using visual processing) the target based on its word or color. At the same time, they controlled for the contributions of response modality (Grégoire et al., 2019) and translation (Durgin, 2000). To control response modality, manual responses were required in both experiments. Translation was controlled by eliminating the need for translation between the cue feature and target feature, so a color patch cue indicated the target color in the Stroop condition, and a word cue indicated the target word in the reverse Stroop condition. The identification experiment replicated the classic Stroop asymmetry; the Stroop effect was larger than the reverse Stroop effect. Because this task elicited manual responses, the resulting classic Stroop asymmetry is inconsistent with the response modality account, which asserts that manual responses should invert the asymmetry. Apparently, the task demands of identification encouraged participants to covertly map verbal codes onto the manual responses, so the manual responses were verbally mediated (Bearden et al., 2021; Blais & Besner, 2006; Parris et al., 2019; Sugg & McDonald, 1994). Then, in the localization experiment, the classic asymmetry was inverted; the Stroop effect was smaller than the reverse Stroop effect.

Testing the Strength-of-Association Model: Auditory Presentation

Thus the results from Sobel et al. (2020) and others (Diaz-Piedra et al., 2022; Smith et al., 2022) supported the strength-of-association account by showing that verbally mediated tasks elicit a classic Stroop asymmetry, and visually mediated tasks invert the classic Stroop asymmetry. Furthermore, by controlling for translation and response modality while manipulating task demands, the inversion of the Stroop asymmetry between verbally and visually mediated tasks could not be explained by the translation or response modality accounts. Here we aimed to provide further support for the strength-of-association account by testing another of its predictions. That is, given the strong association between an identification task and verbal processing, the identification task should confer an advantage on a verbal target feature over a perceptual target feature; furthermore, this advantage over a perceptual feature should not be limited to just a visual feature as in traditional Stroop tasks, but should extend to other sensory modalities. To test this hypothesis, we presented visual targets as in traditional Stroop tasks in Experiment 1, and presented auditory targets in Experiment 2.

While auditory Stroop tasks have addressed various

kinds of conflict between the perceptual and semantic aspects of a spoken word such as gender (e.g., Knight & Heinrich, 2017), we thought that a more appropriate analogy for the pixel color of written words would be a basic perceptual feature such as pitch. As with the visual color-word Stroop task, demonstrations of the auditory Stroop effect for pitch are common (Donohue et al., 2012; Morgan & Brandt, 1989) but demonstrations of the auditory reverse Stroop effect are scarce. As Blais and Besner (2006) argued about the visual Stroop effect, there is no way to tell if nobody has looked for a reverse auditory Stroop effect for pitch, or if instead everyone who has tried to find an effect has found a null effect (the file drawer problem; Rosenthal, 1979). As with the visual Stroop asymmetry, one workaround for null effects in auditory reverse Stroop tasks would be to carry out both Stroop and reverse Stroop tasks, then a large Stroop effect along with a small or null reverse Stroop effect could yield a significant two-way interaction effect.

Indeed, Akiva-Kabiri & Henik (2012) designed a hybrid visual-auditory task that included both Stroop and reverse Stroop tasks. Participants were trained musicians who heard a musical note while viewing the written name of a note. Because participants in traditional Stroop conditions report the target's perceptual feature (color) and in reverse Stroop conditions report the target's semantic feature (word), the analogous tasks were auditory tone naming and visual notation naming. The authors found a classic Stroop asymmetry: incongruent written notation interfered with naming the note more than the auditory note interfered with naming the visual notation. Here we sought to demonstrate a classic Stroop asymmetry for auditory presentation of words for participants who were from a general undergraduate student population rather than trained musicians.

Rationale and Hypotheses

In this paper we aimed to test the prediction made by the strength-of-association account that the strong association between identification tasks and verbal processing should confer an advantage on a target's verbal feature over its perceptual feature, regardless of the sensory modality to which the targets are presented. To do so, in Experiment 1 we presented visual images of the target words, and in Experiment 2 we presented auditory recordings of the target words. Ideally, these experiments would have been carried out in a laboratory setting that could reduce ambient noise and other distractions to a minimum. Unfortunately, in the wake of the global pandemic, many students at our university remain anxious about face-to-face participation in experiments. In the light of this reality, we decided to take the opportunity to deliver our experimental materials remotely.

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

Of course, remote delivery of experimental materials entails the introduction of much unavoidable variability to the testing environment because participants use their own devices and operating systems, and carry out the experiments in settings of their choosing while possibly engaged in other activities such as eating dinner or watching television. These sources of variability can threaten the precision of timing for experiments such as Stroop tasks that measure RT as a dependent variable (Anwyl-Irvine et al., 2021). Nevertheless, a recent study (Smith et al., 2022) demonstrated that delivering experimental materials via Qualtrics, a popular online platform for online data collection (Belliveau et al., 2022; Greene & Naveh-Benjamin, 2022), could replicate the results from a previous study carried out in a laboratory setting (Sobel et al., 2020) in which the manipulation of task demands inverted the classic Stroop asymmetry between conditions. To compensate for the additional variability inherent with remote delivery of Stroop materials, Smith et al. had larger sample sizes (i.e., 83 and 90 for convenience samples, 160 and 144 for nationwide samples) than the 10 to 20 participants per condition that are common in Stroop experiments conducted in the laboratory (Blais & Besner, 2007; Dunbar & MacLeod, 1984; Durgin, 2000; Machado-Pinheiro et al., 2010; Miller et al., 2016; Sobel et al., 2020; Song & Hakoda, 2011, 2015). Here we sought to replicate and extend on the remote delivery of Stroop experiments via Qualtrics demonstrated by Smith et al.

In the first of two experiments, we intended to replicate a classic Stroop asymmetry in which participants accessed the experiment remotely (as in Smith et al., 2022). A Qualtrics script presented Stroop color word stimuli, and asked participants to report the target color in the Stroop condition and the target word in the reverse Stroop condition. We hypothesized that RT differences between congruent and incongruent targets should be larger for the Stroop condition than the reverse Stroop condition. In Experiment 2, Qualtrics delivered prerecorded sound files in which confederates said either “high” or “low” while speaking in either a high or low tone of voice. The equivalent of a Stroop condition was when participants reported the perceptual feature (high or low tone), and reverse Stroop condition was when they reported the verbal feature (the word “high” or “low”). We hypothesized that the classic Stroop asymmetry would extend to auditory presentation, so the RT difference between congruent and incongruent targets should be greater when participants reported the target’s voice tone than when they reported the target word.

Experiment 1: Visual Presentation

Method

Participants

In both experiments, participants were undergraduate students at a mid-sized university in the Southern United States who participated in exchange for credit in their designated psychology courses. Our proposal entitled *Spatial Interference* was approved by the UCA Institutional Review Board, and we treated all participants in accordance with the ethical standards established by the American Psychological Association (2017). To determine an appropriate sample size that could reliably distinguish between a Stroop effect and reverse Stroop effect, a pilot experiment yielded a Cohen’s d of 0.32. A power analysis determined that a Cohen’s d of 0.30 would require a sample size of 54 participants to achieve 80% power at an alpha of .01 (Bausell & Li, 2002). Our sample for Experiment 1 included 80 participants, 67 of whom identified as female, 12 as male, and one as nonbinary. The proportion of female participants in our sample (83.75%) is consistent with the proportion of female students who take psychology courses in our department, which has hovered around 82% over the last few years. Participants’ ages ranged from 18 to 59 years with a mean of 21.49 and standard deviation of 5.77. There were 64 participants who described themselves as White, seven as Hispanic, five as Black or African American, two as Asian American, one as Native Hawaiian or Pacific Islander, and one preferred not to report a race.

The Qualtrics script randomly assigned half of the participants to report the target pixel color (Stroop) in the first block and the target word (reverse Stroop) in the second block; block order was counterbalanced across participants so the other half of participants reported the target word (reverse Stroop) in the first block and target pixel color (Stroop) in the second. The two independent variables were the reported target feature (i.e., target color in the Stroop condition, target word in the reverse Stroop condition) and congruity between the target color and word. Both variables were manipulated within participants, with each level of reported target feature presented in its own block as just described, and both levels of congruity randomly interleaved within each block. The dependent variable was the time between the onset of each visual display and the response (i.e., RT).

Apparatus

Participants logged in to their accounts on SONA (uca.sona-systems.com) to sign up for the experiment. The SONA website then redirected them to the script on

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

Qualtrics, which they could complete by using their own personal devices.

Stimuli

At the beginning of each trial, a prompt (i.e., “Click here to start the next trial”) directed participants to click a button in the middle of the display so the cursor would be centered before participants selected one of four responses. Clicking the button caused a new page to appear that contained a target word that was one of the four color words “Red,” “Green,” “Blue,” or “Yellow,” written with pixels in one of the four colors, above four radio buttons. In the Stroop condition, the radio buttons were each labeled with one of four rectangular color patches containing red, green, blue, or yellow pixels, respectively. In the reverse Stroop condition, the radio buttons were each labeled with one of four color words written in black pixels, arranged in the same order as in the Stroop condition. When participants selected the correct response, the stimulus page was replaced by the cursor-centering page for the next trial. When they selected an incorrect response, a page with the following message appeared: “The answer you provided was incorrect. Please try to select the right answer.” To start the next trial after receiving this admonition, participants needed to click the advance button. We hoped this extra step for mistaken responses would provide an incentive to select correct responses.

Procedure

The Qualtrics script began by presenting an informed consent letter, then a page containing demographics questions. Next, a brief set of instructions informed the participants that they would see a series of words written with pixels that were either congruent or incongruent with the words’ meanings. Participants who were assigned to the Stroop condition in the first block were instructed to report each target color, and the remaining participants were instructed to report each target word. The Appendix contains the instructions that preceded each of the two blocks for both experiments. The experiment began when participants clicked the Qualtrics Advance button.

The first four trials in each block were practice trials and excluded from analysis, followed by 32 experimental trials. Each of the four congruent targets (e.g., “Red” written with red pixels) were presented four times in each block. The incongruent targets included two repetitions of each of the following eight word-color combinations (summarized in Table 1): the word “Red” written in green pixels, “Red” in blue pixels, “Green” in red pixels, “Green” in yellow pixels, “Blue” in red pixels, “Blue” in yellow pixels, “Yellow” in green pixels, and

“Yellow” in blue pixels. Thus, there were a total of 16 congruent targets and 16 incongruent targets in each block, presented in random order. At the end of the first block, a page informed participants they had completed one half of the experiment, and that for the remainder of the experiment they should report the other target feature. The second block began when participants clicked the Advance button.

Each page that contained a target and response buttons also included a timer that recorded the time between the onset of the page and the respondent’s first and last mouse clicks on the page, as well as the total number of mouse clicks. As described below, the parameters measured by the timer formed the basis for measuring the dependent variable, RT. As is standard in Stroop experiments in general and in Qualtrics scripts in particular, the timing mechanism was invisible to participants. Because Stroop tasks are intended to measure attentional interference, informing participants about the real time progress of a timing mechanism would introduce a conspicuous but irrelevant distraction to the stimulus presentation. In the debriefing at the end of the experiment, participants were informed that we were trying to find out if they were slower to respond to incongruent targets than to congruent targets.

Results

Before submitting RTs to a two-way ANOVA in SPSS with congruity and reported feature (pixel color or word) as within-subjects factors, we removed the results from specific trials for any of three reasons. First, we removed trials in which participants provided an incorrect response; for example, if a target in the Stroop condition was “Red” in blue pixels, the correct response would be the patch made from blue pixels, and any other response would be incorrect. Next, we removed any trials in which there was more than one mouse click. Our rationale for doing so is as follows. When participants selected one

TABLE 1

Combinations of Word and Pixel Color Used for Incongruent Targets in Experiment 1

Target Word	Target Pixel Color
“Red”	green
“Red”	blue
“Green”	red
“Green”	yellow
“Blue”	red
“Blue”	yellow
“Yellow”	green
“Yellow”	blue

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

of the four responses with their first mouse click, the time to first mouse click represented their RT for that trial. Because the script automatically advanced (to the next trial for correct responses or the error message for incorrect responses) when participants clicked any of the response buttons, in trials with more than one mouse click, the participant's first mouse click must have been somewhere on the page that was not on one of the response buttons. For that reason, we believed that in trials with more than one mouse click, the time to first mouse click should not be interpreted as representing the RT, and the time of the last mouse click was also not readily interpretable. This rationale is consistent with a previous study in which Stroop experimental materials were delivered remotely via Qualtrics (Smith et al., 2022).

Finally, after removing any trials with incorrect responses or more than one mouse click, we calculated the mean and standard deviation of each participant's RTs. An initial examination of the data revealed that most RTs were on the order of three seconds or less, but some RTs were much longer, and even minutes long. Because

participants carried out the experiment in settings of their choosing, we believe these much longer RTs did not reflect the time required to select and initiate a response, but instead indicate that participants got distracted by a concurrent task. The trick is to distinguish between valid cases in which participants actually generated a response as instructed but took an unusually long time to do so, from invalid cases in which participants were carrying out a completely different task. A simple, relatively effective, and widely accepted method to eliminate the influence of invalid trials is to exclude any values that are more than three standard deviations greater than the overall mean (Osborne & Overbay, 2004). With that in mind, for each participant we removed all RTs that were more than three standard deviations greater than that participant's mean RT. The percentage of trials removed for incorrect responses, extra mouse clicks, or being an outlier are presented in Table 2. The remaining RTs were then used to calculate the means for each participant and condition.

After removing trials with errors, extra clicks, and outliers, the means of the remaining RTs (depicted in Figure 1) were submitted to a two-way ANOVA in SPSS with congruity and reported feature (pixel color or word) as within-subjects factors. Responses were faster for congruent targets than incongruent, $F(1, 79) = 61.60, p < .001, \eta_p^2 = .44$, but RTs were not significantly different when the participants reported the target color (Stroop) and when they reported the target word (reverse Stroop), $F(1, 79) = 3.22, p = .08, \eta_p^2 = .04$. The interaction between congruity and reported feature, $F(1, 79) = 28.81, p < .001, \eta_p^2 = .27$, shows that the Stroop effect was different from the reverse Stroop effect. Simple effects analysis showed that both the Stroop effect, $F(1, 79) = 78.00, p < .001, \eta_p^2 = .50$, and reverse Stroop effect, $F(1, 79) = 14.30, p < .001, \eta_p^2 = .15$, were significant, and confirmed that the Stroop effect size ($\eta_p^2 = .50$) was larger than the reverse Stroop effect size ($\eta_p^2 = .15$).

Although RT differences between Stroop and reverse Stroop conditions are more robust than error rate differences, when error rate differences are significant, they tend to increase along with RTs; conditions with slower responses tend to have higher error rates than conditions with faster responses (Kane & Engle, 2003; Meier & Kane, 2013). To see if that pattern applied to our results, we submitted the percentages of errors, extra clicks, and outliers (summarized in Table 2) each to its own two-way ANOVA in SPSS with congruity and reported feature (pixel color or word) as within-subjects factors. Error rates were higher for the incongruent targets than for congruent targets, $F(1, 79) = 7.80, p = .007, \eta_p^2 = .04$, and outlier rates were higher for the incongruent targets than for congruent targets,

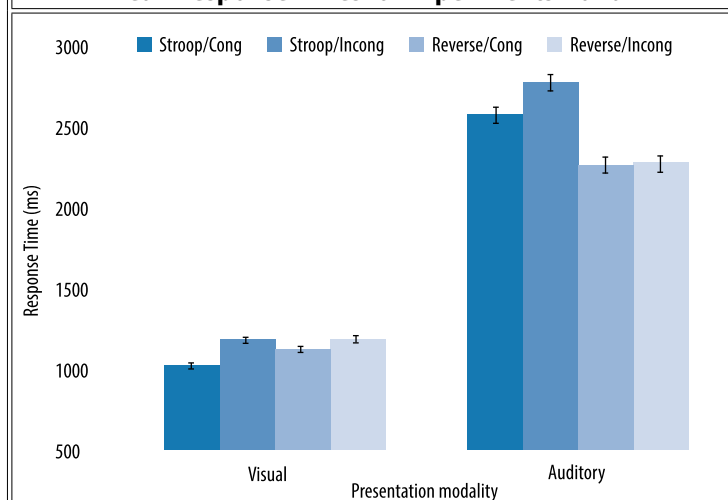
TABLE 2

Percentages of Trials Excluded from Analysis

		Congruent			Incongruent		
		Errors	Clicks	Outliers	Errors	Clicks	Outliers
Visual presentation (Exp 1)	Stroop	0.31%	3.51%	0.78%	1.88%	2.89%	2.10%
	Reverse	0.23%	2.66%	0.94%	0.70%	2.89%	2.58%
Auditory presentation (Exp 2)	Stroop	3.28%	2.19%	1.09%	6.09%	3.13%	1.33%
	Reverse	1.72%	2.66%	0.86%	2.97%	2.81%	1.01%

FIGURE 1

Mean Response Times for Experiments 1 and 2



Note. Error bars represent 95% confidence intervals (calculation based on Loftus & Masson, 1994).

$F(1, 79) = 17.40, p < .001, \eta_p^2 = .18$. None of the other effects were significant (all $ps > .05$). The main effect of congruity on error rates demonstrates a Stroop and reverse Stroop effect, but the lack of an interaction between congruity and reported feature failed to demonstrate a classic Stroop asymmetry. The main effect of congruity on outlier rate suggests that the outlier criterion based on three standard deviations greater than the mean was appropriate for the congruent targets because it excluded about 1% of the congruent trials (Osborne & Overbay, 2004), but the criterion may have been too strict for the incongruent targets because it excluded about 2% of the incongruent trials.

Discussion

The RT results from the identification task replicated the classic Stroop asymmetry; the Stroop effect was larger than the reverse Stroop effect. Because we obtained a classic Stroop asymmetry for a task that elicited manual responses, our results do not support the argument that vocal responses induce the classic Stroop asymmetry and manual responses invert the asymmetry (Grégoire et al., 2019). But our results do support the argument that in identification tasks with manual responses, participants covertly map verbal labels onto the responses (Bearden et al., 2021; Blais & Besner, 2006; Parris et al., 2019; Sugg & McDonald, 1994). Furthermore, the remote delivery of the experimental materials introduced variability that would not occur in a laboratory setting (Anwyl-Irvine et al., 2021). The emergence of a classic Stroop asymmetry for RT in the midst of so much uncontrollable variability highlights the robustness of the classic asymmetry, and suggests that it may generalize to auditory presentation of the stimuli for the same experimental conditions and manual responses.

Experiment 2: Auditory Presentation

Method

Participants

Our sample for Experiment 2 included 80 participants, 60 of whom identified as female, and 20 as male. As in Experiment 1, the proportion of female participants in our sample for Experiment 2 (75.00%) is consistent with the 82% of female students who have taken psychology courses in our department over the last few years. Participants' ages ranged from 18 to 55 years with a mean of 20.54 and standard deviation of 4.61. There were 53 participants who described themselves as White, 14 as Black or African American, seven as Hispanic, four as Asian American, one as Native Hawaiian or Pacific Islander, and one preferred not to report a race.

For visual presentation in Experiment 1, participants reported the target's perceptual feature (color) in the Stroop condition and the target's semantic feature (word) in the reverse Stroop condition, so the equivalent features for auditory presentation in Experiment 2 would be the target's tone in the Stroop condition and the target word in the reverse Stroop condition. Although the reported features were different in the two experiments, the underlying experimental design remained the same as in Experiment 1; the two levels of reported feature were organized by block and two levels of congruity were randomly interleaved within blocks. Participants were exposed to a Stroop condition in one block and a reverse Stroop condition in the other block, and block order was randomly assigned and counterbalanced across participants.

Apparatus

As in Experiment 1, participants used their own personal devices to access their Sona account, which redirected them to the Qualtrics script.

Stimuli

We recruited two female and two male confederates and recorded them saying the words "High" and "Low," each word in a high tone of voice and low tone of voice, then uploaded the sound files to Qualtrics. Each trial began with a cursor-centering page, and when participants clicked the button a stimulus page appeared and played one of the 16 sound files. In the Stroop condition, the stimulus page contained two radio buttons labeled "High tone" and "Low tone" respectively, and in the reverse Stroop condition, the buttons were labeled "High" and "Low."

Procedure

As in Experiment 1, the Qualtrics script began by presenting three pages containing an informed consent letter, demographics questions, and instructions (presented in the Appendix), in that order. The 16 sound files (eight of them congruent and eight incongruent) were presented twice in each block, in random order. After proceeding through four practice trials excluded from analysis and 32 experimental trials, participants were informed that they had completed the first half of the experiment, and that for the remainder of the experiment they should report the other target feature. A timer on each stimulus page recorded the time to the first and last mouse clicks on the page, and the total number of mouse clicks.

Results

As in Experiment 1, we removed all trials that had incorrect responses, more than one mouse click, or any participant's RTs that were more than three standard

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

deviations greater than that participant's mean RT. In Experiment 1, after removing errors, extra clicks, and outliers, every participant retained at least half of the trials in every condition. In contrast to Experiment 1, in Experiment 2 there were nine participants for whom the total number of removed trials was more than half (eight out of 16) of the trials in at least one of the four conditions (i.e., Stroop and reverse Stroop, congruent and incongruent). After removing the data from these nine participants, the RTs from the remaining 71 participants were analyzed (see Table 2 for the percentage of errors, extra clicks, and outliers for the remaining 71 participants).

Mean RTs (depicted in Figure 1) were submitted to a two-way ANOVA in SPSS with congruity and reported feature (voice tone or word) as within-subjects factors. Responses were faster for congruent targets than incongruent, $F(1, 70) = 30.37, p < .001, \eta_p^2 = .30$, and were slower when participants reported the target tone (Stroop) than when they reported the target word (reverse Stroop), $F(1, 70) = 71.69, p < .001, \eta_p^2 = .51$. The significant interaction between congruity and reported feature, $F(1, 70) = 15.04, p < .001, \eta_p^2 = .18$, shows that the Stroop effect was different from the reverse Stroop effect. Simple effects analysis confirmed that the Stroop effect was significant, $F(1, 70) = 31.57, p < .001, \eta_p^2 = .31$, but the reverse Stroop effect was not, $F(1, 70) = 0.09, p = .76, \eta_p^2 = .001$, and the Stroop effect size ($\eta_p^2 = .31$) was larger than the reverse Stroop effect size ($\eta_p^2 = .001$).

The percentages of errors, extra clicks, and outliers (summarized in Table 2) were each submitted to their own two-way ANOVA in SPSS with congruity and reported feature (voice tone or word) as within-subjects factors. Error rates were higher for the incongruent targets than for the congruent targets, $F(1, 70) = 93.06, p < .001, \eta_p^2 = .57$, and when participants reported the target tone (Stroop) than when they reported the target word (reverse Stroop), $F(1, 70) = 44.95, p < .001, \eta_p^2 = .39$, and the interaction between congruity and reported feature, $F(1, 70) = 42.29, p < .001, \eta_p^2 = .38$, shows that the Stroop effect for error rates was different from the reverse Stroop effect. Simple effects analysis confirmed that the Stroop effect was significant, $F(1, 70) = 97.21, p < .001, \eta_p^2 = .58$, but the reverse Stroop effect was not, $F(1, 70) = 3.49, p = .07, \eta_p^2 = .05$, and the Stroop effect size ($\eta_p^2 = .58$) was larger than the reverse Stroop effect size ($\eta_p^2 = .05$). None of the effects for extra clicks or outliers reached significance (all $ps > .05$). In contrast to Experiment 1, which failed to provide evidence of a classic Stroop asymmetry for error rates, in Experiment 2 there was a classic Stroop asymmetry for error rates.

Discussion

Auditory presentation elicited a classic Stroop asymmetry for both RT and error rates. As with the classic Stroop asymmetry for RT in Experiment 1, the Experiment 2 results do not support the response modality account of the classic Stroop asymmetry (Grégoire et al., 2019) but do support the hypothesis that for identification tasks, manual responses are verbally mediated (Bearden et al., 2021; Blais & Besner, 2006; Parris et al., 2019; Sugg & McDonald, 1994). Furthermore, auditory presentation introduced even more variability into the experimental materials than was the case for visual stimuli; specifically, participants controlled the loudness of the sound files playing on their devices. The fact that we obtained a significant interaction between congruity and reported feature for both RTs and error rates amidst all the variability entailed by remote presentation suggests that experimenters should not avoid the reverse auditory Stroop task in fear that they will obtain a null effect. We hope this result emboldens other researchers to carry out auditory reverse Stroop tasks, because a null effect for an auditory reverse Stroop task along with a large auditory Stroop effect could produce a significant interaction, so these results will not languish in a file drawer (Rosenthal, 1979).

General Discussion

Stroop effects that are larger than reverse Stroop effects are so widespread in the literature that the asymmetry has been dubbed a classic (Melara & Algom, 2003). Whereas the classic asymmetry is commonplace in traditional Stroop experiments that elicit vocal responses to identify the target features (Blais & Besner, 2006), experiments that elicit manual responses to localize the target invert the asymmetry (Durgin, 2000; Miller et al., 2016; Song & Hakoda, 2015; Uleman & Reeves, 1971). This inversion could result from the response modality (vocal versus manual) or the mental processing associated with the task (verbal processing for identification tasks, visual processing for localization tasks). Nevertheless, experiments that manipulated the task while controlling for response modality (Diaz-Piedra et al., 2022; Smith et al., 2022; Sobel et al., 2020) demonstrated that the strength of association between the mental processing stream of the target feature and the task is the key; a verbally mediated identification task elicits a classic Stroop asymmetry, whereas a visually mediated localization task elicits an inverted Stroop asymmetry, even when both tasks entail manual responses. Given the strength of association between verbal processing and an identification task (Blais & Besner, 2006), an identification task should elicit a classic Stroop asymmetry regardless of the sensory modality to

which the target words are presented. Thus, the primary contribution of our study to the Stroop literature is the discovery of a classic Stroop asymmetry for auditory presentation of target words, which provides novel support for the strength-of-association account of the Stroop asymmetry.

Limitations and Future Directions

The predictions of the automaticity and strength-of-association accounts are summarized in Table 3. The automaticity account asserts that identification of a written word has become automatic but identification of a perceptual feature has not (Dunbar & MacLeod, 1984). Furthermore, because it seems likely that participants have spent more time, effort, and attention throughout their lives identifying spoken words than they have spent identifying the pitch of the speaker's voice, the automaticity account predicts that the Stroop effect should always be larger than the reverse Stroop effect. In contrast, the strength-of-association account (Blais & Besner, 2006) asserts that verbally mediated identification tasks confer an advantage on the target word over the target's perceptual feature (i.e., Stroop effect > reverse Stroop effect), whereas perceptually mediated localization tasks confer an advantage on the target's perceptual feature over the target word (i.e., Stroop effect < reverse Stroop effect). Thus, for traditional Stroop identification of visual targets as in the upper left cell, both automaticity and strength-of-association predict the classic Stroop asymmetry. But for localization of visual targets in the lower left cell (Diaz-Piedra et al., 2022; Smith et al., 2022; Sobel et al., 2020), the inversion of the classic Stroop asymmetry in these studies is consistent with the strength-of-association account but not automaticity.

A primary limitation of our study becomes apparent when considering our experiments, which involve the identification of auditory targets, and therefore inhabit the upper right cell of Table 3. Whereas we have argued that our results are consistent with the strength-of-association account, our results, which demonstrate a classic Stroop asymmetry, could also be explained by the automaticity account. Although we would argue that the automaticity account had already been discredited by the experiments involving the localization of visual targets (Diaz-Piedra et al., 2022; Smith et al., 2022; Sobel et al., 2020), a skeptic could respond that auditory processing is sufficiently distinct from visual processing that conclusions based on visual presentation do not extend to auditory presentation.

A second limitation of our study is the preponderance of female participants in our sample. Although we are unaware of any studies that have looked at the role of gender differences in the Stroop asymmetry, by

extrapolating on what is known about gender differences in mental processing we might speculate about how such a skewed sample might affect our results. Whereas the role of gender differences in mental processing is slight (Ardila et al., 2011), there is some evidence that women have superior verbal processing than men, who have superior visuospatial processing than women (Yeo et al., 2016). With that in mind, a target's verbal feature may become mentally accessible faster than the target's perceptual feature for women because of their superior verbal processing. Accordingly, any sample with a preponderance of female participants should evince a classic Stroop asymmetry. In response, we would argue that a preponderance of female participants does not necessarily entail a classic Stroop asymmetry, because in the first of two Stroop experiments delivered remotely via Qualtrics, Smith et al. (2022) had two samples in which female participants predominated, and yet they found a classic Stroop asymmetry for identification as well as an inverted asymmetry for localization. But then the same skeptic we imagined above would once again claim that results from experiments with visual presentation do not extend to experiments with auditory presentation.

Thus it seems that our results are consistent not just with strength-of-association, but also with automaticity and gender differences in mental processing. Nevertheless, even if we accept the skeptic's claim that results from experiments with visual presentation do not extend to experiments with auditory processing for the sake of argument, we can imagine an experiment that could provide definitive support for our claim that a classic Stroop asymmetry for auditory presentation of targets supports the strength-of-association account. The key lies in the lower right cell of Table 3, which is currently empty of any existing experiment involving localization of auditory targets. Such an experiment should be able to select a winner from the

TABLE 3

Predictions Made by the Automaticity and Strength-of-Association Hypotheses

	Visual presentation	Auditory presentation
Identification (verbal processing)	Automaticity: Stroop > reverse Stroop	Automaticity: Stroop > reverse Stroop
	Strength of Association: Stroop > reverse Stroop	Strength of Association: Stroop > reverse Stroop
Localization (perceptual processing)	Automaticity: Stroop > reverse Stroop	Automaticity: Stroop > reverse Stroop
	Strength of Association: Stroop < reverse Stroop	Strength of Association: Stroop < reverse Stroop

strength-of-association, automaticity, and gender differences in mental processing hypotheses, but only for an experiment in a laboratory setting where the researchers can specifically arrange the locations of a computer and speakers. And this reveals a third limitation of our study: by delivering our experimental materials remotely, we were unable to carry out the critical experiment in the lower right cell in Table 3.

The critical experiment might work as follows. In a laboratory equipped with a computer connected to two speakers located on either side of the computer, we would play the same 16 sound files we used for this study. For each trial, one sound file would be routed to the right speaker and another sound file would be routed to the left speaker. The two sound files would both be either congruent (e.g., “High” in a high tone for the right speaker and “Low” in a low tone for the left speaker) or incongruent (e.g., “High” in a low tone for the right speaker and “Low” in a high tone for the left speaker). In the Stroop condition, participants would report the location (either right or left) of a target defined by its tone, and in the reverse Stroop condition they would report the location of a target defined by its meaning. Because auditory localization depends on perceptual processing, strength-of-association predicts the target tone should have an advantage over the target’s meaning, resulting in a Stroop effect that would be smaller than the reverse Stroop effect. Because the gender ratio in our department’s course should remain stable over the next few years, we expect that female participants should predominate in any future sample just as they did in the samples for this study. Thus, both automaticity and gender differences in mental processing predict an advantage for the target’s meaning over the target tone; the Stroop effect would be larger than the reverse Stroop effect. If this critical experiment finds a smaller Stroop effect than the reverse Stroop effect, the strength-of-association account would be consistent with all four cells in Table 3, and the automaticity and gender differences in mental processing accounts would be consistent with just the upper two cells.

Conclusions

In two experiments, we carried out Stroop and reverse Stroop tasks with visual and auditory stimuli delivered remotely. The uncontrollable variability in the experimental materials entailed by remote delivery relative to a laboratory setting (Anwyl-Irvine et al., 2021) implies that the classic Stroop asymmetries obtained in both experiments are robust effects. In turn, the classic Stroop asymmetry demonstrates that the targets’ verbal features enjoyed an advantage over the perceptual features, even

though we elicited manual responses. This lends further support to the argument that in Stroop identification tasks, participants covertly map verbal labels onto the manual responses. We argued that these results support the extension of the strength-of-association (Blais & Besner, 2006) and verbal mediation (Bearden et al., 2021; Blais & Besner, 2006; Parris et al., 2019; Sugg & McDonald, 1994) hypotheses, but not the response modality hypothesis (Grégoire et al., 2019), to the auditory domain. Nevertheless, we also acknowledged that our results could be seen as consistent not just with strength-of-association, but also with automaticity (Dunbar & MacLeod, 1984) and gender differences in mental processing (Yeo et al., 2016) hypotheses. Nevertheless, our project sets the stage for future experiments that could provide more definitive support for strength-of-association as the explanation for the Stroop asymmetry, once participants are ready and willing to return to experiments in the laboratory.

References

- Akiva-Kabiri, L., & Henik, A. (2012). A unique asymmetrical Stroop effect in absolute pitch possessors. *Experimental Psychology*, 59(5), 272–278. <https://doi.org/10.1027/1618-3169/a000153>
- American Psychological Association. (2017). *Ethical principles of psychologists and code of conduct*. <http://www.apa.org/ethics/code>
- Anwyl-Irvine, A., Dalmaijer, E. S., Hodges, N., & Evershed, J. K. (2021). Realistic precision and accuracy of online experiment platforms, web browsers, and devices. *Behavior Research Methods*, 53(4), 1407–1425. <https://doi.org/10.3758/s13428-020-01501-5>
- Appelbaum, L. G., Boehler, C. N., Davis, L. A., Won, R. J., & Woldorff, M. G. (2014). The dynamics of proactive and reactive cognitive control processes in the human brain. *Journal of Cognitive Neuroscience*, 26(5), 1021–1038. https://doi.org/10.1162/jocn_a_00542
- Ardila, A., Rosselli, M., Matute, E., & Inozemtseva, O. (2011). Gender differences in cognitive development. *Developmental Psychology*, 47(4), 984–990. <https://doi.org/10.1037/a0023819.supp>
- Bausell, R. B., & Li, Y. F. (2002). *Power analysis for experimental research: A practical guide for the biological, medical, and social sciences*. Cambridge University Press.
- Bearden, R. L., Asgari, S., Sobel, K. V., & Scoles, M. T. (2021). Manual responses are verbally mediated in Stroop identification tasks. *Psi Chi Journal of Psychological Research*, 26(2), 121–129. <https://doi.org/10.24839/2325-7342.JN26.2.121>
- Belliveau, J., Soucy, K. I., & Yakovenko, I. (2022). The validity of Qualtrics panel data for research on video gaming and gaming disorder. *Experimental and Clinical Psychopharmacology*, 30(4), 424–431. <https://doi.org/10.1037/pha0000575>
- Blais, C., & Besner, D. (2006). Reverse Stroop effects with untranslated responses. *Journal of Experimental Psychology: Human Perception and Performance*, 32(6), 1345–1353. <https://doi.org/10.1037/0096-1523.32.6.1345>
- Blais, C., & Besner, D. (2007). A reverse Stroop effect without translation or reading difficulty. *Psychonomic Bulletin & Review*, 14(3), 466–469. <https://doi.org/10.3758/BF03194090>
- Diaz-Piedra, C., Gianfranchi, E., Catena, A., & Di Stasi, L. L. (2022). Electrophysiological correlates of the reverse Stroop effect: Results from a simulated handgun task. *International Journal of Psychophysiology*, 175, 32–42. <https://doi.org/10.1016/j.ijpsycho.2022.02.006>
- Donohue, S. E., Liotti, M., Perez, R., III, & Woldorff, M. G. (2012). Is conflict monitoring supramodal? Spatiotemporal dynamics of cognitive control processes in an auditory Stroop task. *Cognitive, Affective & Behavioral Neuroscience*, 12(1), 1–15. <https://doi.org/10.3758/s13415-011-0060-z>
- Dunbar, K., & MacLeod, C. M. (1984). A horse race of a different color: Stroop interference patterns with transformed words. *Journal Of Experimental Psychology: Human Perception And Performance*, 10(5), 622–639. <https://doi.org/10.1037/0096-1523.10.5.622>

- Durgin, F. H. (2000). The reverse Stroop effect. *Psychonomic Bulletin & Review*, 7(1), 121–125. <https://doi.org/10.3758/BF03210730>
- Grégoire, L., Poulin-Charronnat, B., & Perruchet, P. (2019). Stroop interference depends also on the level of automaticity of the to-be-interfered process. *Acta Psychologica*, 197, 143–152. <https://doi.org/10.1016/j.actpsy.2019.05.013>
- Greene, N. R., & Naveh-Benjamin, M. (2022). Online experimentation and sampling in cognitive aging research. *Psychology and Aging*, 37(1), 72–83. <https://doi.org/10.1037/pag0000655>
- Kane, M. J., & Engle, R. W. (2003). Working-memory capacity and the control of attention: The contributions of goal neglect, response competition, and task set to Stroop interference. *Journal of Experimental Psychology: General*, 132(1), 47–70. <https://doi.org/10.1037/0096-3445.132.1.47>
- Knight, S., & Heinrich, A. (2017). Different measures of auditory and visual Stroop interference and their relationship to speech intelligibility in noise. *Frontiers in Psychology*, 8.
- Linzarini, A., Houdé, O., & Borst, G. (2017). Cognitive control outside of conscious awareness. *Consciousness and Cognition: An International Journal*, 53, 185–193. <https://doi.org/10.1016/j.concog.2017.06.014>
- Loftus, G. R., & Masson, M. E. J. (1994). Using confidence intervals in within-subject designs. *Psychonomic Bulletin & Review*, 1(4), 476–490. <https://doi.org/10.3758/BF03210951>
- Machado-Pinheiro, W., Volchan, E., Vila, J., Dias, E. C., Alfradique, I., de Oliveira, L., Pereira, M. G., & David, I. A. (2010). Role of attention and translation in conflict resolution: Implications for Stroop matching task interference. *Psychology & Neuroscience*, 3(2), 141–150. <https://doi.org/10.3922/j.psns.2010.2.003>
- MacLeod, C. M. (2005). The Stroop Task in Cognitive Research. In A. Wenzel & D. C. Rubin (Eds.), *Cognitive methods and their application to clinical research*. (pp. 17–40). American Psychological Association. <https://doi.org/10.1037/10870-002>
- Meier, M. E., & Kane, M. J. (2013). Working memory capacity and Stroop interference: Global versus local indices of executive control. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 39(3), 748–759. <https://doi.org/10.1037/a0029200>
- Melara, R. D., & Algom, D. (2003). Driven by information: A tectonic theory of Stroop effects. *Psychological Review*, 110(3), 422–471. <https://doi.org/10.1037/0033-295X.110.3.422>
- Miller, H. C., Kubicki, S., Caffier, D., Kolski, C., & Naveteur, J. (2016). The Stroop and reverse Stroop effects as measured by an interactive tabletop. *International Journal of Human-Computer Interaction*, 32(5), 363–372. <https://doi.org/10.1080/10447318.2016.1150642>
- Morgan, A. L., & Brandt, J. F. (1989). An auditory Stroop effect for pitch, loudness, and time. *Brain and Language*, 36(4), 592–603. [https://doi.org/10.1016/0093-934X\(89\)90088-6](https://doi.org/10.1016/0093-934X(89)90088-6)
- Osborne, J. W., & Overbay, A. (2004). The power of outliers (and why researchers should always check for them). *Practical Assessment, Research & Evaluation*, 9(6). <http://pareonline.net/getvn.asp?v=9&n=6>
- Parris, B. A., Sharma, D., Weekes, B. S. H., Momenian, M., Augustinova, M., & Ferrand, L. (2019). Response modality and the Stroop task: Are there phonological Stroop effects with manual responses? *Experimental Psychology*, 66(5), 361–367. <https://doi.org/10.1027/1618-3169/a000459>
- Rosenthal, R. (1979). The file drawer problem and tolerance for null results. *Psychological Bulletin*, 86(3), 638–641. <https://doi.org/10.1037/0033-2909.86.3.638>
- Smith, M. E., Smith, M. D., & Sobel, K. V. (2022). The classic Stroop asymmetry in online experiments. *Psi Chi Journal of Psychological Research*, 27(2), 133–145. <https://doi.org/10.24839/2325-7342.JN27.2.133>
- Sobel, K. V., Puri, A. M., & York, A. K. (2020). Visual search inverts the classic Stroop asymmetry. *Acta Psychologica*, 205. <https://doi.org/10.1016/j.actpsy.2020.103054>
- Song, Y., & Hakoda, Y. (2011). An asymmetric Stroop/reverse-Stroop interference phenomenon in ADHD. *Journal of Attention Disorders*, 15(6), 499–505. <https://doi.org/10.1177/1087054710367607>
- Song, Y., & Hakoda, Y. (2015). An fMRI study of the functional mechanisms of Stroop/reverse-Stroop effects. *Behavioural Brain Research*, 290, 187–196. <https://doi.org/10.1016/j.bbr.2015.04.047>
- Stroop, J. R. (1935). Studies of interference in serial verbal reactions. *Journal of Experimental Psychology*, 18(6), 643–662. <https://doi.org/10.1037/h0054651>
- Sugg, M. J., & McDonald, J. E. (1994). Time course of inhibition in color-response and word-response versions of the Stroop task. *Journal of Experimental Psychology: Human Perception and Performance*, 20(3), 647–675. <https://doi.org/10.1037/0096-1523.20.3.647>
- Uleman, J. S., & Reeves, J. (1971). A reversal of the Stroop interference effect, through scanning. *Perception & Psychophysics*, 9(3-A), 293–295. <https://doi.org/10.3758/BF03212651>
- Virzi, R. A., & Egeth, H. E. (1985). Toward a translational model of Stroop interference. *Memory & Cognition*, 13(4), 304–319. <https://doi.org/10.3758/BF03202499>
- Whitehead, P. S., Brewer, G. A., Patwary, N., & Blais, C. (2018). Contingency learning is reduced for high conflict stimuli. *Acta Psychologica*, 189, 12–18. <https://doi.org/10.1016/j.actpsy.2016.09.002>
- Yamamoto, N., Incera, S., & McLennan, C. T. (2016). A reverse Stroop task with mouse tracking. *Frontiers in Psychology*, 7, 670. <https://doi.org/10.3389/fpsyg.2016.00670>
- Yeo, R. A., Ryman, S. G., Thompson, M. E., van den Heuvel, M. P., de Reus, M. A., Pommy, J., Seaman, B., & Jung, R. E. (2016). Cognitive specialization for verbal vs spatial ability in men and women: Neural and behavioral correlates. *Personality and Individual Differences*, 102, 60–67. <https://doi.org/10.1016/j.paid.2016.06.037>

Author Note. We have no known conflict of interest to disclose. Correspondence concerning this article should be addressed to Kenith V. Sobel, Department of Psychology and Counseling, University of Central Arkansas, Conway, AR 72035. Email: ksobel@uca.edu

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

APPENDIX	
Instructions provided for each experiment, block order, and block	
Experiment 1: Visual presentation Block order: Stroop then reverse Stroop Block 1: Stroop • In this experiment, you will see a series of target words, one at a time, with pixels that are colored red, green, blue, or yellow. Each target word will be 'Red', 'Green', 'Blue', or 'Yellow'. Sometimes the color of the target's pixels and the word's meaning will match, and sometimes they won't match. For example, the target word below is 'Red', but its pixels are colored blue, so this target's color and meaning don't match. • (Here the instructions presented an image containing the word "Red" written with blue pixels) • Below the target will be four buttons, one button next to a patch of red pixels, one next to a green patch, one next to a blue patch, and one next to a yellow patch. In the first half of the experiment, you should report the target's pixel color, NOT the target's meaning, so for this target word you should click the button next to the blue patch, not the button next to the red patch. • Click the arrow below to begin the experiment. Block 2: reverse Stroop • You have now completed one half of the experiment. In the second half of the experiment, you will see a series of target words, one at a time, just like in the first half of the experiment. • (Here the instructions presented an image containing the word "Red" written with blue pixels) • The difference is that in the second half of the experiment, you should report the target's meaning, NOT the target's pixel color. Also, the response buttons will be next to words, not color patches, so for this target word you should click the button next to the word 'Red', not the button next to 'Blue'. • Click the arrow below to begin the second half of the experiment. Block order: reverse Stroop then Stroop Block 1: reverse Stroop • In this experiment, you will see a series of target words, one at a time, with pixels that are colored red, green, blue, or yellow. Each target word will be 'Red', 'Green', 'Blue', or 'Yellow'. Sometimes the color of the target's pixels and the word's meaning will match, and sometimes they won't match. For example, the target word below is 'Red', but its pixels are colored blue, so this target's color and meaning don't match. • (Here the instructions presented an image containing the word "Red" written with blue pixels) • Below the target will be four buttons, one button next to the word 'Red', one next to 'Green', one next to 'Blue', and one next to 'Yellow'. In the first half of the experiment, you should report the target's meaning, NOT the target's pixel color, so for this target word you should click the button next to the word 'Red', not the button next to 'Blue'. • Click the arrow below to begin the experiment. Block 2: Stroop • You have now completed one half of the experiment. In the second half of the experiment, you will see a series of target words, one at a time, just like in the first half of the experiment. • (Here the instructions presented an image containing the word "Red" written with blue pixels) • The difference is that in the second half of the experiment, you should report the target's pixel color, NOT the target's meaning. Also, the response buttons will be next to color patches, not words, so for this target word you should click the button next to the patch with blue pixels, not the button next to the patch with red pixels. • Click the arrow below to begin the second half of the experiment.	Experiment 2: Auditory presentation Block order: Stroop then reverse Stroop Block 1: Stroop • In this experiment, you will hear a series of target words, one at a time, said in either a high or low tone of voice. Sometimes the tone of voice and the word's meaning will match, and sometimes they won't match. For example, someone may say the word high, but do so in a low tone of voice. • There will be two buttons on each screen where audio is played, one that says high tone and one that says low tone. In the first half of the experiment, you should report the target's tone of voice, NOT the target's meaning. Therefore if the word low is said with a high tone of voice, you should report high tone. • Click the arrow below to begin the experiment. Block 2: reverse Stroop • You have now completed one half of the experiment. In the second half of the experiment, you will hear a series of target words, one at a time, just like in the first half of the experiment. • The difference is that in the second half of the experiment, you should report the target's meaning, NOT the tone of voice. Also the response buttons will now be labeled high and low. Therefore if you hear the word high said in a low tone of voice, you should click on the button labeled high. • Click the arrow below to begin the second half of the experiment. Block order: reverse Stroop then Stroop Block 1: reverse Stroop • In this experiment, you will hear a series of target words, one at a time, said in either a high or low tone of voice. Sometimes the tone of voice and the word's meaning will match, and sometimes they won't match. For example, someone may say the word high, but do so in a low tone of voice. • There will be two buttons on each screen where audio is played, one that says high and one that says low. In the first half of the experiment, you should report the target's meaning, NOT the tone of voice. Therefore if the word low is said with a high tone of voice, you should report low. • Click the arrow below to begin the experiment. Block 2: Stroop • You have now completed one half of the experiment. In the second half of the experiment, you will hear a series of target words, one at a time, just like in the first half of the experiment. • The difference is that in the second half of the experiment, you should report the target's tone of voice, NOT the target's meaning. Also the response buttons will now be labeled high tone and low tone. Therefore if you hear the word high said in a low tone of voice, you should click on the button labeled low tone. • Click the arrow below to begin the second half of the experiment.

“Not Liking the Look of This”: Examining the Relationship Between COVID-Related Social Media Exposure and Mental Health Symptoms

Pooja Punjabi, Anna Jensen, Ashley Mota Ortega, and Aleksandria Perez Grabow*
Psychology Department, California State University San Marcos

ABSTRACT. The COVID-19 pandemic led to the implementation of quarantine measures, resulting in widespread isolation and encouraging more online engagement, especially around information related to the novel COVID-19 virus. Uncertainty reduction theory suggests that individuals who sought this information were likely exposed to distressing media content that increased their stress, rather than reducing it as intended. Indeed, research has identified COVID-19 as a traumatic stressor capable of eliciting PTSD-like responses, with recent studies demonstrating associations between higher levels of media exposure to COVID-19 information and greater psychological distress. However, there is some evidence to suggest potential adaptive uses of social media related to the pandemic. Moreover, scarce research exists on the actual pandemic-related content that individuals have been exposed to on social media. The present study utilized quantitative and qualitative methods to examine the relationship between mental health outcomes and positive/negative exposure to COVID-19-related social media, as well as the moderating influences of positive COVID-related social media exposure and previous trauma, respectively, in college students. Participants completed an online survey assessing their exposure to COVID-19 content on social media, mental health symptoms, and previous trauma exposure. Our quantitative results indicated significant associations between high fear following a COVID-19 post and more depressive, $B(SE) = 0.13(0.04)$, $p = .003$, anxiety, $B(SE) = 0.26(0.05)$, $p < .001$, and posttraumatic stress symptoms, $B(SE) = 0.27(0.09)$, $p = .003$, with previous trauma moderating fear and anxiety symptoms, $B(SE) = 0.59(0.23)$, $p = .02$. Our thematic analysis identified news stories as the main type of content that elicited both negative and positive emotions among participants. Further research is needed to continue to understand how to better mitigate the risk of exposure to negative social media content on mental health outcomes.

Keywords: COVID-19, social media, mental health, trauma

On January 2, 2020, science journalist Helen Branswell tweeted, “Not liking the look of this” in response to the handful of COVID-19 cases reported from Wuhan, China. The post foreshadowed the dramatic rise of the COVID-19 pandemic across the globe, which led the World Health Organization (WHO) to declare the pandemic a public health emergency of international concern by January 30, 2020. Several subsequent state and federal level mandates implemented within the United States changed social

norms regarding daily behaviors (e.g., school closures, loss of a job, scarcity of resources, mandatory mask-wearing). These changes provoked unprecedented stressors related to the physical, psychological, and financial well-being of many adults (Park et al., 2020). In particular, the stresses of quarantine and social isolation influenced the emergence of negative psychological effects in university students who were sent home to continue their studies online (Park et al., 2020; Pfefferbaum & North, 2020). As public health and

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

government officials aimed to keep citizens apprised of the ever-evolving situation, global media coverage of the pandemic continued to increase (Garfin et al., 2020). During this time, social media became one of the main tools by which to share information, leading to the emergence of a novel situation declared by the WHO as an “infodemic” (e.g., Bunker, 2020; Cinelli et al., 2020; Hua & Shaw, 2020).

Uncertainty Reduction Theory

Uncertainty reduction theory (URT) suggests that individuals will seek out information in an attempt to make sense out of a situation and to ultimately reduce anxieties and uncertainties in order to survive, socially or otherwise (Berger, 1988; Grace & Tham, 2021). Originally applied to the context of interpersonal relationships, URT has been extended to apply to interactions in the digital world (Srivastava & Chandra, 2018) and in seeking health information (Lin et al., 2016). Research on the infodemic notes the overwhelming amount of information associated with COVID-19 and an increased risk of spreading misinformation and disinformation through such social media platforms as WhatsApp (Sathish et al., 2020) and Instagram (Fitriani & Purworini, 2021), which may subsequently promote adverse mental health outcomes (Jung & Jung, 2022). Therefore, in the context of the media exposure and uncertainty reduction, recent research suggests that this theory may need to be revisited (e.g., Liu & Liu, 2020). Specifically, it is likely that individuals who sought out information about COVID-19 were exposed to distressing content via social media that, rather than reducing anxiety, instead increased their stress.

Media Exposure to Traumatic Events

Prior research suggests an increase in symptoms of psychological distress following exposure to reports of traumatic events in the media (e.g., Bernstein et al., 2007; Holman et al., 2008). Silver et al. (2013) found that prior television exposure to content related to 9/11 and the Iraq War predicted worsened symptoms of posttraumatic stress disorder (PTSD), acute stress, and physical health conditions two to three years after exposure among a U.S. national adult sample. Thompson and colleagues (2019) surveyed participants over a three-year period that included two highly publicized mass violence events, the 2013 Boston marathon bombings and the 2016 mass shooting at the Pulse nightclub in Orlando. The researchers found that exposure to media coverage related to the Boston marathon bombings was associated with symptoms of posttraumatic stress six months after the event occurred. Moreover, these symptoms predicted increased worrying about future negative events two

years after the bombings, as well as a significant increase in media consumption and acute stress one year later following the mass shooting in Orlando. These results indicate that media exposure related to traumatic real-life events perpetuates a cycle of heightened psychological distress and media consumption. Notably, recent research identifies COVID-19 as a traumatic stressor capable of eliciting PTSD-like responses (Bridgland et al., 2021).

Media Exposure to COVID-19

Emerging findings from studies examining COVID-related media exposure consistently demonstrate significant associations between higher levels of exposure and more mental health concerns. In a study of 300 Chinese adults, Yao (2020) found that higher levels of COVID-19 media exposure were related to higher depressive and anxiety symptoms, after controlling for demographics, mental illness history, and social support. A separate study in China explored the relationships across COVID-19 media exposure, anxiety, and the media vicarious traumatization effect in a sample of 1118 Chinese citizens (Liu & Liu, 2020). Results indicated that all four types of media observed (official, commercial, social, and overseas) significantly predicted anxiety. Further, this relationship was mediated by media vicarious traumatization, described as subjective levels of distress following media exposure. Another study with a focus on social media exposure (SME) reported positive associations between frequency of COVID-19 SME and odds of developing anxiety and combined anxiety-depressive symptoms (Gao et al., 2020). Studies outside of China have reported similar outcomes, namely that increased time on social media during the pandemic has been linked to greater mental distress (Riehm et al., 2020) and internalizing symptoms (Mongkhon et al., 2021). Despite these consistent findings, more information is needed to better understand the nature and context of the media in question beyond mere exposure and usage frequency.

The Role of Previous Trauma

The emergence of negative mental health conditions may also be exacerbated following exposure to media coverage of traumatic topics for individuals who have witnessed similar experiences in their own lives (Hall et al., 2019; Holman et al., 2019; Thompson et al., 2019). In a study of media use and post-traumatic stress disorder in college students following Typhoon Hato in China, Hall et al. (2019) found that students who indicated more time viewing disaster-related media content and who experienced the trauma directly (e.g., witnessed death or near death, lost their homes) had higher odds of reporting PTSD symptomology. However, research is limited in examining the role of previous trauma—related

or unrelated to the media traumatic stressor—in the relationship between media exposure and mental health outcomes. In addition, studies on this topic that focus specifically on social media exposure are scarce, despite previous findings that social media use is associated with PTSD symptoms (Hall et al., 2019) and linked to higher stress (Goodwin et al., 2013) post-disaster than traditional media use. This is imperative given that social media may have a more direct, personal impact on users compared to the “objective” information shared through traditional media (Lemyre et al., 2010).

Positive Influences of Exposure

Finally, there is some evidence to suggest that individuals use social media in a more adaptive manner. Specifically, research has found that some adults may seek out hedonic media content (e.g., humorous videos, happy stories) to cope with stress related to the pandemic (Eden et al., 2020). This type of media usage appeared to serve as a buffer for psychological well-being, positing that exposure to social media that elicits positive feelings may act as a protective factor. Additionally, viewing images of heroism in the media following a disaster has been associated with lower odds of PTSD (Hall et al., 2019). Taken together, it is possible that the ways in which media and users frame a trauma may influence the community’s interpretation of the event (Norris et al., 2008). As most of the research on the pandemic has understandably focused on negative outcomes related to media exposure, it is also important to examine the influence of exposure to positive media content given the limited research in this area.

The Current Study

The present study sought to address the gap between exposure to widespread social media coverage of a global traumatic event and mental health outcomes in U.S. college students using a mixed-methods design. This sample is imperative to study given the high usage of social media among US college students (98%), who report using social media more frequently on a weekly basis than any other population (Experian Simmons, 2020). Given that previous studies have reported links between traumatic media exposure and psychological distress (e.g., Thompson et al., 2019; Liu & Liu, 2020), we hypothesized that higher levels of reported fear following exposure to a negative COVID-related post would be associated with more PTSD symptoms, anxiety symptoms, and depressive symptoms. Based on prior related research, we also hypothesized that previous trauma (Hall et al., 2019) and exposure to positive COVID-19 related social media (Eden et al., 2020), respectively, would moderate the proposed relationship between reported fear and

mental health symptoms. Relatedly, we examined whether there would be differences in mental health outcomes among students exposed to COVID-related content, positive or negative, as compared to students with no reported social media exposure. Finally, we investigated the major qualitative themes of positive and negative posts related to COVID-19 to understand the context of this media exposure.

Materials and Methods

Participants

Participants included 78 undergraduate students enrolled in either an introductory or upper division psychology course at a U.S. university. Students ranged in age from 20–46 years and identified as primarily White (35.4%; 25.3% Multiracial; 24.1% Hispanic/Latinx; 6.3% Asian; 1.3% Black/African American; 1.3% Native Hawaiian or other Pacific Islander; 2.5% Other). Gender distribution was largely women (69.4%; 10.8% men; 19.8% other). Most students indicated their parents’ highest education level as high school completion or less (69.7%; 21.2% completed college; 9.2% attended graduate or professional school). Respondents completed an online survey at the beginning of the COVID-19 pandemic, during which time students were transitioning from in-person to fully online courses. Data was collected between April and May of 2020. Researchers obtained consent via a digital consent form at the beginning of the survey and inputting their initials into a textbox to provide consent. This study was approved by the Institutional Review Board at California State University San Marcos.

Measures

Demographics

Participants reported their age, race and ethnicity, gender, and socioeconomic status (SES). An average score of two items assessing the parents’ highest level of education was used as the indicator of SES in this study (e.g., Yan & Gai, 2022).

COVID-19 Social Media Exposure

A single yes or no question assessed exposure to a COVID-related social media post that elicited fear in the past month. Participants who indicated exposure were then asked to mark how fearful the post made them feel after seeing it. Fear was measured on a 5-point scale (0 = *not at all*, 1 = *a little*, 2 = *somewhat*, 3 = *very*, 4 = *extremely*). These items were adopted from the Social Media Exposure Scale (Ng et al., 2018) and adapted to focus on feelings of fear from exposure. Additional follow-up questions were created by the researchers and included free response items asking participants

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

to describe the post and where they had come across the post on social media (i.e., “If yes, please describe the specific post(s), image(s), and/or video(s) you are holding in mind,” and “If yes, please describe how you came across the post(s), image(s), and/or video(s)”). A similar yes or no question was used to measure exposure to a COVID-related social media post that elicited positive feelings in the past month, with free response follow-ups on the description and location of the post (i.e., “If yes, please describe why the post(s), image(s), and/or video(s) elicited humor, happiness, or other positive feelings”).

Anxiety Symptoms

Anxiety symptoms were measured using the Beck Anxiety Inventory (BAI; Beck et al., 1988). The BAI is a 21-item self-report measure in which participants indicate how much they have been bothered by symptoms in the past month. Example items include “Fear of the worst happening,” “Heart pounding/racing,” and “Hands trembling,” and participants rated these items on a 4-point scale (0 = *not at all*, 1 = *mildly, but it didn't bother me much*, 2 = *moderately – it wasn't pleasant at times*, 3 = *severely – it bothered me a lot*). Scores for the BAI were averaged ($M = 0.68$; range = 0–2.29), and Cronbach's alpha in our sample was strong ($\alpha = .94$).

Depressive Symptoms

Depressive symptoms were measured using the Beck Depression Inventory (BDI; Beck et al., 1961). The BDI is a 21-item self-report scale. For each item, participants are directed to pick one out of four statements that most closely relates to how they have been feeling in the past two weeks (e.g., 0 = I do not feel sad, 1 = I feel sad much of the time, 2 = I am sad all of the time, 3 = I am so sad

or unhappy that I can't stand it”). An item that assessed suicidal thoughts was not administered to participants because of limited resources for making clinical referrals. The average scores and the reported alphas do not include this item. The average scores ranged from 0–1.60 ($M = 0.55$), and Cronbach's alpha for the BDI in our sample was acceptable ($\alpha = .89$).

PTSD Symptoms

PTSD symptoms were measured using the PTSD Checklist for DSM-5 (PCL-5; Blevins et al., 2013). The PCL-5 is a 20-item self-report measure in which participants indicate how much they were bothered in response to a stressful experience in the past month. Participants were asked to keep in mind the social media post related to COVID-19 that elicited anxiety, panic, or was found to be triggering when considering the items; therefore, only participants who endorsed exposure to a negative COVID-related social media post completed the PCL-5 ($n = 57$). Example items include “Repeated, disturbing, and unwanted memories of the post/image/video,” “Avoiding memories, thoughts, or feelings related to the post/image/video,” and “Trouble falling or staying asleep.” Participants rated items on a 5-point scale (0 = *not at all*, 1 = *a little bit*, 2 = *moderately*, 3 = *quite a bit*, 4 = *extremely*), which were averaged ($M = 1.11$; range: 0 – 3). Cronbach's alpha for the PCL-5 in our sample was strong ($\alpha = .93$).

Previous Trauma History

Prior exposure to traumatic life events was measured using the Brief Betrayal Trauma Survey (BBTS; Goldberg & Freyd, 2006). The BBTS is a 14-item self-report questionnaire with items assessing traumatic events distinguished between non interpersonal events and interpersonal events perpetrated by someone close or not close to the respondent. Items are assessed before the age of 18 and after the age of 18. Responses are given on a 3-point scale (0 = *never*, 1 = *1 or 2 times*, 2 = *more than that*), which were averaged for our study ($M = 0.24$; range = 0 – 1). Sample items include: “You were emotionally or psychologically mistreated over a significant period of time by someone with whom you were very close (such as a parent or lover).” Cronbach's alpha for the BBTS in our sample was moderate ($\alpha = .79$).

Analytic Plan

We conducted all analyses using IBM SPSS version 26 for Windows. We examined means, standard deviations, boxplots, and bivariate correlations to ensure that all data met statistical assumptions (Field, 2009). We ran multiple linear regression analyses with moderation using Model 1 from the PROCESS bootstrapping plugin (version 3.5). We conducted power analyses for the

TABLE 1

Means, Standard Deviations, Ranges, and Correlations for Study Variables

Variables	<i>M</i>	<i>SD</i>	Range ^a	1	2	3	4	5	6	7	8
1. Fear	2.10	1.56	0–4	–							
2. Depressive Sxs ^b	0.55	0.40	0–1.60	.38**	–						
3. Anxiety Sxs ^b	0.68	0.57	0–2.29	.54***	.69***	–					
4. PTSD Sxs ^b	1.11	0.76	0–3	.39**	.69***	.58***	–				
5. Previous Trauma	0.24	0.21	0–1	.27*	.32**	.30**	.38**	–			
6. Gender ^c	–	–	0–1	.29*	.25*	.32**	–.14***	.11	–		
7. Age	24.73	4.94	20–46	.18	–.21	–.10	–.01	.22	–.11	–	
8. SES ^d	2.66	1.48	0–5	–.08	–.09	–.01	–.13	–.01	.04	–.08	–

Note. ^aRange illustrates the range values for this sample. ^bSxs = symptoms. ^cMean and standard deviation for sex were not provided due to the dichotomous nature of the variable. Women = 69.4%; Other = 19.8%; Men = 10.8%; SES=socioeconomic status. * $p < .05$. ** $p < .01$. *** $p < .001$.

main effects and moderation analyses using values from a recent study with similar predictors and outcomes (Liu & Liu, 2020). Based on calculations in G*Power (Faul et al., 2007), we aimed to recruit 199 participants to achieve a minimum power of .80 for the multiple linear regression analyses with moderation, although notably we were unable to obtain this sample size (final $n = 78$). We also conducted independent samples t tests to examine differences in mental health outcomes between participants exposed to COVID-related content via social media and those without exposure, as well as included Cohen's d to report effect sizes of any mean differences. Given that sex was correlated with many of our main variables, we controlled for sex in all regression models.

To analyze qualitative data from free response items, we used content analysis to identify themes, categorize responses, and assess for frequencies of themes. First, two researchers reviewed raw responses to begin the process of preliminary data coding. Next, the researchers grouped preliminary codes into categories to form new codes and a codebook. Last, free response items were again reviewed and coded using the codebook to capture themes and patterns in the data (Rouder et al., 2021). Inter-rater reliability for the content analyses was good (IRR Cohen's kappa: 0.79; McHugh, 2012). This method of statistically analyzing descriptive statistics of qualitative data is consistent with similar mixed methods procedures (e.g., Tashakkori & Teddlie, 2010).

Results

Bivariate correlations and descriptive statistics of study variables can be found in Table 1. Notably, fear reported directly after exposure to a COVID-19 post was positively correlated with depressive symptoms, anxiety symptoms, PTSD symptoms, and previous trauma. Previous trauma was also positively associated with depressive symptoms, anxiety symptoms, and PTSD symptoms.

In our sample of college students, 75.6% reported exposure to a COVID-19 post that elicited fear, and 57.7% reported exposure to a COVID-19 post that elicited positive feelings. We found that higher levels of reported fear to a COVID-19 post were associated with more depressive symptoms, $B(SE) = 0.13(0.04)$, $p = .003$, anxiety symptoms, $B(SE) = 0.26(0.05)$, $p < .001$, and PTSD symptoms, $B(SE) = 0.27(0.09)$, $p = .003$. We also examined potential interaction effects for positive COVID-related social media exposure and previous trauma, respectively. We did not find any significant interaction effects for exposure to positive COVID-related social media. However, our results revealed that previous trauma significantly moderated the relationship between reported fear to a COVID-19

post and anxiety symptoms, $B(SE) = 0.59(0.23)$, $p = .02$, such that participants who reported higher levels of fear to a COVID-19 post and higher rates of previous trauma endorsed more anxiety symptoms. Estimates from the final models, including non-significant interactions, can be found in Table 2.

Independent samples t tests indicated statistically significant mean differences in depressive and anxiety symptoms between students who had been exposed to a negative COVID-related post as compared to those who had not been exposed. Participants exposed to a negative post reported more depressive symptoms ($M = 0.64$, $SD = 0.40$) than those not exposed ($M = 0.29$, $SD = 0.28$), $t(75) = 3.47$, $p = .001$; $d = 1.01$. Similarly, participants exposed to a negative post reported more anxiety symptoms ($M = 0.79$, $SD = 0.56$) in relation to those not exposed ($M = 0.35$, $SD = 0.50$), $t(75) = 3.10$, $p = .003$; $d = 0.83$. There were no significant differences in depressive symptoms for exposure to a positive COVID-related post ($M = 0.47$, $SD = 0.38$) versus no exposure ($M = 0.69$, $SD = 0.40$), $t(75) = 2.34$, $p = .52$; $d = 0.56$, nor in anxiety symptoms for positive exposure ($M = 0.64$, $SD = 0.55$) versus no exposure ($M = 0.77$, $SD = 0.61$), $t(75) = 0.97$, $p = .41$; $d = 0.22$.

Thematic Analysis

A total of 92 distinct statements were identified and extracted from the open-ended responses. The clustering of formulated meanings resulted in four themes related to posts that elicited fear and/or anxiety (i.e., news coverage related to COVID-19 deaths, images of people who had died from COVID-19, contagion/

TABLE 2

Final Moderation Model Including Interaction Effects

	<i>B</i>	<i>SE</i>	<i>p</i>
Outcomes of Fear Following Negative Post			
Depressive Symptoms	0.13	0.04	.003
Anxiety Symptoms	0.26	0.05	<.001
PTSD Symptoms	0.27	0.09	.003
Interaction Effects of Fear X Previous Trauma			
Depressive Symptoms	0.32	0.19	.09
Anxiety Symptoms	0.59	0.23	.02
PTSD Symptoms	0.59	0.37	.12
Interaction Effects of Fear X Positive Exposure			
Depressive Symptoms	0.01	0.10	.94
Anxiety Symptoms	0.01	0.12	.92
PTSD Symptoms	0.07	0.19	.72

Note. All models control for gender. Bold values indicate statistical significance at $p < .05$.

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

spread of COVID-19, and negative consequences of lockdown/quarantine) and four themes reflecting posts that promoted positive emotions among participants (i.e., positive news stories related to COVID-19, humor through memes, motivational/inspirational posts/videos, and positive changes emerging from social isolation; noted in Table 3).

Negative Post Themes

First, we collected open-response data to understand where participants came across social media posts eliciting both negative and positive emotions. In response to where participants came across negative posts, the top three platforms identified were Instagram (27%), a news outlet (unspecified; 23%), and Facebook (22%; Twitter: 8.1%; social media, unspecified: 8.1%; YouTube: 5.4%; Snapchat: 5.4%; TikTok: 1.4%).

News Coverage Related to COVID-19 Deaths. The most prominent theme in our study centered around COVID-19 deaths reported by a news outlet via social media. Many participants identified experiencing anxiety from the mass death rates that were reported in the media at the height of the pandemic. Several participants also shared learning about stories of individuals who had died from the coronavirus. Exposure to the way in which dead bodies were buried or, more accurately, were disposed of in the case of overcrowding during the early stages of the pandemic was also a shared experience. Following are illustrative quotes: “Seeing the number of deaths from news outlets...” (Mass death rates reported); “Saw a post in the news about the overwhelming amount of deceased people in some nursing homes and read that staff in one nursing home resorted to storing bodies in a shed.” (Manner of body burial/disposal); “It was a news article about a young man in his 30s with asthma who died from covid-19” (Stories of death).

Images of People Who Had Died From COVID-19. Another recurring concept in the analysis again highlighted the theme of death as well as underscored the power of visual processing via imagery. Most participants described specific pictures of the burial/disposal of dead bodies. Videos of burial/disposal were also identified and described in some detail: “The images of the mass burials of people in New York” (Pictures); “Dead patients being carried out from the hospital in body bags” (Videos); “Images of dead bodies in refrigerated trucks outside hospitals because there is no room to put the bodies anymore.” (Pictures)

Contagion/Spread of COVID-19. An additional theme that emerged from the analysis was the spread of the COVID-19 virus. In particular, participants reported anxiety from learning about the rate of contagion of the virus. Many participants also endorsed exposure to

information how the virus was being spread via various forums (e.g., through videos, written posts, etc.): “Just posts on the idea that the virus was spreading so quickly...” (Rate of contagion); “A video of a person coughing and intentionally spreading his germs” (Information on virus spread); “A flight attendant explaining her experience with exposure and now sickness to COVID-19.” (Information on virus spread)

Negative Consequences of Lockdown/Quarantine. Finally, participants identified several negative consequences associated with the quarantine mandate. Specifically, participants reported stressors related to the length of the lockdown and factors that likely increased the length of lockdown. Exposure to news about protests related to quarantine, as well as losses related to the worldwide mandate were identified. Participants also described witnessing the effects of material shortages and hoarding behaviors. Sample posts included, “The posts about the elderly not being able to get what they need due to the pandemic and hoarding of products by others” (Material shortages/hoarding); “Posts that regarded school closures and/or graduation cancellations” (Losses from lockdown);

Posts of people that are protesting the stay at home order because they no longer want to be in it and say they will be safe and still practice social distancing although I do not believe it and by doing this what if we have to stay on lockdown for a longer time (Length of lockdown).

Positive Post Themes

For positive posts, participants identified finding these posts mainly on Instagram (31%), social media (unspecified; 26%), and Facebook (14%; news outlet, unspecified: 8.6%; Twitter: 6.9%; TikTok: 6.9%; YouTube: 5.1%; Snapchat: 1.7%).

Positive News Stories Related to COVID-19. Similar to the most occurring theme for negative social media posts, we found that participants largely identified the source of positive posts as news stories. Specifically, participants recalled many individual recovery stories, ranging from strangers to celebrities to people in their more immediate communities. Participants also endorsed positive emotions related to the plateau/flattening of the “curve.” Last, news reports on positive, indirect consequences of the pandemic were identified: “A news segment about animal adoption facilities being empty as a result of the pandemic” (Indirect positive consequences); “A news story of an old woman recovered from coronavirus” (Individual recovery stories); “News indicating that curve is flattening and people are recovering” (Plateau of curve).

Humor Through Memes. Another popular theme that emerged from our analysis was the use of humor through memes created and posted online. As a meme is generally described as an idea that spreads within a culture through imitation, the ideas that participants identified revolved around face mask designs and mandates, what individuals did in their homes during quarantine, reframing stressful situations from quarantine into more lighthearted content, and quips about the toilet paper shortage. Sample posts included, “It was a meme about quarantine and everyone becoming bakers” (Quarantine); “There have been plenty of memes about toilet paper and the type of masks people are wearing” (Face masks/Toilet paper shortage); “Memes about 2020 being the worst year and ruining summer” (Reframing stressful situations)

Motivational/Inspirational Posts/Videos. A third category included social media posts and videos described as motivational and/or inspirational: “A video of group of nurses and firefighters cheering each other on outside of a hospital.”; “Light hearted, motivational videos on COVID-19.”

Positive Changes Emerging From Social Isolation. Last, participants wrote on positive changes resulting from social isolation that they observed via social media. These responses largely comprised of individual behavior changes, either personal or observed in others: “It was a post that individuals should take this time to better themselves and encouraged exercise” (Individual behavior changes); “I’ve seen posts about the positive transformations people are experiencing during social isolation that make me feel hopeful and happy” (Individual behavior changes).

Discussion

As an international public health crisis, the pandemic led to widespread feelings of fear and uncertainty in members of the public, subsequently motivating individuals to become increasingly reliant on the media for information (Garfin et al., 2020). Using a cross-sectional, undergraduate sample, we examined the relationships across both negative and positive exposure to COVID-related social media on mental health outcomes. We found evidence for associations between reported fear following negative exposure and poorer mental health outcomes, as well as significant differences between individuals who had been exposed to a negative post and those who had not in relation to depressive and anxiety symptoms. Our moderation analyses revealed that higher levels of fear following exposure to a negative COVID-related post and higher rates of previous trauma were related to higher endorsement of anxiety symptoms. However, we note that these results should

be taken as preliminary associations given that our study was underpowered.

Although our results are limited in determining the direction of influence between exposure and mental health, our qualitative analysis illustrated that many of our participants turned to social media for news on the coronavirus, which elicited both fear (e.g., news coverage related to COVID-19 deaths) and positive feelings (e.g., positive news stories related to the pandemic). In line with URT, these findings again highlight public reliance on media—in this case, social media—for news and information during stressful periods. However, themes that emerged especially from exposure to negative social media posts, such as imagery of dead bodies and information on the spread of the virus, likely contributed to more, rather than less, stress for individuals.

Our preliminary findings also link to research suggesting that increased fear in response to certain media exposure may be predictive of heightened psychological distress (e.g., Hall et al., 2019). In our study, examination of prominent themes of negative social media exposure revealed the recurring motif of death, specifically via news stories and images. At a time when little was known about the virus, it is possible that students experienced fear and subsequent anxiety related to mortality following exposure to death-related posts.

TABLE 3

Meanings and Subsequent Clusters with Percentages of Negative/Positive Themes

Formulated Meanings	Negative Exposure Themes	Percentages (Themes)
Mass death rates reported Stories of deaths Manner of body burial/disposal	News coverage of COVID-19 deaths	21.8%
Pictures Videos	Images	17.9%
Rate of contagion Information on virus spread	Contagion/spread of COVID-19	11.5%
Material shortages/hoarding Protests Lockdown length Losses from lockdown	Negative consequences of lockdown	6.4%
Formulated Meanings	Positive Exposure Themes	Percentages (Themes)
Individual recovery stories Plateau of curve Indirect positive consequences	Positive news stories	21.8%
Face masks Quarantine Toilet paper shortage	Humor through memes	20.5%
Reframing stressful situations	Motivational/inspirational posts/videos	6.4%
Individual behavior changes	Positive changes emerging from social isolation	5.1%

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

Further, the suggestive moderating role of previous trauma in our study is consistent with past studies positing that media coverage of collective traumas can exacerbate symptoms from previous traumatic experiences (e.g., Slone, 2000). Literature suggests that trauma survivors may experience increased rumination (Michl et al., 2013), which may be a mechanism in explaining why participants in our study reported increased anxiety symptoms following exposure to stressful events in the media. This may be especially true in the case of the pandemic; students were not only experiencing the pandemic in their everyday lives (e.g., working or attending classes from home), but were also bombarded with information related to the pandemic on social media platforms, making it difficult not to dwell on this ongoing stressful event.

Although trauma and rumination are predictors of both anxiety and depression, we speculate that our non-significant moderation model for depressive symptoms may have partly been a result of the timing of our data collection. Given that our surveys were completed at the start of isolation measures in the US, it is possible that many students were experiencing heightened stress and anxiety responses at that time as compared to depressive symptoms, which may have developed later into quarantine. Overall, the percentage of anxiety, depressive, and PTSD symptoms in our sample were consistent with norms of these disorders among US adults. Specifically, 41.7% of participants endorsed clinically significant levels of anxiety based on the BAI cutoff scores (Beck et al., 1988), compared to a 30% prevalence rate among US adults (National Comorbidity Survey, 2017) and 35.1% among the general population during the pandemic (Delpino et al., 2022). Based on depression cutoff scores for the BDI-II (Beck et al., 1961), 15.3% of our sample reported moderate to severe depression levels in comparison to 18.4% of US adults (Lee et al., 2023) and 26% during COVID-19 (Ettman et al., 2023). Last, 24.6% of participants indicated scores on the PCL-5 suggestive of a PTSD diagnosis (Blevins et al., 2013), higher than the overall prevalence rate of PTSD among US adults generally (3.5 – 4.7%; American Psychiatric Association, 2022) and during the pandemic (15%; Zhang et al., 2021).

We also found an association between fear following negative exposure and PTSD symptoms, although our moderation analysis of this model yielded non-significant results. Notably, our analysis was limited in power ($n = 57$) given that PTSD symptoms were only assessed in participants who endorsed exposure to negative COVID-related content. Specifically, participants were asked to indicate symptoms based on the social media post, image, or video they identified in the previous

exposure item. Although this was certainly a limitation in our analyses, this method of measuring PTSD symptoms could provide some evidence that, in line with previous research (e.g., Bridgland et al., 2021; Liu & Liu, 2020; Ramsden, 2015), vicarious traumatization via media exposure may exist.

Our study found that over half of participants reported exposure to positive social media posts related to COVID-19; however, there were no significant findings related to this positive exposure, whether as a moderator and potential protective factor, or in differences in mental health symptoms between those exposed to these positive posts and those without this exposure. This is inconsistent with recent findings on the potential buffering effects of positive media usage on negative mental health outcomes during the pandemic (Eden et al., 2020). These differences are likely the result of a small sample size, but may also be due to the complex, diverse ways in which individuals use media for coping. For example, Eden and colleagues (2020) found that college students experiencing high stress reported more hedonic media use and avoidant/escapist coping via media, whereas students experiencing high anxiety—arguably characterized by more generalized and longer-lasting feelings of worry and nervousness as compared to stress (Spitzer et al., 2006)—reported using media for both short-term, emotion-focused coping strategies (e.g., avoidance, escapism, humor-based) and longer-term, problem-focused coping. These findings suggest the multifaceted ways in which positive media content may influence coping and well-being, and future research could benefit from examining the complexity of positive social media posts beyond mere exposure. Our qualitative themes begin to address this complexity, and future studies could examine whether certain types of positive posts buffer negative mental health outcomes associated with media exposure.

Finally, these findings highlight the need to investigate broader implications of whether the responsibility for viewing potentially traumatic content lies with the viewer or the platforms. One argument posits that social media users are in control of the posts on their feed given their choice to follow other users and the option to block users or content they do not want to see. However, social media platforms utilize algorithms designed to cater to the viewer so that they spend as much time as possible on the application or website. For example, if a viewer is engaging with a social media post either by commenting or simply looking at the post for a certain amount of time, these algorithms will subsequently push similar content onto the viewer because it assumes that the viewer wants to see more of that subject matter. A simple solution could be limiting one's social media

usage, but realistically, these platforms have become an integral part of society (Lindgren, 2017). From keeping up with breaking news to engaging with friends, social media allows individuals to stay connected with the world around them. As researchers continue to study the influence of social media and mass exposure to collective trauma, it is important to consider the ways in which these platforms can keep their users safe, rather than capitalize off their engagement given potential consequences on mental health.

Limitations

As previously noted, this study utilizes cross-sectional data; a future longitudinal design would assist in teasing out the direction of effect hypothesized in this study (e.g., more exposure predicts increases in mental health symptoms). It is possible, for instance, that heightened anxiety may prompt individuals to seek out information via social media, consistent with the traditional URT, or that the presence of depressive symptoms may influence rumination behaviors of focusing on negative posts. Further, our sample size for this study was limited, largely in part due to the pandemic and difficulties collecting data during this time. Although it is probable that most young and emerging adults were undergoing similar stressors related to quarantine, the infodemic, and the overall pandemic, the experience of US college students during this time was likely unique given their additional barriers of navigating new online environments and stressful home situations (e.g., Clabaugh et al., 2021). Therefore, these findings should not be generalized to populations beyond this sample. In addition, our sample was largely comprised of women, which is consistent with the demographic landscape of college students in the United States and should also be considered in the generalization of these findings. Finally, it is important to note potential biases in retrospective, self-report studies. For example, previous research cites that individuals experiencing depressive symptoms may overreport past trauma and negative exposures (Colman et al., 2016). Additionally, given that participants were asked to recall past exposure, they may have been more likely to remember (or misremember) certain types of posts (e.g., negative vs. positive news coverage; Soroka et al., 2019).

Future Directions

Future research should consider using a longitudinal, ecological momentary assessment design with an adequately powered sample to assess the long-term behavioral and mental health outcomes associated with pandemic-related media exposure. As preliminary findings for positive posts revealed themes of positive news stories, humor through memes, motivational/inspirational

posts/videos, and positive changes emerging from social isolation, future research should continue to assess how exposure to hedonic media can serve to combat the adverse effects of negative pandemic-related content. There is also a need for more research on differences in the amount of time participants are exposed to both positive and negative pandemic-related content (i.e., media frequency) and whether they actively seek out more positive content to cope with fear/anxiety.

Researchers should also aim to investigate whether individuals are self-selecting (i.e., choosing to expose themselves to negative content) or passively scrolling through negative content that may be presented on their social media feeds. In addition, future studies could assess whether differences in personality traits or motivators for using social media platforms may explain why some individuals are more likely to seek out positive content to counteract exposure to negative media.

Finally, the use of telehealth and mobile applications has dramatically increased and provided greater access to therapy and support services since the height of the pandemic (Wiederhold, 2021). Thus, public policymakers and researchers should consider working together to integrate mental health services into algorithms on social media to promote more strategic media use as an adaptive coping method.

References

- American Psychiatric Association. (2022). Trauma- and Stressor-Related Disorders. In *Diagnostic and statistical manual of mental disorders* (5th ed., text rev.).
- Beck, A. T., Epstein, N., Brown, G., & Steer, R. A. (1988). An inventory for measuring clinical anxiety: Psychometric properties. *Journal of Consulting and Clinical Psychology*, 56(6), 893–897. <https://doi.org/10.1037//0022-006X.56.6.893>
- Beck, A. T., Ward, C. H., Mendelson, M., Mock, J., & Erbaugh, J. (1961). An inventory for measuring depression. *Archives of General Psychiatry*, 4, 561–571. <https://doi.org/10.1001/archpsyc.1961.01710120031004>
- Becker-Blease, K. A., Finkelhor, D., & Turner, H. (2008). Media exposure predicts children's reactions to crime and terrorism. *Journal of Trauma & Dissociation*, 9(2), 225–248. <https://doi.org/10.1080/1529730802048652>
- Berger, C. R. (1988). Uncertainty and information exchange in developing relationships. In S. Duck (Ed.), *Handbook of personal relationships: Theory research and interventions* (pp. 239–256). Wiley & Sons
- Bernstein, K. T., Ahern, J., Tracy, M., Boscarino, J. A., Vlahov, D., & Galea, S. (2007). Television watching and the risk of incident probable posttraumatic stress disorder. *Journal of Nervous & Mental Disease*, 195(1), 41–47. <https://doi.org/10.1097/01.nmd.0000244784.36745.a5>
- Blevins, C. A., Weathers, F. W., Davis, M. T., Witte, T. K., & Domino, J. L. (2013). The posttraumatic stress disorder checklist for DSM-5 (PCL-5): Development and initial psychometric evaluation. *Journal of Traumatic Stress*, 28, 489–498. <https://doi.org/10.1002/jts.22059>
- Bridgland, V. M. E., Moeck, E. K., Green, D. M., Swain, T. L., Nayda, D. M., Matson, L. A., Hutchison, N. P., & Takarangi, M. K. T. (2021). Why the COVID-19 pandemic is a traumatic stressor. *PLoS one*, 16(1), e0240146. <https://doi.org/10.1371/journal.pone.0240146>
- Bunker, D. (2020). Who do you trust? The digital destruction of shared situational awareness and the COVID-19 infodemic. *International Journal of Information Management*, 55, 102201. <https://doi.org/10.1016/j.ijinfomgt.2020.102201>
- Cinelli, M., Quattrociocchi, W., Galeazzi, A., Valensise, C. M., Brugnoti, E., Schmidt, A. L., Zola, P., Zollo, F., & Scala, A. (2020). The COVID-19 social media infodemic. *Scientific Reports*, 10(1). <https://doi.org/10.1038/s41598-020-73510-5>

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

- Clabaugh, A., Duque, J. F., & Fields, L. J. (2021). Academic stress and emotional well-being in United States college students following onset of the COVID-19 pandemic. *Frontiers in Psychology*, 12, 628787. <https://doi.org/10.3389/fpsyg.2021.628787>
- Colman, I., Kingsbury, M., Garad, Y., Zeng, Y., Naicker, K., Pattern, S., & Thompson, A. H. (2016). Consistency in adult reporting of adverse childhood experiences. *Psychological Medicine*, 46, 543–549. <https://doi.org/10.1017/S0033291715002032>
- Delpino, F. M., da Silva, C. N., Jerônimo, J. S., Mulling, E. S., da Cunha, L. L., Weymar, M. K., Alt, R., Caputo, E. L., & Feter, N. (2022). Prevalence of anxiety during the COVID-19 pandemic: A systematic review and meta-analysis of over 2 million people. *Journal of Affective Disorders*, 318, 272–282. <https://doi.org/10.1016/j.jad.2022.09.003>
- Eden, A. L., Johnson, B. K., Reinecke, L., & Grady, S. M. (2020). Media for coping during COVID-19 social distancing: Stress, anxiety, and psychological well-being. *Frontiers in Psychology*, 11. <https://doi.org/10.3389/fpsyg.2020.577639>
- Ettman, C. K., Fan, A. Y., Subramanian, M., Adam, G. P., Badillo Goicoechea, E., Abdalla, S. M., Stuart, E. A., & Galea, S. (2023). Prevalence of depressive symptoms in U.S. adults during the COVID-19 pandemic: A systematic review. *SSM - Population Health*, 21, 101348. <https://doi.org/10.1016/j.ssmph.2023.101348>
- Experian Simmons Research. (2020, October 26). *Is social media damaging or helping college students?* Greenville University Papyrus. <https://papyrus.greenville.edu/2020/10/is-social-media-damaging-or-helping-college-students>
- Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39, 175–191.
- Field, A. (2009). *Discovering statistics using SPSS* (3rd ed.). SAGE Publications.
- Fitriani, E., & Purworini, D. (2021). Reducing COVID-19 information uncertainty through social media. *Advances in Social Science, Education and Humanities Research*, 661, 80–88.
- Gao, J., Zheng, P., Jia, Y., Chen, H., Mao, Y., Chen, S., Wang, Y., Fu, H., & Dai, J. (2020). Mental health problems and social media exposure during COVID-19 outbreak. *PLOS ONE*, 15(4), e0231924. <https://doi.org/10.1371/journal.pone.0231924>
- Garfin, D. R., Silver, R. C., & Holman, E. A. (2020). The novel coronavirus (COVID-2019) outbreak: Amplification of public health consequences by media exposure. *Health Psychology*, 39(5), 355–357. <https://doi.org/10.1037/hea0000875>
- Goldberg, L. R., & Freyd, J. J. (2006). Self-reports of potentially traumatic experiences in an adult community sample: Gender differences and test-retest stabilities of the items in a brief betrayal-trauma survey. *Journal of Trauma & Dissociation*, 7(3), 39–63. https://doi.org/10.1300/J229v07n03_04
- Goodwin, R., Palgi, Y., Hamama-Raz, Y., & Ben-Ezra, M. (2013). In the eye of the storm or the bullseye of the media: Social media use during Hurricane Sandy as a predictor of post-traumatic stress. *Journal of Psychiatric Research*, 47(8), 1099–1100. <https://doi.org/10.1016/j.jpsychires.2013.04.006>
- Grace, R., & Tham, J. C. K. (2021). Adapting uncertainty reduction theory for crisis communication: Guidelines for technical communicators. *Journal of Business and Technical Communication*, 35(1), 110–117. <https://doi.org/10.1177/1050651920959188>
- Hall, B. J., Xiong, X., Yip, P. S. Y., Lao, C. K., Shi, W., Sou, E. K. L., Chang, K., Wang, L., & Lam, A. I. F. (2019). The association between disaster exposure and media use on post-traumatic stress disorder following Typhoon Hato in Macao, China. *European Journal of Psychotraumatology*, 10(1). <https://doi.org/10.1080/20008198.2018.1558709>
- Holman, E. A., Garfin, D. R., Lubens, P., & Silver, R. C. (2019). Media exposure to collective trauma, mental health, and functioning: Does it matter what you see? *Clinical Psychological Science*, 8(1), 111–124. <https://doi.org/10.1177/2167702619858300>
- Holman, E. A., Silver, R. C., Poulin, M., Andersen, J., Gil-Rivas, V., & McIntosh, D. N. (2008). Terrorism, acute stress, and cardiovascular health. *Archives of General Psychiatry*, 65(1), 73. <https://doi.org/10.1001/archgenpsychiatry.20076>
- Hua, J., & Shaw, R. (2020). Corona virus (COVID-19) "Infodemic" and emerging issues through a data lens: The case of China. *International Journal of Environmental Research and Public Health*, 17(7), 2309. <https://doi.org/10.3390/ijerph17072309>
- Jung, S., & Jung, S. (2022). The impact of the COVID-19 infodemic on depression and sleep disorders: Focusing on uncertainty reduction strategies and level of interpretation theory. *JMIR Formative Research*, 6(1), e32552. <https://doi.org/10.2196/32552>
- Lee, B., Wang, Y., Carlson, S. A., Greenlund, K. J., Lu, H., Liu, Y., Croft, J., Eke, P. I., Town, M., & Thomas, C. W. (2023). National, state-level, and county-level prevalence estimates of adults aged ≥18 years self-reporting a lifetime diagnosis of depression—United States. *Morbidity and Mortality Weekly Report*, 72, 644–650. <http://dx.doi.org/10.15585/mmwr.mm7224a1>
- Lemyre, L., Johnson, C., & Corneil, W. (2010). Psychosocial considerations for mass decontamination. *Radiation Protection Dosimetry*, 142(1), 17–23. <https://doi.org/10.1093/rpd/ncq273>
- Lin, W., Zhang, X., Song, H., & Omori, K. (2016). Corrigendum to "Health information seeking in the Web 2.0 age: Trust in social media, uncertainty reduction, and self-disclosure." *Computers in Human Behavior*, 61, 90. <https://doi.org/10.1016/j.chb.2016.01.040>
- Lindgren, S. (2017). *Digital media and society* (1st ed.). SAGE Publications.
- Liu, C., & Liu, Y. (2020). Media exposure and anxiety during COVID-19: The mediation effect of media vicarious traumatization. *International Journal of Environmental Research and Public Health*, 17(13), 4720. <https://doi.org/10.3390/ijerph17134720>
- McHugh, M. L. (2012). Interrater reliability: The kappa statistic. *Biochemia Medica*, 22(3), 276–82.
- Michl, L. C., McLaughlin, K. A., Shepherd, K., & Nolen-Hoeksema, S. (2013). Rumination as a mechanism linking stressful life events to symptoms of depression and anxiety: Longitudinal evidence in early adolescents and adults. *Journal of Abnormal Psychology*, 122(2), 339–352. <https://doi.org/10.1037/a0031994>
- Mongkhon, P., Ruengorn, C., Awiphan, R., Thavorn, K., Hutton, B., Wongpakaran, N., Wongpakaran, T., & Nochaiwong, S. (2021). Exposure to COVID-19-related information and its association with mental health problems in Thailand: Nationwide, cross-sectional survey study. *Journal of Medical Internet Research*, 23(2), e25363. <https://doi.org/10.2196/25363>
- National Comorbidity Survey. (NCS; 2017). <https://www.hcp.med.harvard.edu/ncs/index.php>
- Ng, Y. J., Yang, Z. J., & Vishwanath, A. (2018). To fear or not to fear? Applying the social amplification of risk framework on two environmental health risks in Singapore. *Journal of Risk Research*, 21, 1487–1501.
- Norris, F. H., Stevens, S. P., Pfefferbaum, B., Wyche, K. F., & Pfefferbaum, R. L. (2008). Community resilience as a metaphor, theory, set of capacities, and strategy for disaster readiness. *American Journal of Community Psychology*, 41(1–2), 127–150.
- Park, C. L., Russell, B. S., Fendrich, M., Finkelstein-Fox, L., Hutchison, M., & Becker, J. (2020). Americans' COVID-19 stress, coping, and adherence to CDC guidelines. *Journal of General Internal Medicine*, 35(8), 2296–2303. <https://doi.org/10.1007/s11606-020-05898-9>
- Pfefferbaum, B., & North, C. S. (2020). Mental health and the COVID-19 pandemic. *New England Journal of Medicine*, 383(6), 510–512. <https://doi.org/10.1056/nejmp2008017>
- Ramsden, P. (2015). *Viewing violent news on social media can cause trauma*. Paper presented at the British Psychological Society. <http://www.sciencedaily.com/releases/2015/05/150506164240.htm>
- Riehm, K. E., Holingue, C., Kalb, L. G., Bennett, D., Kapteyn, A., Jiang, Q., Veldhuis, C. B., Johnson, R. M., Fallin, M. D., Kreuter, F., Stuart, E. A., & Thrul, J. (2020). Associations between media exposure and mental distress among U.S. adults at the beginning of the COVID-19 pandemic. *American Journal of Preventive Medicine*, 59(5), 630–638. <https://doi.org/10.1016/j.amepre.2020.06.008>
- Rouder, J., Saucier, O., Kinder, R., & Jans, M. (2021). What to do with all those open-ended responses? Data visualization techniques for survey researchers. *Survey Practice*. <https://doi.org/10.29115/SP-2021-0008>
- Sathish, R., Manikandan, R., Silvia Priscila, S., Sara, B. V., & Mahaveerakannan, R. (2020). A report on the impact of information technology and social media on COVID-19. *2020 3rd International Conference on Intelligent Sustainable Systems (ICISS)*. <https://doi.org/10.1109/iciss49785.2020.9316046>
- Silver, R. C., Holman, E. A., Andersen, J. P., Poulin, M., McIntosh, D. N., & Gil-Rivas, V. (2013). Mental- and physical-health effects of acute exposure to media images of the September 11, 2001 attacks and the Iraq war. *Psychological Science*, 24(9), 1623–1634. <https://doi.org/10.1177/0956797612460406>
- Slone, M. (2000). Responses to media coverage of terrorism. *Journal of Conflict Resolution*, 44(4), 508–522. <https://doi.org/10.1177/0022002700044004005>
- Soroka, S., Fournier, P., & Nir, L. (2019). Cross-national evidence of a negativity bias in psychophysiological reactions to news. *Proceedings of the National Academy of Sciences of the United States of America*, 116(38), 18888–18892. <https://doi.org/10.1073/pnas.1908369116>
- Spitzer, R. L., Kroenke, K., Williams, J. B., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder. *Archives of Internal*

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

- Medicine*, 166(10), 1092. <https://doi.org/10.1001/archinte.166.10.1092>
- Srivastava, S. C., & Chandra, S. (2018). Social presence in virtual world collaboration: An uncertainty reduction perspective using a mixed methods approach. *MIS Quarterly*, 42(3), 779–803. <https://doi.org/10.25300/misq/2018/11914>
- Tashakkori, A., & Teddlie, C. (2010). *SAGE handbook of mixed methods in social & behavioral research*. SAGE Publications, Inc. <https://dx.doi.org/10.4135/9781506335193>
- Thompson, R. R., Jones, N. M., Holman, E. A., & Silver, R. C. (2019). Media exposure to mass violence events can fuel a cycle of distress. *Science Advances*, 5(4), eaav3502. <https://doi.org/10.1126/sciadv.aav3502>
- Wiederhold, B. K. (2021). How technology can help Post-COVID anxiety: A call to action. *Cyberpsychology, Behavior, and Social Networking*, 24(6), 365–366. <https://doi.org/10.1089/cyber.2021.29217.editorial>
- Yan, Y., & Gai, X. (2022). High achievers from low family socioeconomic status families: Protective factors for academically resilient students. *International Journal of Environmental Research and Public Health*, 19(23), 15882. <https://doi.org/10.3390/ijerph192315882>
- Yao, H. (2020). The more exposure to media information about COVID-19, the more distressed you will feel. *Brain, Behavior, and Immunity*, 87, 167–169. <https://doi.org/10.1016/j.bbi.2020.05.031>
- Zhang, L., Pan, R., Cai, Y., & Pan, J. (2021). The prevalence of post-traumatic stress disorder in the general population during the COVID-19 pandemic: A systematic review and single-arm meta-analysis. *Psychiatry Investigation*, 18(5), 426–433. <https://doi.org/10.30773/pi.2020.0458>

Author Note. Correspondence concerning this article should be addressed to Aleksandria Perez Grabow, California State University San Marcos, 333 S Twin Oaks Rd., San Marcos, CA 92096. Email: agrabow@csusm.edu.

A Model of Students' COVID-19 Stress and Burnout at a Minority Serving College

Jeanie K. Cox¹, Lorinda B. Camparo^{1*}, and C. Nathalie Yuen^{2*}

¹Department of Psychology, Whittier College

²Psychology, Health, and Community, The Evergreen State College

ABSTRACT. The coronavirus pandemic altered lives worldwide. COVID-19 negatively impacted mental health for college students (Zimmermann et al., 2021), with students experiencing increased feelings of anxiety, depression, and emotional distress, even after schools resumed in-person classes (Zheng et al., 2021). Previous research has investigated negative outcomes of COVID-19 (e.g., higher depression and anxiety, lower GPA), but few studies have investigated potential intermediate factors that might precede those negative outcomes. To examine potential intermediate factors between perceptions of COVID-19 and these well-documented negative outcomes, we used Koeske and Koeske's (1991) Demand→Stress→Burnout→Outcome model. Between September 2021 and February 2022, a total of 116 participants from a small minority-serving undergraduate liberal arts college participated in this study through the use of an online survey. Participants were asked to report their fear of and perceptions about the seriousness of COVID-19; these items served as the "demand" in our model. We next asked participants to report their Stress, Personal Burnout, and Work/School Burnout, and we conducted a path analysis to test the model. The resulting model was a good fit to the data, $\chi^2_{(5)} = 8.10$, $p = .15$, CFI = 0.99, TLI = 0.98, RMSEA = .07, SRMR = .05. Our findings suggest that helping students cope with the stress and burnout associated with COVID-19 may be a useful point of intervention for reducing anxiety and depression.

Keywords: COVID-19, college students, women, stress, burnout



Diversity badge earned for conducting research focusing on aspects of diversity.

Since the beginning of the coronavirus (COVID-19) pandemic, there have been over 771 million cases of COVID-19 and over 6.9 million deaths worldwide (World Health Organization, 2023). In the United States alone, there have been over 106.7 million cases of COVID-19 and 1,153,910 deaths, all taking a toll on the progression of everyday life (Centers for Disease Control and Prevention [CDC], 2023a). At times of high COVID-19 transmission, over 150,000 individuals within the United

States were being admitted to hospitals daily (Mathieu et al., 2022), leaving hospitals severely understaffed and lacking in the necessary resources to provide care for patients (Mitropoulos & Brownstein, 2022).

In addition to COVID-19's devastating physical effects, the pandemic itself seriously worsened symptoms of depression and anxiety (Russell et al., 2020; Salari et al., 2020; Thorndike et al., 2022), even among individuals who never caught the virus. In general, most adults

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

felt increased symptoms of anxiety from news about COVID-19, with misinformation and rumors exacerbating those symptoms (Salari et al., 2020). The pandemic also left many individuals without jobs, increasing the prevalence of socioeconomic stressors like food insecurity or housing (Thorndike et al., 2022). Strict lock-down/stay-at-home policies, social-distancing, and mask-wearing mandates, enforced in the United States and many other countries to curb the rapid spread of COVID-19 (Morelad et al., 2020) forced schools and businesses to transition to remote learning and work. Sadly, these stay-at-home measures also correlated with a significant increase in reports of domestic violence (Piquero et al., 2021; Usher et al., 2020), leading to even greater anxiety and depression as individuals were forced to spend more time with their abusers due to the lockdowns (Brown et al., 2020). Moreover, these stay-at-home/lockdown policies caused significant disruptions to the accessibility of mental health and other social services (Brunier & Drysdale, 2020). Consequently, many individuals went without any form of mental health care during extremely difficult circumstances created by the coronavirus pandemics.

Populations Most Affected

Of those who experienced negative outcomes due to the COVID-19 pandemic, ethnic minorities were disproportionately hard hit (Abuelgasim et al., 2020; Tai et al., 2021). For example, although People of Color (POC) made up 41.2% of front-line workers (Rho et al., 2020) leading to a greater COVID-19 exposure risk than White people (Abuelgasim et al., 2020; Tai et al., 2021), they had lower access to COVID-19 testing and/or health care than Whites people did (Abuelgasim et al., 2020; Tai et al., 2021). These factors contributed to the higher mortality rates seen within ethnic minority groups (Tai et al., 2021).

Women were also more negatively impacted by COVID-19, particularly in comparison to men (Aleksanyan & Weinman, 2022; see Connor et al., 2020, for a review; Russel et al., 2020; Zimmermann et al., 2021). This is because women in general—not just mothers—take on a greater share of caregiving roles, and this was especially true during the COVID-19 pandemic (Aleksanyan & Weinman, 2022; Connor et al., 2020; Russell et al., 2020). Women also comprise 64.4% of all workers in frontline industries, even prior to the COVID-19 pandemic, making them a staple in public-associated industries (Rho et al., 2020). In turn, women were more likely to be infected with the COVID-19 virus due to their caregiving roles and positions as frontline workers (Aleksanyan & Weinman, 2022). Additionally, because women make up 80% of all those diagnosed

with autoimmune disorders, they were at greater risk for severe illness as a result of contracting COVID-19 (Angum et al., 2020). It is not surprising then, that due to their caregiving roles and the greater awareness of the severity of COVID-19 due to their caregiving activities (Salari et al., 2020; Zheng et al., 2021; Zimmermann et al., 2021), women experienced higher levels of anxiety and depression as compared to men during the COVID-19 pandemic (Zimmermann et al., 2021).

Unique Challenges for College Students

Although college students did not experience the same threat to their physical health as POC, women, and older adults did, the COVID-19 pandemic still created many unique challenges for young adults (Gruber et al., 2020) and college students attempting to continue their education (von Keyserlingk et al., 2022; Zimmermann, 2021; see Wang et al., 2023, for a review). For example, college students who had to return to their parents' home as a result of the transition to remote learning might have felt a stalling or regression in developmental areas such as autonomy, sexual intimacy, and sexual and gender identity (Gruber et al., 2020). They might have felt role confusion if forced back into an unwelcome adolescent role living under their parents' roof again, or conversely, forced to prematurely assume adult roles, such as homeschooling younger siblings, caregiving for family members, shopping for the family to reduce COVID exposure to parents and grandparents, or having to live on their own and become economically self-sufficient.

Longitudinal research has found significant increases in college students' study-related stress (Keyserlingk et al., 2022) and depression and anxiety (Zimmermann et al., 2021) in the first few months after the lockdowns relative to the months immediately preceding the onset of COVID-19. Even after schools resumed in-person classes, students' mental health continued to suffer (Zheng et al., 2021), further impacting their academic performance as they reported feeling less motivated in their academic environments (Meeter et al., 2020; Sukhawathanakul et al., 2022). Consequently, many students decided to take time off from college or reduce the number of credits they took during the academic year (Aucejo et al., 2020). However, those who decided to take time off were less likely to return to their college or university. For those who decided to continue with their education online, many students were consumed with technology (Wright et al., 2020; Wright et al., 2023; Zimmermann et al., 2021). As social media usage and screen time increased as a result of the COVID-19 pandemic, students' mental and physical health suffered, potentially adding another layer of difficulty for students (Wright et al., 2020; Wright et al., 2023).

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

The Present Study: Modeling COVID-19 Stress and Burnout

In addition to the research examining the physical, psychological, emotional, and academic outcomes of the COVID-19 pandemic, some research has also examined the construct of Burnout as a response to prolonged Stress and as a precursor to COVID-19's negative outcomes (e.g., Çağış & Yıldırım, 2022; Gundogan, 2022; Yıldırım & Solmaz, 2020). This research has focused primarily on healthcare workers at the front line of the COVID-19 pandemic (Yıldırım & Solmaz, 2020). According to Kristensen et al. (2005), "personal burnout is the degree of physical and psychological fatigue and exhaustion experienced by the person" (p. 197). Additionally, individual's attribution of physical and psychological exhaustion to a specific domain of life (e.g., personal life, work, school, parenting) results from long-term exposure to emotionally demanding situations (i.e., stress). Thus, this definition suggests that chronic stress leads to burnout, and burnout is what leads to negative outcomes such as depression, anxiety, and poor academic performance. Consistent with this conceptualization, one study examining Turkish graduate and postgraduate university students' stress and burnout during the COVID-19 pandemic found that school burnout mediated the relationship between COVID-19 stress and students' depression and subjective well-being (Gundogan, 2022).

In the present study, we examined the relationship between perceptions of COVID-19, Stress and Burnout in an ethnically diverse sample of young-adult undergraduate students. We chose this age-group based on the previously discussed unique challenges faced by this population and research demonstrating the negative effect of the COVID-19 pandemic on college students' mental health (e.g., Gundogan, 2022; Zimmermann et al., 2021) despite their lower risk for serious illness or death due to the COVID-19 virus. Moreover, this research has also identified elevated levels of distress among women and Latinx college students immediately following the onset of the COVID-19 lock-downs (Zimmermann et al., 2021), but it did not include a measure of burnout as a potential mediator of these negative outcomes..

We further applied Koeske and Koeske's (1991) Demand→Stress→Burnout→Outcome model as a theoretical framework based on their argument that "[d]emands and/or stress produced negative health or behavioral outcomes indirectly through their impact on a state of exhaustion" (i.e., burnout), which they further argued was distinguishable from outcomes such as depression (Koeske & Koeske, 1991, p. 417). Although much of the research examining stress and burnout

during the pandemic has not included any theoretical model (but see Gundogan, 2022, and Yıldırım & Solmaz, 2020, for their discussions of Lazarus's Transactional Model of Stress), we felt Koeske and Koeske's model was appropriate based on its simplicity and its obvious consistency with definitions of burnout in the literature and current research on the relationship between stress, burnout, and various outcomes.

For our study, we conceptualized the COVID-19 pandemic as the demand in Koeske and Koeske's model, and examined participants' self-reports of Stress and Burnout as they related to the participants' perception of the severity of the COVID-19 pandemic and Fear of COVID-19. Although Stress and Burnout may seem similar, they are very different concepts. Stress refers to "perceived tension between demands and resources" (Koeske & Koeske, 1991, p. 416). That is, as perceptions of a demand increase (i.e., participants who report perceptions of greater Seriousness of COVID-19 and a greater Fear of COVID-19), the individual's resources become more and more depleted, leading to greater stress. In contrast, as noted above, burnout is a feeling of physical and psychological exhaustion that arises in response to chronic stressors (Kristensen et al., 2005). According to this distinction and Koeske and Koeske's model, stress precedes burnout, and as stress increases, so does burnout (Campos et al., 2011; Maroco & Campos, 2012).

Based on Koeske and Koeske's (1991) model and previous research on the populations that experienced more negative outcomes due to COVID-19, we predicted the following:

1. **Hypothesis 1:** College students of color would report greater Fear of COVID-19 and greater perceptions of the Seriousness of COVID-19, higher levels of Stress, Personal Burnout, and Work/School Burnout than would White college students. We further predicted there would be a positive relationship between their fear and perceptions of COVID-19, Stress, Personal Burnout, and Work/School Burnout.
2. **Hypothesis 2:** Women college students would report greater Fear of COVID-19 and greater perceptions of the Seriousness of COVID-19, higher levels of Stress, Personal Burnout, and Work/School Burnout than would men college students. We further predicted there would be a positive relationship between their perceptions of COVID-19, Stress, Personal Burnout, and Work/School Burnout.
3. **Hypothesis 3:** We predicted that greater Fear of COVID-19 and greater perceptions of the Seriousness of COVID-19 for the college sample

overall would be positively associated with greater Stress, which would be positively associated with greater Personal Burnout and Work/School Burnout.

It is important to note that we did not include outcome measures of depression, anxiety, or other negative effects of COVID-19 in our survey for several reasons: (a) a desire to reduce the length of the survey based on students' expressed complaints about already having to respond to too many surveys; (b) a desire to reduce the likelihood of including upsetting or triggering survey questions; and (c) the fact that these outcomes have already been extremely well-documented in the literature. Moreover, Koeske and Koeske stated that "one advantage of the full model is its ability to integrate a set of studies, each of which uses different measures or elaborates different portions of the model" (p. 417). In the present study, we focused only on the Demand→Stress→Burnout portion of the model.

Method

Participants

A total of 116 participants from a small (approximately 1100 students) minority-serving undergraduate liberal arts college participated in this study, with 50.4% of participants self-identifying as commuter students. Participants ranged in age from 18 to 31 ($M = 19.8$, $SD = 1.8$), 72 participants (62%) self-identified as women with the remainder self-identifying as men except for one participant who self-identified as nonbinary. Sixty-nine percent of participants self-identified as POC: Hispanic/Latinx ($n = 46$), White/European ($n = 36$), Biracial ($n = 20$), Black/African American ($n = 7$), East/Southeast Asian ($n = 7$), and Middle Eastern/North African ($n = 1$). See Table 1 for a full description of participant demographics. During the data collection period, the college offered in-person, hybrid, and remote course options, while also mandating masks and COVID-19 vaccinations. Participants received extra credit for their participation in the study.

Measures

Fear of COVID-19

Participants' Fear of COVID-19 was measured using an individual question, "How afraid of COVID-19 are you?" with scale points ranging from 1 (*not afraid at all*) to 5 (*extremely afraid, keeps me up at night*). Participants were instructed that they could click up to two scale points in response to the question, in order to identify whether participants might be experiencing simultaneous ambivalence about the virus (Camparo & Camparo, 2021). For example, some participants might have been simultaneously extremely afraid of the impact of the virus on their diabetic grandmother's health, but not at

TABLE 1
Participant Demographics

Demographics	N	%
Age		
18	24	20.7%
19	33	28.4%
20	28	24.1%
21	16	13.8%
22	10	8.6%
23	2	1.7%
25	2	1.7%
31	1	0.9%
Year in school		
Freshman/1st year	34	29.3%
Sophomore/2nd year	30	25.9%
Junior/3rd year	37	31.9%
Senior/4th year	15	12.9%
Extracurricular Participation		
Yes	79	68.1%
No	37	31.9%
Living on or off campus		
On campus	56	48.3%
Off campus	59	50.9%
Off Campus - who do you live with?		
Parents/siblings	36	31.0%
Friends/roommates	12	10.3%
Extended family	4	3.4%
Significant other	5	4.3%
Alone	2	1.7%
Other	1	0.9%
Employment Status		
Employed, full time	3	2.6%
Employed, part time	25	21.6%
Work study on campus	19	16.4%
Work study on campus & off campus job	12	10.3%
Not employed, looking for work	25	21.6%
Not employed, not looking for work	32	27.6%
Gender		
Female	70	60.3%
Male	45	38.8%
Nonbinary	1	0.9%
Race/Ethnicity		
Black/African American	7	6.0%
White/European	36	31.0%
Hispanic/Latinx	47	40.5%
East/Southeast Asian	6	5.2%
Biracial	18	15.5%
Middle Eastern/North African	1	0.9%
Missing/N.A.	1	0.9%
Relationship Status		
Married	1	0.9%
In a relationship with a significant other	46	39.7%
Single, never married	69	59.5%
Vaccination Status		
Fully Vaccinated (post two weeks of final dose)	114	98.3%
Partially vaccinated (one dose of a two dose vaccine or not past two weeks)	1	0.9%
Not vaccinated and do not plan to be	1	0.9%

all afraid of the impact of the virus on their own health. This would constitute simultaneously fearing and not fearing COVID-19, an emotional state we believed some participants might experience, and could be important when interpreting findings. If two scale points were chosen, participants were asked to provide a qualitative response to explain their choices.

Seriousness of COVID-19

Participants' perceptions of the Seriousness of the COVID-19 virus relative to the flu virus was measured using an individual question, "How much do you feel COVID-19 compares to the flu?" with scale points ranging from 1 (*not serious/dangerous at all*) to 5 (*extremely serious/dangerous*). Participants were again instructed that they could pick up to two scale points when answering the question, in order to identify whether participants were experiencing any simultaneous ambivalence in relation to this question (Camparo & Camparo, 2021). If two scale points were chosen, participants were asked to provide a qualitative response to explain their choices.

Stress

Participants' stress was measured using the Perceived Stress Scale (Cohen et al., 1983). Using a 5-point scale ranging from 1 (*never*) to 5 (*very often*), participants responded to 10 questions related to how "unpredictable, uncontrollable, and overloaded" the participants felt their lives to be (Cohen et al., 1998). Four items (items 4, 5, 7, and 8) were reverse coded. Higher scores indicate higher perceived Stress with scores ranging from 10 to 50. In the current study, Cronbach's alpha was .88.

Personal Burnout

Participants' Personal Burnout was measured using the Copenhagen Burnout Inventory (Kristensen et al., 2005). Personal Burnout was defined as a "state of prolonged physical and psychological exhaustion" (Kristensen et al., 2005). Using a 5-point scale ranging from 1 (*always*) to 5 (*never/almost never*), participants were instructed to choose one option in response to six questions asking about their levels of exhaustion. Example items included: "How often do you feel tired?" and "How often do you feel worn out?" Total scores were averaged across the six items, with scores ranging from 0 to 100. Higher scores indicate higher levels of personal burnout. In the current study, Cronbach's alpha was .90.

Work/School Burnout

Participants' Work/School Burnout, or a state of "prolonged state of physical or psychological exhaustion" in relation to an individual's work or school, was also measured using the Copenhagen Burnout Inventory (Kristensen et al., 2005). However, the phrasing of

some questions was changed to include school-related burnout as well as work-related burnout. For example, one question was originally phrased as, "Do you feel burnt out because of your work," and this question was changed to, "Do you feel burnt out because of your work/school?" Using a 5-point scale ranging from 1 (*always*) to 5 (*never/almost never*), participants were instructed to choose one option in response to seven questions which related to their feelings of being burnt out from their work or school. Example items included: "Is your work/school emotionally exhausting?" and "Do you feel that every working/school hour is tiring for you?" The last four questions were reverse coded. Higher scores indicate higher levels of Work/School Burnout. In the current study, Cronbach's alpha was .91.

Other Measures

In addition to the previous measures discussed, participants were asked questions about their relationship status, parental status (Berry & Jones, 1995), and their relationships with their children, as well as opinions about masks and COVID-19 vaccinations; these items were not included in the present study.

Procedure

The study was determined to be exempt from a full review by the college's Institutional Review Board due to the low-risk nature of the study. However, participants were provided with contact information for the undergraduate campus's counseling center if they felt any discomfort or negative effects from the survey. Participants were recruited through different psychology courses and sports teams on the undergraduate campus, due to the limited availability of recruitment methods in place at the time on campus and also to help limit the chances of participants responding to the survey more than once. Data were collected anonymously through an online survey on the platform SoGoSurvey (recently rebranded to the name Sogolytics) between September 2021 and February 2022. Before participants were able to complete the survey, they digitally signed an informed consent form by selecting, "I agree," if they wanted to continue onto the survey, or "I do not agree," which would immediately exit the survey. The survey began with a demographic questionnaire that allowed participants to write in their responses to most questions (e.g., age, gender identity, racial/ethnic identity). After completing the demographic portion of the questionnaire, if participants indicated that they had children, they were taken to a portion of the questionnaire regarding their relationship with their children. Once participants finished this portion of the questionnaire or if they indicated that they did

not have children, participants then answered questions regarding COVID-19, COVID-19 vaccines, and use of masks to mitigate exposure to COVID-19. In this section, participants were instructed that they could click on one or two scale points, the latter of which would provide a measure of their simultaneous ambivalence on the topic, if applicable (Camparo & Camparo, 2021). If they chose two scale points (i.e., an expression of simultaneous ambivalence), they were then asked to provide a qualitative response to explain their choices. Following the COVID-19 related questions, participants then answered questions assessing their Personal Burnout, Work/School Burnout, and Stress levels. For these measures, participants were instructed that they could choose only one response. Once participants completed the survey, they were taken to a Thank You page with no identifying information and were then able to exit the survey platform. Participants were instructed to take a screenshot of the Thank You page and submit it to their instructor for extra credit. The survey lasted approximately 15 minutes.

Results

Preliminary Analysis

We provided the opportunity for participants to demonstrate simultaneous ambivalence on questions regarding COVID-19 (Camparo & Camparo, 2021); however, only 2% of participants showed simultaneous ambivalence. Due to the extremely small number of participants demonstrating simultaneous ambivalence on this topic, it was not analyzed in this study.

Results for Hypothesis 1: Ethnic Differences

To examine ethnic differences in participants' perceptions of COVID-19, participants' self-reports of their ethnic identity were recoded as "white/non-Hispanic" ($N = 36$) and "POC" (People of Color; $N = 80$). We used one-tailed independent-samples t tests to examine differences in the two groups' Fear of COVID-19, perceptions of the Seriousness of COVID-19, Stress, Personal Burnout, and Work/School Burnout (see Table 2). Although we hypothesized that college students of color would report perceptions of greater Seriousness of COVID-19 and greater Work/School Burnout, college students of color and Whites' reports on these factors did not differ (for all associations, $p > .08$).

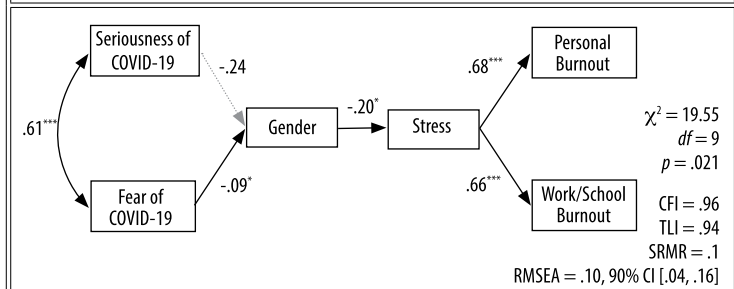
Results for Hypothesis 2: Gender Differences

As stated above, all but one participant self-identified as either female ($N = 72$) or male ($N = 44$). Due to the small sample size for nonbinary, data from this participant were not included in the analyses related to gender differences. Again, we used one-tailed independent-samples t tests

to examine gender differences in Fear of COVID-19, perceptions of the Seriousness of COVID-19, Stress, Personal Burnout, and Work/School Burnout (see Table 3). To test models for gender differences in the Demand→Stress→Burnout model as well as the full model, we used R version 4.2.2 (R Core Team, 2022), RStudio version RStudio 2022.12.0+353 (Posit team, 2022), and the lavaan package (Rosseel, 2012). Our preliminary analyses supported the idea that women were more negatively impacted by COVID-19 through greater feelings of Stress and Burnout. However, when

FIGURE 1

Path Analysis Model of Associations Between COVID, Gender, and Burnout Constructs



Note. $N = 114$. Values reflect standardized regression coefficients. Dashed lines in gray represent nonsignificant relations.

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

TABLE 2

POC vs. White Seriousness and Fear of COVID-19, Personal Burnout, Work/School Burnout, and Stress t -Test Results

Variable	POC		White		$t(111)$	p	d
	M	SD	M	SD			
Seriousness of COVID-19	3.86	0.94	3.53	1.25	1.40	.166	0.31
Fear of COVID-19	2.92	1.05	2.57	1.18	1.60	.112	0.32
Personal Burnout	59.85	22.14	52.78	22.43	1.58	.118	0.32
Work/School Burnout	60.95	24.35	54.66	22.16	1.32	.191	0.27
Stress	3.24	0.72	2.98	0.85	1.68	.095	0.34

TABLE 3

Female vs. Male Seriousness and Fear of COVID-19, Personal Burnout, Work/School Burnout, and Stress t -Test Results

Variable	Women		Men		$t(112)$	p	d
	M	SD	M	SD			
Seriousness of COVID-19	4.03	0.80	3.30	1.23	3.51	<.001	0.74
Fear of COVID-19	3.05	0.95	2.36	1.14	3.33	.001	0.67
Personal Burnout	63.87	20.46	47.92	22.17	3.92	<.001	0.76
Work/School Burnout	63.38	22.24	52.03	24.93	2.53	.013	0.49
Stress	3.31	0.68	2.93	0.85	2.62	.010	0.51

gender was entered, the model (see Figure 1) was not a good fit for the data, $\chi^2_{(9)} = 19.55, p = .02, CFI = 0.96, TLI = 0.94, RMSEA = .10, SRMR = .10$.

Results for Hypothesis 3: Relationship Between Fear of COVID-19/Seriousness of COVID-19 and, Stress, Personal Burnout, and Work/School Burnout

To examine the relationship between the two demand factors (Fear of COVID-19 and Perceptions of the Seriousness of COVID-19) and Stress, Personal Burnout, and Work/School Burnout, we calculated one-tailed Pearson Product-Moment Correlations (see Table 4). The associations between the perceptions of the Seriousness of COVID-19 and Fear of COVID-19 and Burnout and Work-School Burnout, mediated by Stress, were analyzed using structural equation modeling. COVID-19 concern and COVID-19 fear were positively associated, $r(114) = .61, p < .001$. When Seriousness of COVID-19 and Fear of COVID-19 were regressed on Stress, the associations were not significant. When Stress was regressed on Personal Burnout and Work/School Burnout together, the associations were significant

and positive. The association for Stress on Personal Burnout was $\beta = .66, SE = 1.87, z = 10.60, p < .001$, and the association for Stress on Work/School Burnout was, $\beta = .66, SE = 1.87, z = 10.86, p < .001$. The indirect effect of Seriousness of COVID-19 and Fear of COVID-19 on Personal Burnout and Work/School Burnout, through Stress was significant, $\beta = .17, SE = 1.48, z = 2.38, p = .02$. The resulting model (see Figure 2) was a good fit to the data, $\chi^2_{(5)} = 8.10, p = .15, CFI = 0.99, TLI = 0.98, RMSEA = .07, SRMR = .05$.

Discussion

There is no doubt that COVID-19 created significant demands on many important facets of life. Although COVID-19's impact was felt around the globe by individuals of all ages and demographic groups, it posed unique challenges for college students and was particularly harmful to POC and women. This study is one of the first to examine the relationship between fear of COVID-19, concern about the seriousness of COVID-19, and stress and burnout in a sample of undergraduate students from a minority-serving institution. Most research examining stress and burnout due to COVID-19 has focused on front-line health-care workers, the general public, or older graduate-level university students (Çağış & Yıldırım, 2022; Gundogan, 2022; Yıldırım & Solmaz, 2020). Despite college students' lower risk for severe physical effects from the COVID-19 virus, the pandemic posed serious challenges for their development in several key domains (Gruber et al., 2020), necessitating a greater understanding of COVID-19 stress and burnout in this age group.

Based on previous research, we hypothesized that POC in a college sample would report greater Fear of COVID-19 and greater perceptions of the Seriousness of COVID-19; higher levels of Stress, Personal Burnout, and Work/School Burnout; and a positive relationship between their perceptions of COVID-19, Stress, Personal Burnout, and Work/School Burnout. Our hypotheses for gender differences were fully supported. Findings regarding gender differences were consistent with previous findings that women experienced significantly higher levels of distress, anxiety and depression (i.e., negative outcomes based on Koeske and Koeske's model, 1991) as compared to men during the COVID-19 pandemic (Aleksanyan & Weinman, 2022; Russell et al., 2020; Zimmermann et al., 2021). As previously stated, adult women are overrepresented in both frontline industries and caregiving roles, and are more likely to have an autoimmune disorder (Aleksanyan & Weinman, 2022; Angum et al., 2020; Connor et al., 2020; Rho et al., 2020; Russell et al., 2020). Consequently, adult women may have a heightened awareness of the short- and

TABLE 4

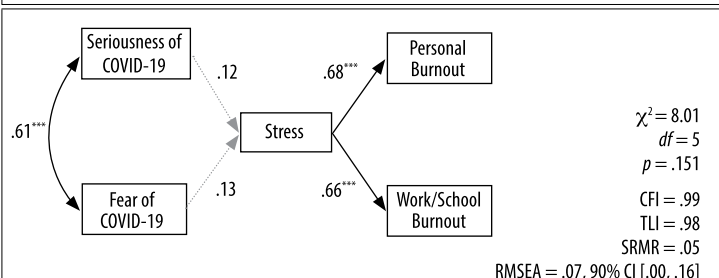
Intercorrelations of Seriousness and Fear of COVID-19, Personal Burnout, Work/School Burnout, and Stress

Variable	1	2	3	4	5
Seriousness of COVID-19	—				
Fear of COVID-19	.61***	—			
Personal Burnout	.22**	.17*	—		
Work/School Burnout	.27**	.14	.82***	—	
Stress	.20*	.20*	.67***	.68***	—

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

FIGURE 2

Path Analysis Model of Associations Between COVID and Burnout Constructs



Note. $N = 114$. Values reflect standardized regression coefficients. Dashed lines in gray represent nonsignificant relations.
 * $p < .05$. ** $p < .01$. *** $p < .001$.

long-term health consequences of COVID-19 and a deeper understanding of the severity and seriousness of COVID-19 (Salari et al., 2020; Zheng et al., 2021; Zimmermann et al., 2021). Our results suggest that these gender differences for adult women may be applicable to women of college age as well. Heightened perceptions of the seriousness of COVID-19 could lead to greater stress, as these individuals could feel as though they have little control over certain aspects of their lives due to COVID-19, or due to the pandemic rearranging living situations. These stressors could then develop into chronic stress, due to the unpredictability of different variants arising during the pandemic and length of the pandemic, and the increased responsibilities for their homes and loved ones. Increased time spent caring for others on top of academic demands could also lead to the physical and emotional exhaustion characteristic of both Personal Burnout and Work/School Burnout.

In contrast, for the effects of ethnicity, our hypotheses were not fully supported. College students of color reported higher levels of Stress than did Whites; however, they did not report significantly greater Fear of COVID, perceptions of the Seriousness of COVID, Personal Burnout, or Work/School Burnout. This lack of significant ethnic differences was surprising given that workers in frontline industries are disproportionately POC (POC accounting for 41.2%; Rho et al., 2020) and the abundance of research finding higher incidence of negative outcomes, including mortality, for POC due to COVID (Abuelgasim et al., 2020; Tai et al., 2021). One possible explanation for our lack of ethnic differences could be the sample size for our White participants ($N = 36$). Analyses for Fear of COVID and Personal Burnout approached significance (i.e., p for Fear of COVID = .07, Cohen's $d = 0.30$; p for Personal Burnout = .06, Cohen's $d = 0.32$), but might not have reached significance due to the small White sample. Also, in our college sample, 72.5% of participants had some form of employment or were looking for work. Consequently, college students of color and White participants may have had similar perceptions of COVID-19's impact on their employment status or income, leading to possible similarities in perceptions of COVID-19 and burnout. Another possible explanation for the lack of significant ethnic differences in Fear of COVID, perceptions of the Seriousness of COVID, Personal Burnout and Work/School Burnout, could be college students of colors' experience with a large number of demands in their daily lives due to generally lower SES, discrimination, and prejudice in American society. Consequently, college students of color may be more successful at managing fear of COVID-19 and burnout from the COVID-19 pandemic than White people are,

or they may be more likely to minimize reports of Fear of COVID and burnout. Future research should include larger samples of White and POC participants as well as a measure of resilience to explore these explanations.

To provide a theoretical framework for our examination of the relationship between greater Fear of COVID-19 and greater perceptions of the Seriousness of COVID-19, Stress, and Personal Burnout and Work/School Burnout, we drew on Koeske and Koeske's (1991) Demand→Stress→Burnout→Outcome model. We predicted a positive relationship between each of these factors, and our predictions were supported. There was an indirect association between our two demand factors (Fear of COVID-19 and Seriousness of COVID-19) and our two Burnout factors (Personal Burnout and Work/School Burnout) through Stress. This finding suggests that interventions to reduce Stress might serve to also reduce Burnout. Nevertheless, given that data were collected at only one time point, and we did not include outcome variables, no causal inferences can be drawn and no mediation effects of stress on COVID-19 outcomes could be analyzed.

Limitations, Strengths, and Future Directions

Several limitations and strengths of this study should be noted. One of the most prominent limitations of this study was the small sample size, which consisted of a majority of women POC participants, potentially reducing the generalizability of some findings and limiting power for other analyses to reach significance. Although the sample size of this study was small, the participants self-reported a wide range of ethnicities making for a diverse and more representative sample. Additionally, although the study took place within a fairly brief three-month time frame beginning during the fall 2021 academic semester, due to extreme fluctuations in infection, hospitalization, and death rates, emergence of new variants with different degrees of contagion and seriousness, and the relatively recent access to COVID-19 vaccinations and boosters during the course of this study, the COVID-19 pandemic was a very dynamic demand. Because participants were still actively experiencing the effects of the COVID-19 pandemic, some participants might have resorted to reflecting on how things were during the lockdown portion of the pandemic (during spring 2020) or even reflecting upon their more recent experiences with COVID-19 (some taking place shortly before the start of this study (during summer 2021). Students also might have felt increased levels of stress and burnout not only from COVID-19, but also other large-scale events happening at the time including war, political unrest, and financial burden from inflation (Leach et al., 2021; Weierstall-Pust et al., 2022).

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

Another factor that could have impacted the outcome of this study was that the undergraduate campus where this study took place required all students to be fully vaccinated against the COVID-19 virus and to wear masks in all shared spaces. These requirements could have led participants to have a greater understanding of the COVID-19 pandemic—or perhaps greater Personal Burnout or Work/School Burnout—leading to higher perceptions of Seriousness and/or Fear of COVID-19 than a different college sample could have.

The rate at which COVID-19 changed and evolved might also have served as a strength for the study. Due to the rapid changes, participants were still actively experiencing COVID-19 through some classes being taught remotely and mask requirements for in-person classes. Also, the Omicron variant had just begun to surge, spiking cases and leading to classes on many college campuses to return to completely remote learning for a short period of time (CDC, 2023b; Elamroussi, 2021; Rashad et al., 2022). This allowed participants to not only reflect on their early experiences with COVID-19, but also their current lived experiences.

As there has been a vast amount of research investigating the physical, psychological, and academic outcomes of the COVID-19 pandemic, future studies should examine the mediating or moderating factors that may lead to these negative outcomes. With future research gaining a better understanding of the path from experiencing COVID-19 to stress and burnout, methods to potentially mitigate these outcomes can be developed. To have the most successful and generalizable results, future studies should use larger sample sizes with a more even distribution of male and female participants and POC and White participants. Future studies should also include younger participants in order to investigate at what age female-identifying participants begin feeling greater levels of stress and burnout than male-identifying participants. It will also be imperative that future research account for the changes in the COVID-19 pandemic as infection, hospitalization, and mortality rates continue to fluctuate and the virus itself continues to change.

Conclusion

This study was designed to investigate how COVID-19, as a specific demand, impacted individuals' Stress and Burnout. Response from female participants showed their significantly heightened levels of Stress and Burnout, revealing the need for an increase in support and intervention to reduce Stress and Burnout for this specific population. By understanding the intermediate steps (Stress and Burnout) that lead to the well-documented negative outcomes, interventions could be implemented to mitigate the severity of the outcomes.

References

- Abuelgasim, E., Saw, L. J., Shirke, M., Zeinah, M., & Harky, A. (2020). COVID-19: Unique public health issues facing Black, Asian, and minority ethnic communities. *Current Problems in Cardiology*, 45(8), 1–10. <https://doi.org/10.1016/j.cpcardiol.2020.100621>
- Aleksanyan, Y., & Weinman, J. P. (2022). Women, men and COVID-19. *Social Science & Medicine*, 294, 1–5. <https://doi.org/10.1016/j.socscimed.2022.114698>
- Angum, F., Khan, T., Kaler, J., Siddiqui, L., & Hussain, A. (2020). The prevalence of autoimmune disorders in women: A narrative review. *Cureus*, 12(5). <https://doi.org/10.7759/cureus.8094>
- Aucejo, E. M., French, J., Araya, M. P. U., & Zafar, B. (2020). The impact of COVID-19 on student experiences and expectations: Evidence from a survey. *Journal of Public Economics*, 191, 1–15. <https://doi.org/10.1016/j.jpubeco.2020.104271>
- Berry, J. D., & Jones, W. H. (1995). The Parental Stress Scale: Initial psychometric evidence. *Journal of Social and Personal Relationships*, 12(3), 463–472. <https://doi.org/10.1177/0265407595123009>
- Brown, S. M., Doom, J., R., Lechuga-Peña, S., Watamura, S. E., & Koppels, T. (2020). Stress and parenting during the global COVID-19 pandemic. *Child Abuse & Neglect*, 110, 1–14. <https://doi.org/10.1016%2Fj.chiabu.2020.104699>
- Brunier, A., & Drysdale, C. (2020, October 5). COVID-19 disrupting mental health services in most countries. WHO survey. World Health Organization. <https://www.who.int/news/item/05-10-2020-covid-19-disrupting-mental-health-services-in-most-countries-who-survey>
- Çağış, Z. G., & Yıldırım, M. (2022). Understanding the effect of fear of COVID-19 on COVID-19 burnout and job satisfaction: A mediation model of psychological capital. *Psychology, Health & Medicine*, 28(1), 279–289. <https://doi.org/10.1080/13548506.2022.2077970>
- Camparo, J. C., & Camparo, L. B. (2021). Are political-opinion pollsters missing ambivalence: "I love Trump"... "I hate Trump". *PLoS ONE*, 16(3), e0247580. <https://doi.org/10.1371/journal.pone.0247580>
- Campos, J., Zucoloto, M. L., Bonafé, F., Jordani, P. C., & Maroco, J. (2011). Reliability and validity of self-reported burnout in college students: A cross randomized comparison of paper-and-pencil vs. online administration. *Computers in Human Behavior*, 27(5), 1875–1883. <https://doi.org/10.1016/j.chb.2011.04.011>
- Centers for Disease Control and Prevention (2023a). COVID-19 data tracker. <https://COVID.cdc.gov/COVID-data-tracker/#datacracker-home>
- Centers for Disease Control and Prevention (2023b). CDC museum COVID-19 timeline. <https://www.cdc.gov/museum/timeline/covid19.html>
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24(4), 386–396. <https://doi.org/10.2307/2136404>
- Cohen, S., & Williamson, G. (1998). Perceived stress in a probability sample of the United States. In S. Spacapan & S. Oskamp (Eds.), *The social psychology of health*. Sage.
- Connor, J., Madhavan, S., Mokashi, M., Amanuel, H., Johnson, N. R., Pace, L. E., & Bartz, D. (2020). Health risks and outcomes that disproportionately affect women during the COVID-19 pandemic: A review. *Social Science & Medicine*, 266, 1–7. <https://doi.org/10.1016/j.socscimed.2020.113364>
- Elamroussi, A. (2021, December 31). Omicron surge is 'unlike anything we've ever seen,' expert says. *CNN Health*. <https://www.cnn.com/2021/12/30/health/us-coronavirus-thursday/index.html>
- Gruber, J., Prinstein, M. J., Clark, L. A., Rottenberg, J., Abramowitz, J. S., Albano, A. M., Aldao, A., Borelli, J. L., Chung, T., Davila, J., Forbes, E. E., Gee, D. G., Hall, G. C. N., Hallion, L. S., Hinshaw, S. P., Hofmann, S. G., Hollon, S. D., Joormann, J., Kazdin, A. E., ... Weinstock, L. M. (2021). Mental health and clinical psychological science in the time of COVID-19: Challenges, opportunities, and a call to action. *American Psychologist*, 76(3), 409–426. <https://doi.org/10.1037/amp0000707>
- Gundogan, S. (2022). The relationship of COVID-19 Student stress with school burnout, depression and subjective well-being: Adaptation of the COVID-19 student stress scale into Turkish. *The Asia-Pacific Education Researcher*, 32, 165–176. <https://doi.org/10.1007/s40299-021-00641-2>
- Koeske, G. F., & Koeske, R. D. (1991). Student "burnout" as a mediator of the stress-outcome relationship. *Research in Higher Education*, 32(4), 415–431.
- Kristensen, T. S., Borritz, M., Villadsen, E., & Christensen, K. B. (2005). *The Copenhagen Burnout Inventory: A new tool for the assessment of burnout. Work & Stress*, 19(3), 192–207. <https://doi.org/10.1080/02678370500297720>
- Leach, C. R., Rees-Punia, E., Newton, C. C., Chantaprasopsuk, S., Patel, A. V., & Westmaas, J. L. (2021). Stressors and other pandemic-related predictors of prospective changes in psychological distress. *Lancet Regional Health* -

- Americas, 4, 100069. <https://doi.org/10.1016/j.jana.2021.100069>
- Mathieu, E., Ritchie, H., Rod s-Guirao, L., Appel, C., Giattino, C., Hasell, J., Macdonald, B., Dattani, S., Beltekian, D., Ortiz-Ospina, E., & Roser, M. (2022). Coronavirus (COVID-19) hospitalizations. *Our World in Data*. <https://ourworldindata.org/COVID-19-hospitalizations#how-many-people-are-in-hospital-due-to-COVID-19-at-a-given-time>
- Maroco, J., & Campos, J. (2012). Defining the student burnout construct: A structural analysis from three burnout inventories. *Psychological Reports: Human Resources & Marketing*, 111(3), 814–830. <https://doi.org/10.2466/14.10.20.PRO.111.6.814-830>
- Meeter, M., Bele, T., Den Hartogh, C. F., Bakker, T., De Vries, R. E., & Plak, S. (2020). College students' motivation and study results after COVID-19 stay-at-home orders. *PsyArXiv*. <https://doi.org/10.31234/osf.io/kn6v9>
- Mitropoulos, A., & Brownstein, J. (2022, January 9). US hospitals strained with influx of patients amid latest COVID-19 surge, staffing shortages. ABC News. <https://abcnews.go.com/Health/us-hospitals-strained-influx-patients-amid-latest-COVID-19/story?id=82112893>
- Morelad, A., Herlihy, C., Tynan, M.A., Sunshine, G., McCord, R. F., Hilton, C., Poovy, J., Werner, A. K., Jones, C. D., Fulmer, E. B., Gundlapalli, A. V., Strosnider, H., Potvien, A., Garc a, M. C., Honeycutt, S., Baldwin, G., CDC Public Health Law Program; & CDC COVID-19 Response Team, Mitigation Policy Analysis Unit (2020). Timing of state and territorial COVID-19 stay-at-home orders and changes in population movement – United States, March 1–May 31, 2020. *Morbidity and Mortality Weekly Report (MMWR)*, 69(35), 1198–1203. <http://dx.doi.org/10.15585/mmwr.mm6935a2>
- Piquero, A. R., Jennings, W. G., Jemison, E., Kaukinen, C., & Knaul, F. M. (2021). Domestic violence during the COVID-19 pandemic- Evidence from a systematic review and meta-analysis. *Journal of Criminal Justice*, 74, 1–10. <https://doi.org/10.1016/j.jcrimjus.2021.101806>
- Rashad, O., Zappelli, S., & Federis, M. (2022, January 31). Colleges reassess safety plans after omicron surge. *CalMatters*. <https://calmatters.org/education/higher-education/college-beat-higher-education/2022/01/california-colleges-omicron-safety-plans/>
- Rho, H. J., Brown, H., & Fremstad, S. (2020). A basic demographic profile of workers in frontline industries. *Center for Economic and Policy Research*. <https://www.eeoc.gov/sites/default/files/2021-04/4-28-21%20Meeting%20-%2005%20Ramirez%20-%20Supporting%20Materials.pdf>
- Rosseel, Y. (2012). lavaan: An R Package for Structural Equation Modeling. *Journal of Statistical Software*, 48(2), 1–36. <https://doi.org/10.18637/jss.v048.i02>
- Russell, B. S., Hutchison, M., Tambling, R., Tomkun, A. J., & Horton, A. L. (2020). Initial challenges of caregiving during COVID-19: Caregiver burden, mental health, and the parent-child relationship. *Child Psychiatry & Human Development*, 51, 671–682. <https://doi.org/10.1007/s10578-020-01037-x>
- Salari, N., Hosseini-Far, A., Jalali, R., Vaisi-Raygani, A., Rasoulpoor, S., Mohammadi, M., Rasoulpoor, S., & Khaledi-Paveh, B. (2020). Prevalence of stress, anxiety, depression among the general population during the COVID-19 pandemic: A systematic review and meta-analysis. *Globalization and Health*, 16(57), 1–11. <https://doi.org/10.1186/s12992-020-00589-w>
- Sukhawathanakul, P., Hadwin, A., Rostampour, R., Olivares, M. B., & Shostak, K. (2022). Studying under stress: The effect of COVID-19 psychological distress on academic challenges and performance of post-secondary students. *Journal of College Student Retention: Research, Theory & Practice*, 0(0), 1–14. <https://doi.org/10.1177/15210251221104245>
- Tai, D. B. G., Sia, I. G., Doubeni, C. A., & Wieland, M. L. (2021). Disproportionate impact of COVID-19 on racial and ethnic minority groups in the United States: A 2021 update. *Journal of Racial and Ethnic Health Disparities*, 9, 2334–2339. <https://doi.org/10.1007/s40615-021-01170-w>
- Thorndike, A. N., Fung, V., McCurley, J. L., Clark, C. R., Howard, S., & Levy, D. E. (2022). COVID-19 stressors and one-year changes in depression and anxiety in a longitudinal cohort of low-income adults in the United States. *Preventive Medicine Reports*, 26, 1–4. <https://doi.org/10.1016/j.pmedr.2022.101730>
- Usher, K., Bhullar, N., Durkin, J., Giamfi, N., & Jackson, D. (2020). Family violence and COVID-19: Increased vulnerability and reduced options for support. *International Journal of Mental Health Nursing*, 29(4), 549–552. <https://doi.org/10.1111/inm.12735>
- von Keyserlingk, L., Yamaguchi-Pedroza, K., Arum, R., & Eccles, J.S. (2022). Stress of university students before and after campus closure in response to COVID-19. *Journal of Community Psychology*, 50(1), 285–301. <https://doi.org/10.1002/jcop.22561>
- Wang, C., Wen, W., Zhang, H., Ni, J., Jiang, J., Cheng, Y., Zhou, M., Ye, L., Feng, Z., Ge, Z., Luo, H., Wang, M., Zhang, X., & Liu, W. (2023). Anxiety, depression, and stress prevalence among college students during the COVID-19 pandemic: A systematic review and meta-analysis. *Journal of American College Health*, 71(7), 2123–2130. <https://doi.org/10.1080/07448481.2021.1960849>
- Weierstall-Pust, R., Schnell, T., He mann, P., Feld, M., H fer, M., Plate, A., & M ller, M. J. (2022). Stressors related to the COVID-19 pandemic, climate change, and the Ukraine crisis, and their impact on stress symptoms in Germany: Analysis of cross-sectional survey data. *BMC Public Health*, 22, Article 2233. <https://doi.org/10.1186/s12889-022-14682-9>
- World Health Organization (2023). *WHO Coronavirus (COVID-19) dashboard*. <https://covid19.who.int/>
- Wright, R. R., Schaeffer, C., Mullins, R., Evans, A., & Cast, L. (2020). Comparison of student health and well-being profiles and social media use. *Psi Chi Journal of Psychological Research*, 25(1), 14–21. <https://doi.org/10.24839/2325-7342.JN25.1.14>
- Wright, R. R., Larson, J., Richards, S., Larson, S., & Nienstedt, C. (2023). The COVID-19 pandemic: Electronic media use and health among US college students. *Journal of American College Health*, 1–16. <https://doi.org/10.1080/07448481.2022.2155463>
- Yildirim, M., & Solmaz, F. (2020). COVID-19 burnout, COVID-19 stress and resilience: Initial psychometric properties of COVID-19 burnout scale. *Death Studies*, 46(3), 524–532. <https://doi.org/10.1080/07481187.2020.1818885>
- Zheng, C., Yi, P., Shen, G., & Chen, W. (2021). Effects of school resumption of college students' mental health during the COVID-19 pandemic. *Journal of Psychological Nursing*, 60(5), 19–27. <https://doi.org/10.3928/02793695-20211118-02>
- Zimmermann, M., Bledsoe, C., & Papa, A. (2021). Initial impact of the COVID-19 pandemic on college student mental health: A longitudinal examination of risk and protective factors. *Psychiatry Research*, 305, 1–9. <https://doi.org/10.1016/j.psychres.2021.114254>

Author Note.

Jeanie K. Cox <https://orcid.org/0009-0005-7042-0849>
 Lorinda B. Camparo <https://orcid.org/0000-0003-1050-909X>
 C. Nathalie Yuen <https://orcid.org/0000-0001-8267-8947>
 Correspondence concerning this article should be directed to
 Jeanie K. Cox. Email: jcox1@poets.whittier.edu

SPRING 2024

PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH

Psi Chi Journal of Psychological Research: 2023 Reviewers

We sincerely appreciate the hard work on the part of the following individuals who each completed at least one review in 2023. Without the assistance of such dedicated professionals, Psi Chi Journal would not be able to function.
—Steve Rouse (Editor)

Joanne D. Altman
High Point University

Lara K. Ault
Saint Leo University

Karl Bailey
Andrews University

Carl A. Bartling
McNeese State University

Michelle Beddow
Saginaw Valley State University

Chris Bjornsen
Longwood University

Karen Brakke
Spelman College

Debi Brannan
Western Oregon University

MaryAnne Britt
Northern Illinois University

Ryan L. Brown
University of California, San Francisco

Sheila Brownlow
Catawba College

Candice Burkett
University of Indianapolis

Mary Jo Carnot
Chadron State College

Kevin R. Carriere
Washington and Jefferson College

Shawn R. Charlton
University of Central Arkansas

Teddi S. Deka
Missouri Western State University

Fabiana DesRosiers
Dominican College

Martin J. Downing
Lehman College

Jorie H. Edwards
Southwestern Oklahoma State University

Deb Esty
Baldwin Wallace University

Warren Fass
University of Pittsburgh, Bradford

Keith Feigenson
Albright College

Frank Ferraro
Midland University

Tifani Fletcher
West Liberty University

Andrew Sheldon Franklin
Norfolk State University

James Gigliello
St Joseph's University

Rebecca Gilbertson
University of Minnesota Duluth

Rupa Gordon
Augustana College

Sangeeta Gupta
Hood College

Jonathan J. Hammersley
Western Illinois University

Thomas F. Harlow
University of Maryland Global Campus

Deborah Harris O'Brien
Trinity Washington University

Ying Wai Bryan Ho
The Hong Kong Polytechnic University

Karen Y. Holmes
Norfolk State University

Marya T. Howell-Carter
Farmingdale State College

Robert Hymes
University of Michigan–Dearborn

Lori E. James
University of Colorado Colorado Springs

Nabil J. Jondi
Hebron University

Marla Jorgensen
Farmingdale State College

Damian Kelty-Stephen
State University of New York at New Paltz

Allen H. Keniston
University of Wisconsin—Eau Claire

Lisa M. Korenman
United States Military Academy

Antonio V. Laverghetta
Saint Leo University

Timothy J. Legg
Purdue University Global

Gina Mariano
Troy University

Chandra D. Mason
Mary Baldwin University

Betsy L. Morgan
University of Wisconsin–La Crosse

Walter Murphy
Texas A&M University–Central Texas

Beverly J. Myers
Stillman College

Susan L. O'Donnell
George Fox University

Marilyn Petro
Nebraska Wesleyan University

Christopher Poirier
Stonehill College

Julee S. Poole
Purdue University Global

Amy Posey
Benedictine College

Dee Posey
Washington State University

Mark G. Rivardo
Saint Vincent College

Chelsea Robertson
West Liberty University

Lisa Rosen
Texas Woman's University

Kristen A. Rost
Troy University

Michelle Santiago
Moravian University

Donald Saucier
Kansas State University

Lauren F. Scharff
U.S. Air Force Academy

Pamela Schuetze
Buffalo State College

Paul Scott
Rockhurst University

M.L. Corbin Sicoli
Cabrini College

Christina S. Sinisi
Charleston Southern University

Paul C. Smith
Alverno College

Kathryn Sperry
Weber State University

Crystal N. Steltenpohl
Center for Open Science Programs

David B. Strohmetz
University of West Florida

Roxanne L. Sullivan
Bellevue University

Jill Swirsky
Holy Family University

Vishal Thakkar
University of Texas Southwestern Medical Center

Leonell Torres-Pagan
Pace University

Janet P. Trammell
Pepperdine University

Dunja Trunk
Bloomfield College

Mary Utley
Drury University

Scott VanderStoep
Hope College

J. Austin Williamson
Augustana College

Caitlin Wong
Wantagh UFSD

Meagan M. Wood
Valdosta State University

Jill Yamashita
California State University, Monterey Bay

Maaly Younis
The American University in Cairo

SPRING 2024

**PSI CHI
JOURNAL OF
PSYCHOLOGICAL
RESEARCH**

Find Your True North in Psychology

Getting good grades in college is the first step to obtaining a rewarding career in psychology. The second step is membership in Psi Chi, the International Honor Society in Psychology.

Could you use some help identifying and achieving your unique calling in life?

Become a member today.

Visit https://www.psichi.org/page/become_member

Through local and global efforts, Psi Chi offers:

- professional communities and friendships,
- personalized mentorships,
- research collaboration opportunities,
- educational content,
- financial support, and more.

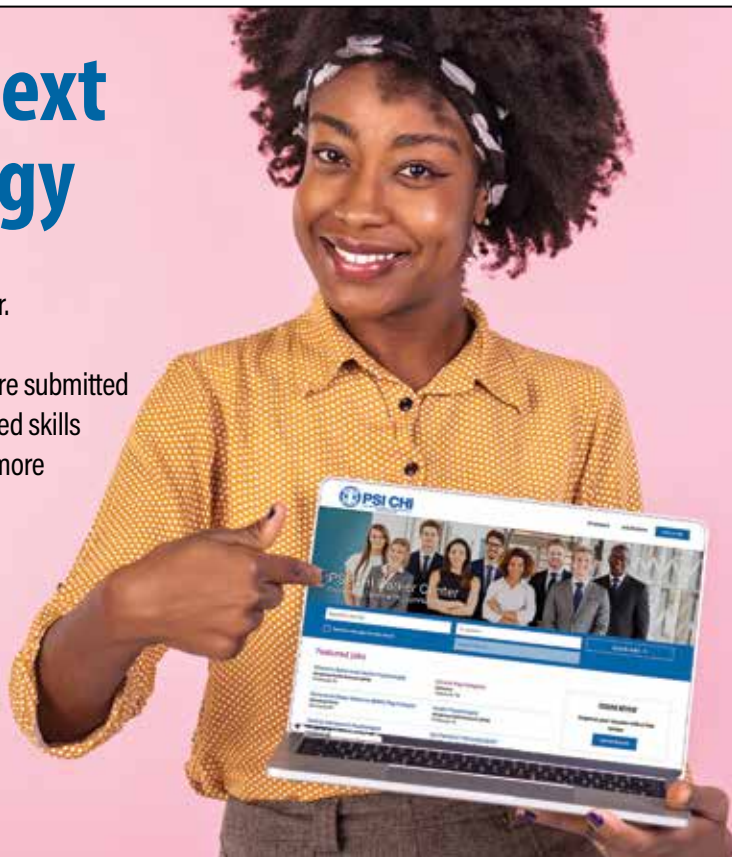


Discover Your Next Job in Psychology

Thousands of psychology-related jobs are waiting for you on Psi Chi's unique Career Center.

- Receive a free resumé evaluation
- Obtain email alerts when relevant positions are submitted
- See career insights, such as wages and needed skills
- Explore advice for interviewing, growth, and more

Get started at <https://jobs.psichi.org>



Publish Your Research in *Psi Chi Journal*

Undergraduate, graduate, and faculty submissions are welcome year round. Only one author (either first author or coauthor) is required to be a Psi Chi member. All submissions are free.

Reasons to submit include

- a unique, doctoral-level, peer-review process
- indexing in PsycINFO, EBSCO, and Crossref databases
- free access of all articles at psichi.org
- our efficient online submissions portal

View Submission Guidelines and submit your research at www.psichi.org/?page=JN_Submissions

Become a Journal Reviewer

Doctoral-level faculty in psychology and related fields who are passionate about educating others on conducting and reporting quality empirical research are invited become reviewers for *Psi Chi Journal*. Our editorial team is uniquely dedicated to mentorship and promoting professional development of our authors—Please join us!

To become a reviewer, visit www.psichi.org/page/JN_BecomeARewriter

Resources for Student Research

Looking for solid examples of student manuscripts and educational editorials about conducting psychological research? Download as many free articles to share in your classrooms as you would like.

Search past issues, or articles by subject area or author at www.psichi.org/journal_past

Learn About Psi Chi

Psi Chi is the International Honor Society in Psychology. Membership is primarily open to undergraduates, graduate students, transfer students, full-time and part-time faculty members, and alumni.

See membership benefits and a link to apply at www.psichi.org/page/member_benefits



Register an account:
<http://pcj.msubmit.net/cgi-bin/main.plex>

