THE UNDERGRADUATE JOURNAL OF
PSYCHOLOGY
AT BERKELEY

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EDITOR'S NOTE

Welcome to the Spring 2018 edition of the Undergraduate Journal of Psychology at Berkeley!

In this edition, we present undergraduate research that applies psychology to current societal issues such as television viewing habits, social perceptions of college students with mental disorders, eyewitness testimonies, self-harm, and gender norms.

As always, we extend our gratitude to the people who make it possible to publish outstanding research. The authors, for granting us the privilege of showcasing their work. Our faculty sponsor, Professor Ann Kring, for providing support and guidance throughout each edition of the journal. The website and graphic design teams, who further our visibility. Our talented Executive Directors, Riley McDanal and Olivia Cavagnaro, whose efforts allowed the editing process to run flawlessly. Finally, our editors, for their tireless commitment to producing papers of the highest caliber. In the following pages lie the dedication and potential of many outstanding undergraduates.

It is our sincere hope that our readers enjoy the 11th edition of UJPB.

With gratitude,
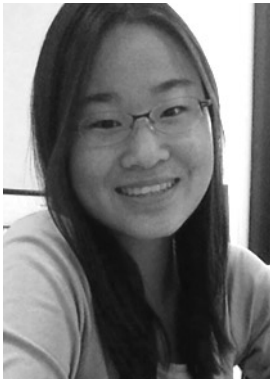
JUWON KIM
Editor-in-Chief

JIGYASA SHARMA
Editor-in-Chief

PREFACE

Welcome to the 2018 edition of the Undergraduate Journal of Psychology!

I am delighted to introduce the latest edition of the Undergraduate Journal of Psychology. As Chair of the Department of Psychology at UC Berkeley, it is my privilege and pleasure to work with the student editors who have put together this journal. These editors work together to carefully to select and edit articles that reflect the very best of psychological science, and they have done an outstanding job with this edition.

At UC Berkeley, we are committed to supporting and promoting research of the highest quality, in order to understand the brain and mind, personality and social interactions, lifespan development, cognition, and mental illness. The papers in the 2018 volume showcase many exciting new findings in different domains of psychology.

Our faculty have the great good fortune to teach and collaborate with a very talented group of undergraduates at Berkeley. Our students not only engage in the intensive study of a problem that reflects their personal interests, but, as important, gain skills in the scientific method. An important part of this skill set is clearly writing about complicated laboratory observations.

Congratulations to all of the participants – contributors and editors alike – who have created another amazing edition of the Undergraduate Journal of Psychology.

ANN M. KRING
Professor and Chair
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Social Perception and Interpretation Among College Students with Asperger Profiles

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Saint Michael's College

Individuals on the autism spectrum express significant fear, anxiety, and sensual overstimulation involving readily identifying, interpreting and processing indirect social feedback and information across various contexts and environments. Furthermore, these individuals demonstrate notable intellectual and academic potential to thrive with the appropriate supports. Additionally, the current study investigates *how* college students with an Asperger's Syndrome (AS) diagnosis (N=7), now classified as High-Functioning Autism Spectrum Disorder (HFASD or ASD), consciously perceive, interpret, and process social concepts, events, and feedback throughout development. The study is entirely original and is the first to qualitatively include and capture the voices and narratives of individuals with Asperger profiles on their social-emotional experience and conscious perception and interpretation of social interactions, environments, and feedback through three developmental stages, including present times in the college setting. The writer thoroughly and structurally interviewed students, and five themes were found prevalent among all transcripts: romantic relationships, family relationships, risk aversion, self-concept, and intelligence and academic development. Results across all themes capture and indicate student's psychological experiences in relation to their social thinking, metacognition, and emotional processing patterns based off of internalized feedback interpretation. Data show profoundly ubiquitous and recurrent themes across participants, time periods, and events that provide new insight into the power of perception among this population.

Keywords: social perception and interpretation, HFASD, College students

The body of research that has been administered on ASD by individuals with ASD is becoming increasingly widespread. The current study aims to gain recognition for the value that personal narratives and qualitative methods hold in psychological research and how it humanizes the individual experience of populations who share a diagnosis or set of behavioral characteristics (Tuval, 2016; Yardley, 2017). Additionally, the current study uses the voices of participants as the sole platform for data and empirical validity. Autistic pioneers such as Dr. Temple Grandin and John Elder Robison are on popular demand to speak at various conferences transnationally about their experiences growing up on the spectrum without a diagnosis yet developing the intrinsic motivation to grow into the successful individuals they are today. Temple Grandin is currently a professor of

Social Perception among Autisic College Students
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animal science at Colorado State University, a pioneer in her field of animal behavior research, an inventor (of the hug machine), and a well-respected, highly active spokesperson for autism who was one of the first adults to publicly disclose her autistic profile and late diagnosis (Silberman, 2015). Additionally, Grandin has been the subject of a plethora of books written on autism and has written several books herself including autobiographies about her personal experiences growing up on the spectrum and being an autistic woman. She has also written books within her field of animal behavioral science such as *Animals Make Us Human* (Grandin and Johnson, 2010) and *Temple Grandin's Guide to Working with Farm Animals* (Grandin, 2017). Grandin has also channeled her affection and passion for animal science and animal rights in engineering curved corrals, chutes, and dip vats for better handling of cattle, tick and pesticide removal, as well as reducing cattle stress, panic, and injury before slaughter (Grandin, 2014). As an autistic spokeswoman, one of her most well-known books is *Thinking in Pictures*, Grandin articulates how her brain works and processes information using both literal and analogical language. In her work, she provides a specific example of her visual thinking process. Each time she hears the word "church," she visualizes a particular church from her childhood and the many details it encompasses. Her church example portrays that her most effective cognitive process for learning and digesting information is through visual means. When her brain naturally turns to a visual representation to understand and make meaning of concepts, subjects such as geometry and calculus are internalized more readily (Grandin, 1995).

John Elder Robison is likewise among the first to publicly disclose his autism. Robison, like Grandin, wrote one of the first autobiographies on autism, *Look Me In The Eye*; in it, he articulates his experiences with consciously feeling different and peculiar from a very young age, being bullied, neglected, continually experiencing loneliness, and building his resilient pathway to becoming a successful engineer. Although many aspects of his life were traumatizing, he incorporates humor as he questions social norms and why neurotypicals act the way they do. For example, in situations when greeting strangers and saying "pleased to meet you," John said in a conference, "how do I know you are not a serial killer?" (Robison, 2007). His published narrative has provided insight to readers about the inner and outer struggles autism can present, as well as moments of genius, hyper interest, intense focus, and fixation on a passion--which for him was engineering. His memoir begins when he was a toddler and goes into elaborate details often naming the colors, textures, senses, and emotions he was experiencing from being an overwhelmed child hiding under the table covering his ears in fetal position blocking out overwhelming stimuli to a successful engineer, author and active spokesperson for autism (Robison, 2007). His written life depicts the personal challenges, trauma, resilience, intellect, and unique strength outlets autism expresses in an individual.

These two leaders have brought public attention to their personal experiences growing up unknowingly to knowingly autistic. Their accounts have educated thousands of people who have further requested them to speak about their lives, share how they became successful, and provide insight into their experiences with

failure and triumph navigating a puzzling and seemingly foreign neurotypical world (Grandin, 2012) and (Robison, 2017). Silberman (2015) refers to Grandin in his book *NeuroTribes: The Legacy of Autism and the Future of Neurodiversity* when discussing autism as a natural form of human neurocognitive variation. He suggests that autism is a necessary form of genius contributing to and advancing innovation, creativity, and critical thought among prestigious academia and overall society. Furthermore, the bountiful empowerment and education provided by Grandin and Robison's autobiographies prompted the writer to interview highly intelligent college students regarding their narratives growing up autistic. Their stories are the most valid and valuable evidence of learning and understanding what being autistic is like, how it challenges, how it advances, and ultimately presents in each person as well as the shared strengths and struggles that show up among the overall population. As Temple Grandin said in her biopic film "[being autistic] is like being an anthropologist on Mars" (Grandin, 2010). The data of the current study parallel this analogous quote; students elaborately articulate their experiences growing up with Asperger's Syndrome and share strikingly similar comparisons and analogies to articulating what navigating the world was and is like as an autistic individual to what Temple has said in her narrative. For example, one student compared having Asperger's to physical blindness. "Having Asperger's is like being blind, except, you do not have the blind man's excuse for not picking up on the social atmosphere of a room." Her quote illustrates the reality of growing up with a seemingly invisible diagnosis masked by exceptional intelligence, social adaptation, and

behavioral mimicry. In most situations when no script is available, the chance of making a social mistake is substantially higher. The student narratives highlight psychological internalizations and adapted self-concepts they have developed over time. The consequences of inadvertently breaking social rules have over time caused them increased distress, paranoia, avoidance, and dissociation to worlds of fantasy novels, fiction, online communities, and video games.

While the current study investigates the social perceptions of college students whose narratives are the platform of data collection, historically, the body of research administered on ASD has heavily focused on examining cognitive and behavioral patterns associated with the disorder, such as executive dysfunction, anxiety, depression, and social deficits (Channon et al., 2001; Channon et al., 2014; Stephenson et al., 2016; Jackson and Dritschel, 2016). Autism is a complicated profile that manifests uniquely among individuals. Lai et al. (2016) found that many individuals with HFASD, especially females, camouflage their social challenges, which can prevent them from receiving diagnoses until later in development, if at all. Additionally, more significant scores of camouflage behavior were associated with more severe depressive symptomology in men and higher signal-detection sensitivity in women. These data suggest that the existing criteria for diagnosing autism do not take into account masked symptoms presented differently on gender and individual basis. For example, researchers are beginning to recognize eating disorder patterns among autistic females according to adolescent self-reports. Elfrosini (2009) found that young women are significantly more susceptible to developing an eating disorder than

neurotypical female peers. While food refusal, pica, rumination, and food jags are overly represented among autistic populations, certain genetics, cognitive styles, and behaviors associated with ASD are also present in anorexia nervosa symptoms (Rastam, 2008). Although researchers are beginning to diversify research methodology and focus, there still is a gap in understanding the various life experiences of autistic individuals, specifically college students, and even more specifically social perception.

In addition, the current study holds groundbreaking value in that, like her participants, the author is also autistic. She received an official diagnosis at age fifteen without prior education on what the diagnosis meant about who she was except that she was different. In meeting an influx of same-aged autistic peers within a residential college program, the writer was intrinsically motivated by personal experiences of confusion, loneliness, shame, trauma, and isolation. Relating to peers for the first time provided her a strong sense of empowerment and drive to share a variety of narratives that tap into the inner psychological worlds of the autistic.

Literature Review

In correspondence with the fifth edition Diagnostic Statistical Manual (DSM-5), ASD is currently identified as a high-functioning form of autism rated comparatively within a spectrum of similar traits presented in greater severity allocating anticipated support level requirements (American Psychiatric Association, 2013). American Psychiatric Association (2013) categorizes autism spectrum disorder into three categories of seemingly required support: Level 3: "requiring very substantial support," Level 2: "requiring substantial support," and Level 1: "requiring support" (pg. 50). Within these sub-diagnostic categories, shared behavioral characteristics are listed: A) challenges engaging in social-emotional reciprocation, in nonverbal communicative interactions, and in developing, maintaining, and understanding social relationships; B) restricted, repetitive patterns of behavior, interests, or activities, insistence on sameness, inflexibility and/or adherence to routines, difficulties with transitions, rigid thinking patterns, highly restricted, fixated interests that are abnormal in intensity or focus, hyper or hypoactivity to sensory input or unusual interest or preoccupation in sensory aspects of the environment (pg. 50). The diagnostic manual seeks to identify and diagnose individuals ranging from nonverbal to acutely articulate and eloquent speakers (Grandin and Panek, 2013). The three levels of functioning indicate presumed support needs based off of individual success with activities of daily living (ADL's), emotional regulation, and language and behavioral development. The levels do not indicate differences in intelligence or cognitive ability despite widespread assumptions (Grandin and Panek, 2013). Individuals who are diagnosed as high-functioning can be low-functioning when overwhelmed, emotionally shut down or withdrawn. However, individuals with high-functioning profiles are often overseen or mistreated due to fluctuating emotional regulation, anxiety, and sensory overstimulation (Reade, 2017). In other words, functioning ability can change depending on the individual's sensual stimulation, current emotional state and compacity, and environmental or situational context.

Furthermore, the DSM-5's updated framework in including Asperger's within the ASD diagnosis measurement has often

shown to be a disservice for these individuals for a plethora of reasons beyond fluctuating levels of functioning. Kite et al. (2012) found that in a sample of 491 health and education professionals, 93% think that there is a difference between Asperger's and autism, specifically 97% of social workers, speech pathologists, and nurses, and 90% of psychologists. The overwhelming discrepancy between professionals and the DSM may pose challenges with implementing appropriate supports for individuals among various areas of the spectrum. Many individuals with ASD profiles have also reported the inclusion of ASD within the broad spectrum has taken away and masked their identity as well as threatened them in falling short of receiving necessary support and relationships (Giles, 2014). Autism and AS manifest uniquely within each individual both in idiosyncratic strengths and personal challenges. Likewise, most of the characteristic advantages associated with autistic populations are not accounted for in the DSM that are equally present and numerical as its ostensible or seemingly apparent deficits (American Psychiatric Association, 2013, p. 50). Fisher, 2015 criticizes the validity of the DSM and its inclination to provide aggregated diagnoses while overseeing individual differences. In other words, the DSM monitors intraindividual dynamics, which in turn neglects crucial psychological context, with various interacting factors, that the individual experiences. No two individuals experience the same situations; however, if they share a diagnosis, they are likely to be treated similarly despite significantly distinctive psychological interplay. For example, individuals with ASD share common characteristics on account of being diagnosed with the same condition; such as difficulties in social interaction or reciprocal

engagement, adherence to routines, restricted interest or hyperfocus on a particular subject or aspect of environment, or intense interest in, or hyper or hypo in sensory elements of the environment (American Psychiatric Association, 2013). On the other hand, each person is from a different household family context, with unique genetics, genders, sexuality, culture, environmental circumstances, and relationship dynamics. These factors will inevitably affect the presentation of a person's diagnosis. The DSM does not acknowledge, note, or emphasize guidelines for identifying and applying prescriptive and individualistic diagnostic pieces of crucial information for mental health professionals. For this reason, individuals are not appropriately treated along with many others who fall through the cracks of and are overseen by the diagnostic system due to divergent symptom presentation (Lai et al., 2016; Attwood et al., 2006). Alvarez (2015) brings up the lack of considering personality when diagnosing individuals with ASD and how it can affect symptom presentation among individuals. This may also be one of the reasons many individuals with HFASD are diagnosed later in development.

Since ASD became a diagnosis aiming to include exclusive yet inclusive levels 1-3 of supposed and outward functioning, ASD diagnoses have increased to approximately 1 in 68 children (U.S. Department of Health and Human Services, 2016). The American Psychiatric Association (2013) notes as one of the primary diagnostic requirements that symptoms must be present during an early developmental period; however, symptoms may not present until "social demands exceed limited capacities, or may be masked by learned strategies later in life" (p. 50). Individuals with HFASD (Level 1 diagnosis

and treatment) are often diagnosed later in life due to a host of factors including social mimicry transcending to rehearsed social scripts, interactions, and etiquette, and many a time above-average to genius-level intelligence. Additionally, misdiagnosis or misattributing behaviors to other seemingly plausible reasons such as depression, anxiety (which are comorbid diagnoses to ASD), timidness, laziness, introverted personality, nerdy, etcetera can cause delayed diagnosis. In these cases and similar others, an ASD diagnosis is seldom considered until social, environmental, and educational demands exceed emotional limits.

A significant amount of research on ASD has focused on disordered behaviors associated with autistic populations. Jackson and Dritschel (2016) tested the impact of social problem-solving challenges on depressive vulnerability among individuals who presented various levels of autism symptom severity. It was confirmed that "deficient" social problem-solving skills account for a significant amount of depressive symptoms associated with increased autism symptom expression (pg. 128). It has also been established that among higher functioning autistic populations, depression rates are most prevalent during adolescence and adulthood (Jackson and Dritschel, 2016). Potential explanations and speculations for heightened depression scores at this particular stage of development may suggest that teenagers and young adults on the spectrum feel overwhelmingly pressured to conform to societal standards, such as becoming employed, enrolling in higher education, and maintaining successful relationships (Singh, 2015). For example, there are services available for the individuals with severe autistic symptoms and language difficulty throughout the lifespan; for individuals with

HFA profiles, services become more challenging and confusing to access post-high school (Singh, 2015). Pfeiffer et al. (2017) interviewed adults on their experiences with employment. Individuals reported challenges with social barriers and miscommunications, attitudes, a desire for more facilitation and explanation for job duties, and sensory overwhelm throughout the environment had a significant impact on work satisfaction and performance. Notwithstanding the psychological damage, distress, and influence these personal factors place on this population, the general discussion and treatment plans designed to treat AS have repeatedly addressed anxiety, depression, and other seemingly disordered thoughts and behaviors rather than the strengths of autism or the factors that influence and prompt the psychological pain this population faces on an everyday basis. These are not attributed to them, but rather to the complexity of their dyadic and collective relationships' influence on their natural cognitive wiring (Silberman, 2015).

Channon et al. (2001) addressed seemingly poor social problem-solving processes among adolescent students with ASD in comparison to neurotypical peers regarding efficiently analyzing and resolving hypothetical social conflict from a variety of scenarios. Results indicated that individuals in the ASD group tested as "impaired" on several aspects of problem-solving in comparison to neurotypical peers across scenarios (pg.466). Channon et al. (2014) found that adults with ASD tested as "impaired" in comprehension of sarcastic remarks and actions (pg.158). Additionally, the ASD group showed difficulty in identifying awkward elements of social scenes incorporated into everyday social scenarios, as well as in generating feasible solutions compared to a control group;

however, they did not show difficulty in evaluating alternative solutions.

Related to anxiety and other associated comorbid conditions with AS, Stephenson et al. (2016) found that adults with AS expressed increased rates of alexithymia; it was also suggested that one of the primary factors contributing to heightened anxiety among individuals with AS is aversive reactions to emotional experiences along with overwhelming thought loops with identifying and processing emotions. Dijkhuis et al. (2017) found that college and post-secondary students with AS experience a significantly lower quality of life than neurotypical peers. Students with AS also reported hindering challenges with emotional processing and daily executive functioning. About 60-78% of adults with ASD experience overwhelming hardship with transitioning to living outside the parent's residence at a socially acceptable time period as well as obtaining work opportunities (Billstedt et al., 2005; Burgess, 2007; Eaves and Ho, 2008). In turn, the majority of individuals with ASD are abundantly dependent on their families throughout the lifespan naturally affecting their quality of life and self-regulation development (Dijkhuis et al., 2017).

Educationally, research has focused on the "deficits" of individuals with AS in the classroom in comparison to neurotypical peers. Lai, Chun Lun Eric, et al., 2017 used a meta-analysis to measure executive functioning patterns among children with ASD in comparison to a neurotypical control group. Findings show that children and adolescents with ASD are "moderately impaired" in verbal working memory, spatial working memory, flexibility, planning, and generativity, (pg. 1). Another recent study investigates heterogeneity among autistic individuals in their reading abilities. McIntyre et al., (2017) found that the heterogeneous nature of reading profiles in students with HFA correlate with autistic severity. In other words, the more severe the symptomatology presentation, the more the individual seems to struggle with the standard classroom reading measurement tests. Wallace et al., (2016) found that executive functioning challenges are linked with anxiety, inflexibility, and metacognition difficulties are associated with depressive symptoms and impaired adaptive functioning.

Further, avoidant behaviors have been noticed among ASD populations. Chamberlain et al., 2013 investigated risk avoidance among autistic individuals during a card game compared to neurotypical control groups and found that the ASD groups notably prioritize safety picks over substantial gains or potential wins. The neurotypical groups took substantially more risks when wins were possible. Chamberlain et al. (2013) conclude that the ASD group's inclination to consistently make safe picks can be generalized to other areas and contexts such as social interactions or seemingly unpredictable events.

While individuals with ASD demonstrate challenges with seeking and maintaining employment and social success, more specifically, they also show difficulties with establishing intimate or romantic relationships. Pearlman-Avnion et al. (2017) found that intimate relationships among ASD populations are connected with a sense of independence and empowerment. It is further speculated that measurements of deemed autonomy and empowerment among these individuals are primary predictors of well-being. It was also confirmed that feelings of social belonging, connectedness, and community inclusion predict increased

likelihood of initiating romantic relationships. However, interestingly within the same study, individuals with AS profiles who were not involved in romantic relationships reported higher sexual well-being and satisfaction than those who were engaged in romantic relationships.

Despite widespread assumptions and stereotypes that individuals with AS do not have or engage in romantic relationships or activity, Struntz and Sandra (2016) found that the vast majority of this population are interested in romance. Moreover, individuals who are in a relationship with a partner who is likewise on the spectrum were significantly more satisfied with their relationship than couples with only one partner with an AS profile. While Pearlman-Avnion et al. (2017) speculate that based off a significant positive correlation between productive capacity and sexual well-being among individuals with ASD who are involved in romantic relationships as well as the essential contribution intimacy brings to a person's life, romantic relationships are an especially valuable tool for learning life skills among this population. It is also a vulnerable time to fail.

Previous research has focused on the many challenges associated with ASD including social and academic behavior, subjective quality of life regarding romance and intimacy, and cognitive patterns based on various scenarios. However, less research has been administered showing autistic narratives and even less has included the voices of the individuals who live with the profile regarding their experiences as essential to ASD research. For example, Holnack et al. (2017) discuss social perception as a deficit among autistic adults, as an incorrect way to view the world.

Distinctively, the current study operationalizes social perception as whatever and however the individual experiences and consciously emotionally processes social stimuli as the reality for that individual; it is neither right or wrong, bad or good. It is their psychological experience, and it needs to be validated and explored. This study redefines what constitutes data, what constitutes empirical validity. The writer shows that social perception is an understudied and overseen psychological process that is imperative to one's general wellbeing. For example, researchers can take data on autistic participants and conclude from those numbers; however, to truly understand what autism is or is like, the autistic individuals must be directly involved and given an active listening ear to be acknowledged and validated. The study is unique not only for the writer conducting personal interviews with autistic peers. At the time of the study, the writer lived with the individuals in a residential college program, was roommates and best friends with one participant, and was personally and genuinely close friends with each interviewee before and after the project. Students felt heavily inclined to share their narratives with passion, articulate detail, and compelling honesty as if the writer were the first person with whom they ever shared their life story. Most of the student interviews lasted for at least an hour and were followed by hugs, light conversation, and a debrief regarding the future of the study. The writer initially chose to administer this project because mentoring the interviewees (students) was the first time she was ever around so many peers her age who also had autistic profiles she could relate to, feeling liberated to be her happy self around.

This study was also inspired by the concept of neurodiversity and the overseen individuals with ASD who were highly

creative innovators, scientists, and inventors who never got their voices heard and the credit they deserved such as Henry Cavendish and Paul Dirac (Silberman, 2013). These two philosophers and physicists were imperative to the fields of math and science yet did not engage in academia for the fame; in fact, they actively hid from and avoided crowds. They were pioneers because they were hyper-passionate and persistent intellectuals who had an infinite thirst for exploring and testing nature; yet they are not particularly well-known presently due to their strong aversion to avoiding crowds and seemingly evident disinterest in fame (Silberman, 2013). While students in the current study seemed to mostly discuss challenging and traumatic experiences from their past, they do all acknowledge that they are exceptionally intelligent and noticeably gifted beyond their peers. It is imperative to note the abundant and consistent challenges these individuals face and feel inclined to include as highlights of their autobiographies; it is also noteworthy to capture the theme of intellectual prestige lasting from elementary school until current times despite in increasingly negative overall self-concept. Despite decreasing grades and academic performance throughout development, internal self-perception and feedback remain constant and prominent.

Method

Participants. The writer conducted the project at Mansfield Hall--an academic, residential college transition program designed to support students who exhibit strong intellectual and academic potential, as well as a host of social, sensory, and executive functioning challenges. The writer also lived in the program and roomed with students in the Mansfield Hall residence hall as the role of a fellow, otherwise known as a student mentor. After residing at Mansfield Hall for two months getting to know students, the writer individually asked seven students if they would like to be interviewed about growing up with Asperger's. The writer used the term Asperger's because most individuals who identify or are diagnosed with HFASD tend to prefer Asperger's over autism. The writer used a convenience sample in selecting students she and the staff deemed she had the closest relationship with. All seven students selected and asked were willing to be interviewed. The writer set up a time with the student that was most convenient for them. Most interviews took place in a private study room with the doors closed, the blinds down, and a note outside saying "please do not disturb." One interview took place in a student's common space out of their request. The two female interviews took place in the writer's bedroom.

All students who were interviewed had a vibrant and trusting relationship with the writer. The students and the writer interacted on multiple occasions on an everyday basis. The writer attended the same daily community program meetings with the students, ate regular meals with the students, socialized in common residential areas with the students, and went on both group and individual outings with the students during the entirety of her internship at Mansfield Hall as a fellow. In addition to students being interviewed by the writer, they were also extremely close friends.

All students interviewed have received an Asperger's Syndrome diagnosis (now classified as HFASD) before the study during various stages of development (American Psychiatric Association, 2013). Two participants were diagnosed in high school, and the rest were diagnosed in

elementary school. At the time of the interview, the mean age of participants (N=7) was 20 years old. The standard deviation was 1.252; the mode was 20, and the median was 20. The writer received prior consent from the Saint Michael's College Institutional Review Board and the Mansfield Hall directors before selecting and asking students for private interviews. Once selected, each student gave both prior verbal and then further written consent via signing a document, which explained the study's purpose and procedure as well as the insurance of participant confidentiality and privacy protection. All participants were interviewed with the same question format (see Appendix); however, clarifying or confirming questions differed among interviews. Interviews were audio recorded and were conducted in a secluded and private environment within the Mansfield Hall facility. Participants will be readily updated with results of the study and will be invited to any presentations, publications or conferences about the project.

Materials. All interviews were audio recorded with the writer's iPhone device, and then transcribed to word documents for writer interpretation. The transcripts were given to the Mansfield Hall directors, who were unaware of the writer's analyses of the transcripts, in order to interpret the data as well as establish inter-rater reliability. The writer attended weekly meetings with program directors and supervisors to discuss the progress of the project. The writer distributed transcripts to three Mansfield Hall directors asking them to take the documents home to read them and highlight themes that they found throughout the narratives as well as add any additional comments. When the writer met with the directors to follow up separately after they read the transcripts, the directors found the same themes as the writer in addition to sub-details of overarching themes.

The writer and her research advisor from Saint Michael's College engineered the interview questions to make them as open-ended as possible, giving the participants an opportunity to reflect without being prompted to answer. The questions were separated into three categories in efforts to capture the participant's development: preadolescence, adolescence, and post-adolescence. Each developmental section asks about the student's household life, academic life, and overall social life aiming to capture the student's day-to-day reality from childhood up to present times. Even after the directors read and shared interpretations of transcripts, the writer repeatedly carefully read through the narratives and typed out all of the quotes that were most indicative of the general themes consensus.

The writer predicted that students would report challenges with social communication and bullying throughout all stages of development. Additionally, the writer anticipated that students would mention heightened intelligence in comparison to peers during development.

Compliance and Ethical Standards

This study complied with ethical standards involving interviewing and working with human beings. This project was approved by the IRB of Saint Michael's College. All participants provided informed consent and signed a written document involving what the study entails and what is expected of them as interviewees. There was and is no conflict of interest involved with this research project. All participants will be invited to attend any presentations on the project.

Results

Five themes were found heavily prevalent among all transcripts: romantic relationships, family relationships, risk aversion, self-concept, and intelligence and academic development. Interpretations of data were sorted among these five categories. Data were reviewed by other Mansfield Hall staff who were naïve to the project's results. Themes remained consistent among inter-raters without any joined discussion about interview interpretations. The Mansfield Hall director's notes and interpretations of student interview transcripts corresponded with the writer's interpretations and of student narratives.

Romantic Relationships

All students reported immense challenges, avoidance, anxiety, confusion, and defeat with their experiences conceptualizing and interpreting the hidden social rules and multifaceted dynamics involved in obtaining romantic relationships. Most students addressed initial interest and motivation to engage in a romantic relationship during adolescent years; however, at present times, students expressed definitive thoughts and feelings of avoidance, disinterest, and concern with the idea of entertaining a romantic relationship. Some students discussed disinterest and active avoidance of romantic and intimate relationships through all stages of development including and especially during current times. "If it means anything, I'm very uninterested in romance; I actively avoid partners, intimate relationships, and romantic relationships. I've just seen too many horror/misfortune stories. It's not worth it. I've got better things to do. Plus, I don't want to have kids. It's going to be a huge drain on me."

Students questioned their role in the process of procuring, engaging, and securing a romantic relationship. "Why actively seek someone? If something's meant to be, it'll happen. I could make a Tinder profile if I really wanted someone, but I'm sort of at peace with [it]. I joke about being single for life; who knows if I'll actually be single for life? What if life completes itself? I guess I'm sort of jaded about the whole thing." "Why is experimenting in and out of love with people you don't really like or just doing it for attention seen as the hallmark of your teenage years?" This same student also made definitive claims about what she believed others thought of her romantic life. "No one has ever really seen me as someone datable; I've just been more of the curious friend, sometimes treated as a novel curiosity. It took me a while to unlearn that and figure out [that] I am capable."

Despite reports of initial interest, motivation, curiosity, and consideration in engaging in a romantic relationship during earlier stages of development, students reported isolation and definitive plans for self-sufficiency post-adolescence. "Honestly, I really just don't care anymore. I'm sick of being sick of being the unloved one. I am completely at peace with it, and I can be completely happy with my completely platonic social circles." One student who engaged in two romantic relationships identified as asexual. "Romantic relationships are fine for others; I am asexual. It took two attempts at several relationships to realize that, and I really wish I had earlier because it was embarrassing and painful all around." This same student expressed that she "loves the idea of love," but her experiences with romance were overwhelming and set her back to further consider or engage in romantic intimacy.

Students' perceptions and experiences with considering, attempting, or engaging in romantic relationships have involved substantial confusion and anxiety for understanding the abstract, ambiguous, and indirect social rules inevitably involved with traditional romance. "I'm absolute pants [distraught] of living with anybody who I don't get a chance to set the rules in the beginning, and find ways to stick to them." She described in great detail her reasons for making a definitive decision to actively avoid romance in her future. "I didn't really like the spotlight effect, and I wasn't particularly comfortable with anything beyond cuddling. Even if I was quite willing to try [it] out at first, [I was] just not interested, really. It was physical sensation, and honestly, I would find a good massage more intriguing than the idea of any fooling around. It probably didn't help that he was quite willing to let me set all of the boundaries, and I kind of hated doing that because it was putting far too much pressure on me if the thing fell through."

Students also expressed challenges and reluctance to allow themselves to be vulnerable or valuable, to let their guard down with another person in thoughtful efforts to preserve the emotional safety of others and themselves. "I was struggling with myself, and if I'm not willing to support myself, how could I support another person in a relationship? I guess I'm still at a point where it really comes back to…I don't love myself, so how could I love someone else? I still feel that I wouldn't be good for anyone because I already feel that I am a burden enough for other people. I don't need to be involved in relationships and hold them back in that way." Students reported defeat from their perceived unsuccessful attempts to engage in romance or figure out their role in a society who pressures the

concept, and have definitively concluded their traumatic experiences as an inherent part of who they are and have established an identity of a person who doesn't date or engage in romantic activity. "If someone magically sweeps me off my feet, I'll go with it, but at this point I have no reason to believe that exists anywhere in the near future for me."

Family Relationships

All students reported confusion, challenge, and distress within their family dynamic and unit. Students expressed emotional and physical detachment from the rest of their families. Students discussed feeling pressure, anxiety, and frustration with meeting parental goals and expectations. Students compared themselves with their siblings including perceived treatment and role within family system as well as differences in parental expectations. Students' relationships with their parents became increasingly more challenging throughout development as well as more emotionally removed.

Students voiced a desire to achieve parental goals and expectations; however, students reported wanting to be treated more adult-like and wanted to feel more independent as emerging adults. "My brother didn't have, doesn't have what I have, and so he was getting along just fine, and it was like at some point they [peers] couldn't believe I was his older brother. They perceived him to be more normal than me." A student who does not have siblings wished she did so she would have had a model for social learning throughout development. "I remember as a kid asking every birthday and every Christmas for another sibling. I never ended up getting my wish. If I had, maybe it would've made a

few things clearer in regards to social dynamics and my oddities a bit earlier."

Additionally, students expressed a feeling of exclusion from the family unit. "High school was a mess for me. I didn't know how much integration of a full family unit there was." Another participant reflected on his childhood with a sense of detachment from his parents. "I don't think I've ever felt close with my family. I've never really felt that attachment to it. You can't really know what the absence of something is like until you experience the presence of something."

Students have made definitive plans for future engagement and communication with their families. "My plans for adulthood became very, very simple; get an apartment and a job. Until you are free from them economically, you cannot write a treaty of independence and a treaty of equal treatment." Although students discussed current challenges with creating boundaries with parent expectations and relationships, students stated that confusion and frustration have been a lifelong theme in their family dynamic and that "there was always something wrong." "There was a long period of time where my mom did expect perfection. She thought because I was behind that I wasn't putting in any effort. It's a different thing; it's frustrating." Another student shared that his father treated him as if he was "incapable of being funny" despite continually trying. This same student also reported physical and emotional abuse from his father that resonates with him deeply to this day. "If the scenario were severe enough he would use a belt to whip me. He would grab hold of me, pull my pants down, and whip a belt on my ass. He wouldn't go as far as to leave a visible mark the next day. He wasn't stupid in that sense, but it eventually got to a point where, since

my mom wasn't truly listening and my brother was too young to even know what was happening, it felt to me… As a result, the internal struggle started getting overridden."

Risk Aversion

All student narratives showed a heavily recurrent theme of risk aversion. Students adhered to concrete rules, laws, and regulations expressing frustration in identifying and interpreting the hidden social rules and messages being displayed to them by others. For this reason, students followed the established rules religiously as a form of possessing control and ensuring safety throughout an otherwise seemingly anxious nature.

Students discussed prioritizing safety over social gains. "I'd be extra on guard all night…like this strong aversion to not doing anything. I guess I'm always afraid I'm going to get caught…caught if I did something wrong, against school code, or law, or whatever. I know that 99% of the time it's fine, but what if someone's R.A. comes in? If there's a slight risk… plus you hear all that stuff about how campus rape epidemic…most of those cases start with parties. There's just a sense of I want to keep myself safe, and I don't care if that alienates me from society and makes me seem even weirder." Another student discussed her reliance and comfort in following known, established rules. "I got along very well with my parents, but we had also never gotten into any situations where we needed to make rules about punishment clear because I had never gotten into anything that would be disobeying."

Moreover, students expressed a sense of defeat in attempting to learn the hidden social rules. "What else can I do? I live…and I begin to stick as close to my

very formal manners as I can. Despite being fully aware that it will get me called stiff, rigid, or unbending because if I do not stick to the most formal rules I know, I cannot tell when it is okay to bend them informality. Going outside of that realm is impossible, simply because I don't know the rules for it."

This same student compared her high-functioning autism with physical blindness. "Having Asperger's is like being blind, except, you do not have the blind man's excuse for not picking up on the social atmosphere of a room." Her justification for comparing HFASD with physical blindness shared a common thread of her experiencing frustration, anxiety, and immense challenge in readily identifying and interpreting social rules and subtleties. This frustration and social blindness get in the way of various elements of her life, including school work, her emotional and physical wellbeing, as well as her perspective of herself and the world. She went on to discuss her success in taking theatre classes because she was given a script of written down lines for her to say without having the pressure to come up with something to say while reading the other person's face and matching it to her own, simultaneously.

Self-Concept

Students disclosed strong self-awareness and experiences of forming speculations of what others think of them based on past received and internalized social feedback. Students actively socially compared themselves with peers, family members, and famous or well-known figures in video games, books, and various forms of media. Students expressed an increasingly negative self-concept as they develop and have internalized their social interpretations,

comparisons, and feedback as permanent and definitive attributes of their nature. Through trial and error, students have learned social defeat. Participants' social confusions and interpretations of interactions and feedback have led to social removal and escapism, and being a social misfit has become a learned and constructed attribute of self. "I simply came to the reputation as a very school-focused girl, somebody who didn't have time for social things, somebody who lived away from them for the most part, someone who didn't care. They probably perceived me as an arrogant loner, which probably would dissert [seem] in some ways. I'm a terrible people person. So I can never deal with people. If I'm lucky, I'll probably find something to do with library work." Another student speculated what others thought of her by reflecting back on her by adolescence. "My childhood friendships were few and far between. I would be trying a whole lot harder to be people's friends than anyone would with me. They'd just be tolerating me." She then discussed her middle school and high school experiences in various boarding schools. "Whenever I tried to get in on group activities with peers, there was definitely an element of everyone else [gets] the priority, and I was sort of just there. My ideal was always factored in last. Unless it was academic, then my brain would be exploited." Later on in her interview, she speculated how peers in college perceived her during current times, "I feel like people wonder…what does she do? She's either in her room or…what does she do when she goes out? She's obviously not downtown… She wouldn't be caught dead partying, going to any of the bars."

Another student acknowledged that he was different and that being weird was normal and okay. "I saw myself as

different, but not necessarily in a bad way, in an 'I'm-so-misunderstood-way.' As I often say, everyone is weird; some people are just better at hiding it than others. I am not one of those people." He also shared his first experience in consciously noticing and comparing his sense of humor in distinction from his peers. He shared a story of when he first realized the purpose of laughing at jokes that aren't funny for the sake of making a kindergarten class happy at a talent show. "I would always be like I don't get it. Why is everybody laughing? It wasn't until later when I realized, that they're laughing so the kid's feelings won't get hurt." He then acknowledged that what most people seemed to find humorous, he did not, such as people falling or hurting themselves accidentally. "A lot of things people find funny, I don't find funny." He referenced America's Home Videos which often shows people failing at a stunt, falling, tripping, or getting hurt; however, he stated, "that's not funny to me…I guess there's empathy." Additionally, he shared his first memory of noticing a difference in his physical and social presentation. "I think the first time I ever knew there was something different about me was when I was in preschool one day; I was just looking in the mirror thinking, why aren't I smiling? I didn't know at that point that a neutral expression is oddly confused with frowning. I thought that unless you were [smiling], then you were unhappy, and that's not true. I guess my expression is a bit darker than other people my age."

A student discussed her process in social learning with peers. "I observe the way people are acting relative to each other and how that compares to how they're acting relative to me." Students mentioned that they became aware early in development that they were different, that they didn't readily identify what other peers were doing to become so easily liked and readily welcomed. "I was the person who was different than the rest of the class, and the rest of you know, anything. I think it still applies to Mansfield Hall and will apply, probably, for the rest of my life. Sometimes when people give me social cues, I don't always get what they're trying to tell me [through] the hidden rules. It's nonverbal, overall body language. A lot of people thought of me as a pariah. A pariah is someone who doesn't like to be talked with, and everyone kind of ignores you. Socially, they don't invite you to anything. You're always left out, being excluded."

Within the theme of self-conception among all students, loneliness came up frequently in interviews. Students shared their many experiences with feeling alone despite having others around them. "I felt alone when I was around other people." Students discussed their observations of peers and the way they noticed others interacting with great detail. When the author asked students what their role in these social events were, students discussed self- removal, comfort in isolation after trying to mingle with groups despite students expressing initial interest to be a part of social groups, to be readily welcomed and comfortable around others. However, as social interactions become increasingly more confusing and challenging to interpret, students discovered a sense of comfort with their games, their books, and their media. Processing social information for neurotypical individuals seems more natural, instinctual, and sometimes subconscious. Students compare themselves with peers and their social processing speeds, observing that they process social information more slowly, taking time to identify and interpret social interactions." A

lot of kids didn't understand the way I worked or the way I socialized, and they were kind of put off by it." A student describes her early memories and experiences involving social confusion during school. "I can remember quite a few problems in elementary school that to me make absolutely no sense. Tag was one thing. Sometimes they broke off the game, and I couldn't tell who people were. Other times it was simply a matter of conversation topics. I thought I was participating just fine, and then they'd stare at me oddly whenever I said something. To this day I still don't know what I did in a number of those instances. I thought I was playing along just fine for whatever the rules were. I still don't know quite what I did." As students interpreted their social engagement and experiences as becoming increasingly more abstract or vaguely negative, anxiety became increasingly more prevalent in guessing what social behaviors to increase or decrease. Thus, students began to attribute social losses to inherent qualities and characteristics of their permanent, innate biological and neurological programming rather than a skill that can be learned and fluid. When social expectations, family expectations, academic and school expectations continued to rise, inevitably self-expectations became more challenging to accomplish. Students felt overwhelmed with vague and unidentified social stimuli and resorted to escapism to another world that is more comfortable, dependable, and temporarily soothing—books, video games, music, history, comics, Netflix, etcetera.

Intelligence and Academic Development

The students also acknowledged that they learned things differently than their peers, and in many ways, were more intelligent and focused. Students discussed being ahead of peers academically during adolescence in elementary school; however, through development, students fell behind academically, and some students even failed out of their first semester of college. "My reading level was really, really far ahead of people. I have a keyboard, now; my writing can now keep up with my thoughts. I brought home excellent grades, the best in the class." Another student states, "In grade school, I functioned much faster than the other kids, Now, I don't because everyone is at a different level."

As students transitioned from grade-to-grade, school seemed to become increasingly more social, and social expectations began to rise and become more apparent, disrupting their academic success. "In elementary school, my interests were pretty much very, very different from everyone else in the class. I thought they were boring, but I wasn't going to be impolite about it, but it probably came off. Unfortunately, first grade was a bit past the age when you can make friends over instances of a broken crayon or when there could be playdates arranged by your parents." Another student discussed experiences in middle school, "in middle school, the way sixth grade worked was I liked math and science but realized that in English, I was falling behind because my abstract memory developed later for me." Another student talked about added anxiety with the expectation to take her daily medications regularly. "Throughout middle school, I had been forced into my daily routines of taking my meds, and suddenly, it was being put on me. Skipping days and dosages is never a good idea. I just didn't care or do anything anymore related to school. I felt like there was one friend who didn't treat me as an equal to other friends and [that] spread into a social paranoia that

all the rest of them were that way, too. It started a wave of depression."

Another student discussed her freshman year of college and experiencing academic turmoil. "My first semester, I flunked out because I fell behind in one of my class assignments, probably why I got called into the dean's office. I was told something there that I hadn't actually been told before—that it was okay to fail. I enrolled as a beginning student, and I tried desperately to get my life put back—time management, some basic skills, and how to juggle priorities and stuff. Because if I didn't do that, I would never leave my parents' home, and would never fix anything. I've come a long way since then, but I still can't do social stuff, because I never actually learned how to fight, or recognize when I'm in a fight." As she became increasingly overwhelmed, she began to escape to her books and phone. "I wanted more time with fan fiction, and if my grades suffered, I didn't care too much about it. My constant life through the next few years would be, why is everybody so focused on my schoolwork, dammit?"

On the other hand, one student shared her family history of intelligence and academic prestige. In comparing herself with her parents, she diminished her own accomplishments as an honors biology major. "How does a girl with a genius I.Q. and two Harvard grads for parents end up somewhere like UVM? It's a long story. [In middle school] My parents were like, she's going to flunk out of this gifted prep school with clearly fixable behavioral issues. Then they sent me off to a wilderness program, and after I completed that, a therapeutic boarding school…there was a lot of pressure of I have two Harvard grads for parents. I mean, my parents are probably somewhere on the spectrum themselves." This same student also went on to share that she didn't think of her Asperger's diagnosis as a learning disorder because she "learn[s] better than most people." "I know that I have to try harder to be socially aware than most people. I try not to think about it until I have to think about it." Students have internalized their academic and social attempts through developmental feedback, thus accepting their perception as a permanent reality.

Discussion

Many autistic individuals suffer from chronic anxiety and depression. Studies have confirmed that autism symptoms directly predict less emotional acknowledgment, increased alexithymia, and intolerance of uncertainty (Maisel et al., 2016). Additionally, alexithymia and acceptance have shown to predict 64% of the effects of autism severity and anxiety levels. Many individuals with ASD also suffer from social communication struggles, emotional turmoil, and shutdown. Hedley and Young (2006) found that social comparison is a principal factor related to depression among adolescents with ASD. In other words, adolescents reported comparing themselves to their peers and continually feeling inadequate, less successful, and noticeably outcasted. Chamberlain et al. (2013) found that individuals with ASD tend to be significantly more risk-averse than neurotypical counterparts. Chamberlain et al. (2013) further expected that the ASD group's strong inclination to choose the safest route generalizes to many other life contexts, especially social situations in regards to the ambiguity of probable social outcomes. The current study confirms that individuals with ASD are consciously risk-averse and avoidant of many social contexts, events, and situations.

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It has been continually confirmed that these individuals express significant challenges with cognitive tasks involving executive functioning and problem-solving processes. Jackson and Dritschel (2016) verify that deficient social problem-solving skills are responsible for a substantial portion of depressive symptoms. Results from the current study confirm that students demonstrated signs of depression on account of social trial and error and feeling defeated with no apparent way of knowing what they did wrong and what to change for future social engagements. In correspondence with Ghaziuddin et al. (1998) who found that ADHD (Attention Deficit Hyperactivity Disorder) was most common in concordance with ASD in children where depression was seen commonly among adolescents and adults with ASD, student narratives showed increased depressive behaviors through development, beginning in adolescence and steadily rising into early adulthood. Students often reported anxiety and emotional overwhelm with analyzing social environments, contexts, and events. One participant compared having Asperger's with physical blindness saying, "having Asperger's is like being blind...except you do not have the blind man's excuse for not picking up on the social atmosphere of a room." Her experience of feeling literally blind when not remembering a person's face as a child in tag, or not recognizing an acquaintance who has recently gotten a haircut, or not recalling people's physical features such as eye or hair color when asked to describe them, are analogically compared to the blindness of living with Asperger's. The main difference, she notes, is that physical blindness is rather apparent and Asperger's is not. The fact that it is not results in harsh assumptions, crude social treatment, and increased isolation. The

students have consciously internalized the harsh feedback they have been given over time, feedback that they think was given to them because their peers saw them as entitled, careless, or rude. Masterson (2016) found that children with autism do in fact read faces differently than neurotypical populations and fixate longer on a speaker's mouth instead of the eyes, especially when a conversation turns emotional or sensitive. Tiffany Hutchens, a professor at UVM, evaluated that individuals with ASD tend to look at the mouth rather than the eyes during emotional or difficult conversations because their working memory is taxed and challenges executive function and information retainment. In other words, individuals are straying from the eye region to concentrate on the stimuli from the mouth to digest and engage in the conversation more fully. Mouths are larger than the eyes; they create sound and are less distracting and intrusive than eye contact (Masterson, 2016). The potential body language that these individuals are missing can be taken as careless by the neurotypical who is giving signs that may indicate they want to be left alone or are upset. It could also be problematic when the individual receives negative feedback from a peer treating them as though they did readily interpret their nonverbal social hints. The unintended offense given or boundaries crossed by individuals with ASD are most often not intentional. The psychological distress the negative feedback causes and builds up over time is detrimental to this population and needs to be further recognized by therapists and educators. The overwhelming inner struggle these students present is not validated, emotionally supported, or widely known, thus affecting who they truly are rather than how they seem in correspondence to their offputting body and

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verbal language. For example, getting overwhelmed and leaving a social event, putting hands over the ears because the sensations are over stimulating, or talking too much on one subject as if one were a lecturing professor, present common scenarios that could be perceived by peers as rude or arrogant.

Ultimately, individuals with ASD profiles are especially vulnerable to being taken advantage of, socially manipulated, teased, and bullied. Channon et al. (2001) and Channon et al. (2014) confirm that this population experiences significant challenges with problem-solving especially in comparison to peers, identifying and interpreting sarcastic remarks, and awkward elements of social interactions. The evidence shows that this population does not often recognize, quickly solve, or readily react to various social probabilities. Inevitably, this makes them vulnerable to crossing boundaries, being bullied, and engaging in social interaction "blindly" with a high likelihood of receiving elusive social feedback.

The current study is groundbreaking in that it tracks the process and the conscious psychological impact through the mind of the individual. It focuses on what the person has experienced and how it has affected them and ultimately how they see and feel about themselves because of years of social, sensual, and emotional feedback from social interactions, contexts, and experiences. This study shows how imperative perception is for understanding the comprehensive psychological profile of individuals and similarities among other individuals with the same diagnosis. The study's approach to recognition allows for valid data to be revealed about who a person is to themselves and how past experiences have led them to definitive conclusions

about themself and the world. The study measures perception as neither right or wrong, good or bad; it is what it is, and the data is the outcome of experience the conscious narrative of internalized memories and emotions in interaction with the current self. While the present study's results show that students seem to have consistent confidence in their intellectual abilities yet have become increasingly insecure academically, Burgess (2007) evaluated data on adolescents with ASD that show that better social cognitive skills do not directly relate to more positive perceptions of their quality of life. In other words, despite students' acute self-awareness and assurance of their exceptional intelligence within the current study, academics hold expectations that personal experience has shown to be emotionally and cognitively taxing that has in turn affected motivation and performance.

Extensive future research is needed to investigate perception and interpretation among individuals on the spectrum from different ethnic and cultural backgrounds, socio-economic status, age ranges, genders, sample sizes, and diverse levels of symptom severity expression. The current study involved females and males who were in college in VT. Further research needs to look at older adults, solely females, solely males, diverse cultures, and various backgrounds to account for differences among these factors. For example, it is now becoming recognized that females present characteristics of perfectionism that are not seen in males with ASD. Women with ASD are compared to chameleons for successfully masking their symptoms and having them attributed as shyness or perfectionist. Additionally, autistic females are showing increasing comorbidity with anorexia-nervosa (Miller, 2018). Moreover, future research is needed to examine more in depth

each of the six categories of data presented in this study. Within the themes, romantic relationships, family relationships, risk aversion, self-concept, and intellectual and academic development, all need to be investigated individually to account for a more detailed analysis of the dynamics in regards to individuals with ASD.

Strengths of the study include its method and context. Conducting qualitatively structured interviews allows for autistic individuals to be validated and central to the endless discussion and research aiming to better understand the nature and psychology of autistic experiences. In addition to other works, including narratives of and by autistic individuals such as Hughes (2012) who used an autoethnographic research approach to understand and reflect on his own experiences growing up with an Asperger's profile, the current study includes multiple narratives elaborately displaying the uniqueness and intricate strengths and challenges that are both distinct and shared among college students reflecting on their emotional and psychological development. Hughes (2012) defines symbolic interactionism as the way we act within social situations based on our interpretations of how we think others see us. He adds that using symbolic interactionism can help provide insight into understanding the self which in turn can aid engagement in scenarios faced on a daily basis (pg. 94). Similarly, O'Connell (2010) found that creative writing is a beneficial outlet for individuals with ASD to articulately express themselves in a way that is unique and therapeutic. Acting and drama therapy has been shown to be significantly helpful for autistic populations because it provides a safe and contrived space for individuals to learn social skills through scripts. One of the

students in the current study reported the efficiency of acting lessons. They helped the student establish a sense of belonging and community, learn social subtleties, read and interpret facial expressions and body language, emphasize voice tonality, gain immense confidence, and develop emotional support and escape from a world full of confusion and ambiguity. In not having to come up with lines spontaneously or readily, the scripts provide room for students to work on their confidence, body language, expression, and self-awareness (Wilmer-Barbrook, 2013).

Like Temple Grandin and John Elder Robison, the voices of autistic individuals need to be collectively brought to the forefront for education and advancement from preconceived or stereotyped thoughts surrounding autism, further perpetuated through mainstream television media such as *The Big Bang Theory* (Lorre et al., 2007), *ATypical*, and *The Good Doctor*. These shows depict all male protagonists who are not autistic in real life, and in the show, portray the most striking and well-known symptoms that are convenient for the plot. In doing this, the shows neglect individual variation among autistic profiles and neglect demographics, age, gender, and cultural and societal contexts. Each autistic individual will have their own unique experiences in relationship with their diagnosis. The most effective way to gain insight into an individual's psychological experience is through listening to the narratives of the person who lived and had emotional responses to make them the person they are today. Additionally, within the context of the current study, narratives directly involved autistic populations in autism research and provide a psychological profile of the reality of being on the spectrum. With future research continuing this method

including various individuals of different, age, gender, cultural, and societal contexts, various populations within the general autistic population can be heard, acknowledged and recognized for their unique autistic experiences and expression. The unique variety and similarity expressed through psychological narratives will better educate the nature of autism both in its uniqueness and complexity, as well as the everyday struggles and strengths that come up across the experiences of individuals with ASD from multiple profiles for researchers to look at autism expression closely within and between various populations while comparing themes that come up in individual narratives. These comparisons may explain how environmental factors affect emotional, cognitive, and psychological development within and between autistic populations.

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SOCIAL PERCEPTION AMONG AUTISIC COLLEGE STUDENTS
- CAITLIN KENNEDY SMITH –

Appendix

Student Interview Questions

I am working on a project here at Mansfield Hall about social perception. I am wondering how college students with Asperger's-like thinking are interpreting social concepts, social events, and social feedback through development. I am asking you if you would like to be interviewed and to share your life narrative with me involving how you interpret and process social information because we have a trusting and authentic friendship, and I too, demonstrate unique social-processing and intellectual abilities. Much of the research that has been conducted on HFASD has essentially shown that social cognition and processing are different and unique. Based on this evidence, I am interested in how social information is being processed, a step further than merely acknowledging that there is a difference.

I have spilt this interview into three categories: preadolescence, adolescence, and post-adolescence/young adulthood; the questions are open-ended in purpose to capture your story and your social perception. I may ask clarifying questions that are not initially written down to make certain that what I am interpreting is correspondent with what you are sharing.

Pre-Adolescence:

1. Let's begin by you telling me a bit about your background, where you come from, your family members, and your hobbies.
2. Beginning with your childhood, tell me about your school, your peers, your teachers, and your academics.
3. Tell me how your peers viewed you and treated you in and outside of school.
4. Tell me how you engaged in school and other places (e.g. were you shy, outgoing, observant, etc.)
5. How did you spend your free time?
6. When you were not in school, who did you engage with?
7. What environment were you most content and why?
8. How did you see yourself at this time?
9. Anything else you would like to mention about your childhood?

Adolescence:

1. Tell me about your transition to middle school. How did things change?
2. How did you do in academics?
3. How did you engage with peers in school and outside of school?
4. What environment were you most content and why?
5. What was most challenging for you during these years?
6. How did you grow during these years?
7. Tell me about your family environment and interactions during adolescence.
8. How did you think about yourself?
9. What did others think about you; in other words, how were you perceived?

Post-Adolescence/Young Adulthood:

1. How about now? Tell me about your transition into college?
2. What is most challenging?
3. What is most enjoyable?
4. How have you grown?
5. Explain what your relationship is like with your family now that you are in college?
6. Tell me how have you adjusted to Mansfield Hall and the college environment?
7. Describe to me how you are doing academically?
8. Share with me who you engage with socially?
9. If I were to follow you for a day in your life, what would I see?
10. How are you perceived here in Burlington and by who?
11. Moving forward, what are your goals and what do you hope to accomplish in the near future?
12. Tell me what you hope to accomplish in the distant future?
13. Are your goals correspondent with others' goals for you?
Is there anything else you would like to tell me about your social experience

The Relationship between Cumulative Stress and Pattern Separation and Pattern Completion Performance

Rachel A. John, Elizabeth R. Duval
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Greater levels of stress are associated with memory impairments. Trauma exposure is a form of stress often characterized and examined dichotomously (exposed, non-exposed), but even healthy populations report a wide range of types and number of stressful experiences. We aimed to examine relationships between stress exposure and memory processes associated with encoding and recall (pattern separation and pattern completion). Eighteen healthy participants, with varied amounts of stressful events, reported the number of stressful events experienced throughout their life and were characterized as trauma-exposed or non-exposed controls based on endorsement of a trauma. All participants completed the Mnemonic Similarities Task (Stark, Yassa, Lacy, & Stark., 2013) to assess pattern separation and pattern completion performance. Results revealed that participants in the trauma-exposed group who reported more cumulative stress performed worse on pattern separation. In all participants, more cumulative stress exposure was correlated with better pattern completion performance. There was no difference between trauma-exposed and control groups in pattern separation or completion performance. These results illustrate the role of cumulative stress on pattern separation and completion and parallel models of memory deficits in PTSD. Our findings have implications for trauma-exposure assessment to account for cumulative stress.

Trauma exposure can lead to post-traumatic stress disorder (PTSD), but the majority of trauma-exposed individuals do not develop PTSD or other mental illnesses (Yehuda & LeDoux, 2007). In fact, while approximately 90% of people will be exposed to at least one traumatic event, only 8.3% of people experience PTSD in their lifetime (Kilpatrick et al., 2013). A diagnosis of PTSD requires a trauma that meets criterion A of the Diagnostic and Statistical Manual of Mental

Disorders (DSM-5). A qualifying criterion A trauma must involve direct or indirect exposure to "actual or threatened death, serious injury, or sexual violence" (American Psychiatric Association, 2013).

Previous findings examining factors associated with resilience from PTSD suggest that healthy trauma-exposed individuals exhibit unique behavioral performance on memory tasks. Specifically, healthy trauma-exposed participants performed significantly better on a nonverbal memory task than trauma-exposed participants with depressive or PTSD symptoms. This finding implies that trauma-exposed participants with PTSD may exhibit memory deficits compared to healthy trauma-exposed controls (Wingo, Fani, Bradley, & Ressler, 2010). Likewise, in a scene recognition task, healthy trauma-exposed controls recalled both emotional and neutral items at similar rates, whereas trauma-exposed participants with PTSD and non-exposed controls remembered emotional items more than neutral items. These results suggest that healthy trauma-exposed individuals do not prioritize emotional information over non-emotional information in memory, unlike non-exposed controls and PTSD groups (Steinmetz, Scott, Smith, & Kensinger, 2012). Overall, these findings highlight memory processes that may be unique to healthy trauma-exposed individuals.

Many studies regarding trauma exposure examine trauma as a binary variable, focusing on the "worst event" endorsed. However, a focus on only one criterion A trauma may not be inclusive of all stressful life experiences. Stress is generally defined as any negative emotional experience associated with changes in behavior (Baum, 1990). Many individuals reporting a history of trauma have experienced cumulative stress, or multiple stressful events, that do not qualify as criterion A trauma (Kilpatrick et al., 2013). There may be individual differences associated with the number of stressful events reported that are overlooked using standard trauma assessments.

Moreover, the lifetime amount of stressful events experienced may be related to memory processes. A study by Evans & Shamberg (2009) found that length of time spent in childhood poverty, a source of general chronic stress, was associated with a deficit in working memory in young adults. Furthermore, stressful events may play a role in two memory processes of interest: pattern separation and pattern completion. These processes are involved in the encoding and recall of information. Pattern separation and pattern completion may be relevant to stressful events. Pattern separation is the ability to differentiate between two similar, but different representations, while pattern completion is the ability to recall a full representation from partial information (Stark, Yassa, Lacy, & Stark., 2013). Irregular pattern separation and pattern completion processes are hypothesized to be associated with cumulative stress (Kheirbek, Klemenhagen, Sahay, & Hen, 2012). Specifically, cumulative stress may be associated with a pattern separation deficit and heightened pattern completion. It is proposed that a stressful environment reduces growth in the hippocampus, a region associated with memory processes such as pattern separation and completion. Without this necessary growth, both of these processes may be impaired (Kheirbek, Klemenhagen, Sahay, & Hen, 2012). Overall, these studies suggest that cumulative stress may be associated with pattern separation and pattern completion.

Previous research reports that inducing stress in healthy adults can result in pattern separation deficits. In a neutral image recall task, anxiety was provoked

using a shock stimulus at random intervals during blocks of encoding and recall. In this paradigm, the threat of shock hindered pattern separation performance during recall in healthy participants (Balderston et al., 2015). This result demonstrates that stress may be associated with impairment in pattern separation. However, the mechanism of the pattern separation deficit is unclear. In addition, it is hypothesized that stress during recall is associated with heightened pattern completion (Balderston et al., 2015). These results illustrate that irregular pattern separation and completion, in healthy participants with acute stress, could be related to memory deficits similar to that of PTSD. Yet, while evidence suggests that specific memory processes like pattern separation and pattern completion may relate to trauma and stress exposure, few studies have examined these connections.

This study aimed to clarify the link between trauma exposure, cumulative stress, and pattern separation and completion. We hypothesized that pattern separation and pattern completion performance would differ in criterion A trauma-exposed and non-exposed (control) adults. Specifically, we expected that criterion A trauma-exposed participants would have better pattern separation and pattern completion performance than controls since previous studies have shown unique, enhanced memory performance in trauma-exposed participants (Wingo, Fani, Bradley, & Ressler, 2010; Steinmetz, Scott, Smith, & Kensinger, 2012). In addition to trauma exposure, we were interested in whether cumulative stress was related to pattern separation and pattern completion performance. Previous findings illustrate that stress is associated with impairment in pattern separation and heightened pattern completion (Balderston et al., 2015). Thus, we hypothesized that number of stressful events would be negatively associated with

pattern separation and positively associated with pattern completion.

Method

Participants

Eighteen healthy adult participants (7 male, 11 female) were recruited from the community surrounding a large Midwestern university through flyers and a university study interest website. All participants provided written informed consent prior to participating and were compensated for their time ($90 total for 1 hour diagnostic evaluation and 1.5 hour memory testing visit). All eligible participants were right-handed, English speakers with no past or present medical, neurological, or psychiatric conditions or use of psychotropic medications. Participants were between the ages of 19 and 43 ($M = 26$, $SD = 7.43$). Eligibility was assessed via a phone screen, diagnostic evaluation performed by a licensed psychologist (Clinician-Administered PTSD Scale for DSM-4 (CAPS; Weathers et al., 1999), Mini International Neuropsychiatric Interview (MINI; Sheehan et al., 1998)) and self-report (State-Trait Anxiety Inventory (STAI; Spielberger et al., 1983), Beck Depression Inventory (BDI; Beck, Steer, Ball, & Ranieri, 1996)). The Life Events Checklist (LEC; Weathers et al., 2013) was used to assess the total number of stressful events throughout a participant's lifetime and the mode in which those events were experienced ("happened to me", "witnessed", or "learned about"). Participants were divided into two groups (trauma-exposed and controls) based on whether they experienced a direct trauma that met criterion A. Trauma-exposed status was determined based on whether the "index" event (self-rated worst stressful event) met criterion A based on DSM-V criteria. No participants exposed to criterion A trauma reported any symptoms that would

lead to a formal diagnosis of PTSD or other psychiatric disorders. Overall, there were no significant differences between groups in all modes of stressful events endorsed (Table 1).

Table 1: Means and Standard Deviations of Types of Stressful Events Endorsed on LEC-5 for Trauma-Exposed and Controls

Control			Trauma-Exposed		
	M	SD	M	SD	p
Happened to Me	.60	.84	1.25	1.39	.24
Witnessed	1.00	1.33	1.50	1.31	.44
Learned About	1.50	2.01	3.50	4.07	.19
Total	3.10	2.69	6.25	4.77	.10

Design

To test pattern separation and completion, we used the well-established Mnemonic Similarities Task (MST; Stark, Yassa, Lacy, & Stark., 2013) during MRI scanning. In this study, we examined behavioral performance on this task to assess pattern separation and completion. MRI data are still being collected and will be reported elsewhere. The MST consisted of images of common objects (ex: gloves, apple, bus) and was composed of two parts: an encoding phase and a recall phase. During encoding, participants were presented with 128 images and responded to each image as either "indoor" or "outdoor" to ensure participants were attending to the task. During recall, participants were shown the same images presented during encoding, lures (images that are different from the encoded images but look similar), and distractor images (images never seen before) for a total of 192 trials. Participants responded to each image as either "old", "similar", or "new". Images were randomly presented during encoding and recall phases.

Each image appeared on the screen for 2000 ms with an intertrial interval (ITI) of 500 ms. The task took approximately 20 minutes to complete. We assessed memory performance (pattern separation and pattern completion scores) based on participant responses in the recall phase. Our scoring was derived from the methods of previous studies using this task (Stark, Yassa, Lacy, & Stark., 2013). Pattern separation was based on correct identification of lures (responses to lures as "similar") while pattern completion was based on incorrect identification of lures (responses to lures as "old").

Data Analysis

To examine task performance differences between the criterion A trauma-exposed and control groups, we performed t-tests on pattern separation and pattern completion scores during recall. To examine the relationship between cumulative stress and task performance, we performed correlations between number of "happened to me" stressful events and pattern

separation and pattern completion scores. We chose to only look at "happened to me" stressful events because they are a direct form of exposure. Though both direct and indirect exposure can result in PTSD, direct exposure to trauma is associated with the development of PTSD at a higher rate than that of indirect exposure (May & Wisco, 2016). Even in a healthy sample, we chose to look at "happened to me" events, because of this risk associated with direct exposure.

Results

There were no significant differences in pattern separation ($t(16) = -1.43$, $p = .17$)

or pattern completion scores ($t(16) = .77$, $p = .45$) between the criterion A trauma-exposed and control groups (figure 1, table 2). Post hoc power analyses were performed, based on effect size (Cohen's d) and an alpha level of .05, to estimate our power to detect differences between groups (criterion A, control). Achieved power for pattern separation was 27% ($d = .68$) and pattern completion was 11% ($d = .35$). Average recall reaction time was significantly correlated only with pattern separation in criterion A trauma-exposed participants ($r(6) = -.74$, $p = .04$; figure 2).

Figure 1: Average Pattern Separation and Pattern Completion Performance in Criterion A Trauma-Exposed and Controls
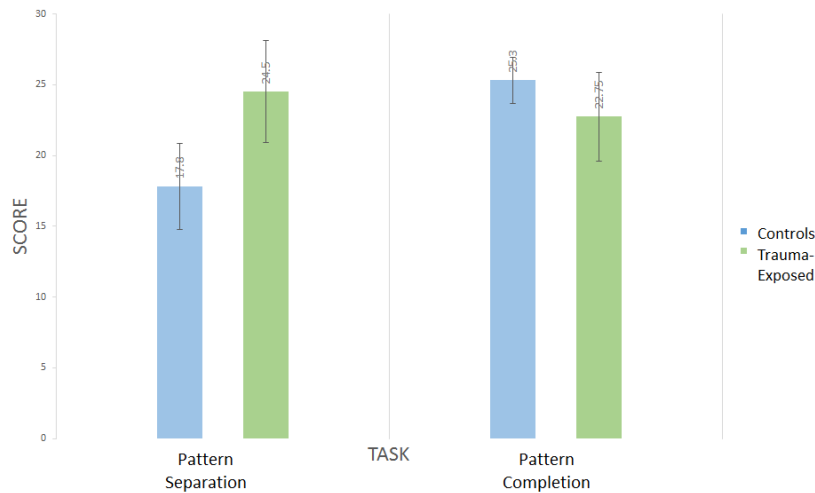
Table 2: Means and Standard Deviations of Pattern Separation and Pattern Completion Scores for Trauma-Exposed and Non-Exposed Controls

Control			Trauma-Exposed		
	M	SD	M	SD	p
Pattern Separation	17.80	9.60	24.50	10.21	.17
Pattern Completion	25.30	5.12	22.75	8.84	.45

Figure 2: Relationship between Pattern Separation Performance and Average Reaction Time within the Criterion A Trauma-Exposed Group
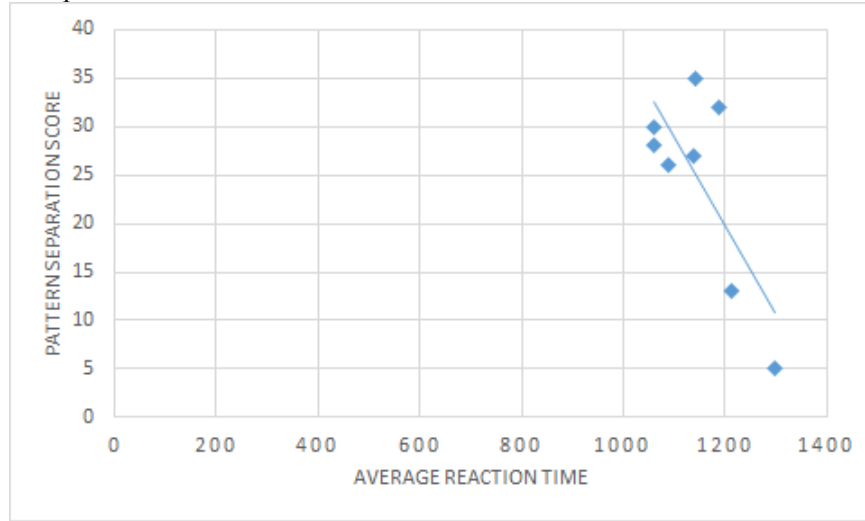
There was a significant negative correlation between pattern separation and the number of directly experienced stressful events ("happened to me") reported in the LEC-5 in criterion A trauma-exposed participants ($r(6) = -.74$, $p =.04$; figure 3). A greater number of stressful events was associated with poorer pattern separation performance. This relationship was not significant in non-exposed controls ($r(8) = .52$, $p =.49$) or across all participants ($r(16) = -.18$, $p =.47$). Additionally, there was a significant positive correlation between pattern completion and number of directly experienced stressful events reported on the LEC-5 in all participants ($r(16) = .469$, $p =.05$; figure 4). A greater number of stressful events was associated with better pattern completion performance. There was a trend-level relationship in the criterion A trauma-exposed participants ($r(6) = .66$, $p =.08$), but no relationship in controls ($r(8) = .34$, $p =.34$).

Figure 3: Relationship between Pattern Separation Performance and Stressful Events Endorsed within the Criterion A Trauma-Exposed Group
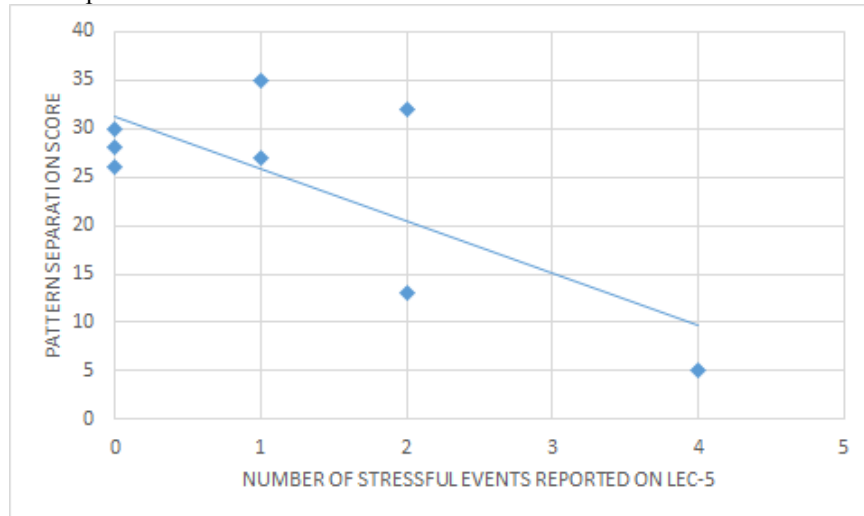
Figure 4: Relationship between Pattern Completion Performance and Stressful Events Endorsed Across All Participants
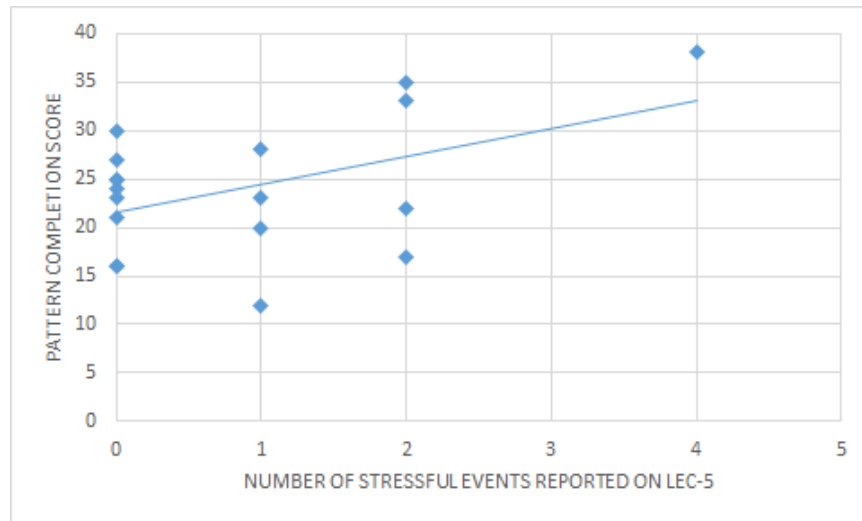
Discussion

Our study investigated the relationships between memory, trauma, and cumulative stress in order to elucidate these widely unexamined connections. Our hypotheses that cumulative stress would relate to memory performance, specifically pattern separation and pattern completion, in healthy adults, were supported. Initially, we hypothesized that cumulative stress would be negatively associated with pattern separation performance and positively associated with pattern completion performance. We found that for people in the criterion A trauma-exposed group, experiencing more stressful events was associated with poorer performance on pattern separation. Additionally, number of stressful events experienced was associated with better pattern completion performance across all participants, suggesting that pattern completion is enhanced as the number of stressful events experienced increases. Contrary to our predictions, there was no difference between criterion A trauma-exposed and non-exposed control groups in pattern separation or completion performance.

Contrary to the idea of general memory deficits associated with stress, our findings indicate that stressful event exposure was correlated with poorer pattern separation, but enhanced pattern completion. Some evidence suggests that impaired pattern separation could be associated with a bias toward enhanced pattern completion (Kheirbek, Klemenhagen, Sahay, & Hen, 2012). Without the ability to properly distinguish new and old representations, analogous to pattern separation, an individual might be prone to generalize information based on old representations, leading to a pattern completion bias. Similarly, impaired pattern separation and a pattern completion bias could be associated with fear generalization in PTSD. Fear generalization involves incorrectly judging neutral information similar to trauma-related information as a threat (Liberzon & Abelson, 2016). Based on models of stress and PTSD, our behavioral results are similar to impairments reported in PTSD: poorer pattern separation and better pattern completion scores associated with the

amount of stress exposure. Overall, since the combination of a pattern separation deficit and pattern completion bias is a potential marker for PTSD, it is possible that cumulative stress exposure is associated with this trajectory.

Moreover, criterion A traumas and non-criterion A stressful events may be correlated with different cognitive processes. We only found a negative relationship between pattern separation and stressful event exposure in the criterion A trauma-exposed group. Previous research is inconclusive, but both trauma and stressful events may be associated with behavioral symptoms and perhaps cognitive impairment as well. One potential explanation for this result is that criterion A traumas may be correlated with more cognitive impairment than non-criterion A stressful events. Furthermore, while a diagnosis of PTSD must involve a criterion A trauma, non-criterion A stressful events can also be associated with PTSD-like symptoms. In one symptom survey, a higher percentage of participants who endorsed a criterion A trauma experienced more PTSD-like symptoms compared to non-criterion A participants (PCL-S; Cameron, Palm, & Follette, 2010). At the same time, other literature has shown the opposite: non-criterion A events yielded a greater percentage of participants experiencing PTSD-like symptoms (Gold, Marx, Soler-Baillo, & Sloan, 2005). Additional studies are needed to further investigate differences in distress and impairment associated with different types of stressful experiences.

We found no difference between criterion A trauma-exposed and control groups in pattern separation or completion performance. Yet, we observed a positive correlation between cumulative stress and pattern completion in all participants. Regardless of criterion A status, cumulative stress may be a more important factor in impairment severity. For example, in a survey of delinquent girls, cumulative trauma was associated with greater symptoms and impairment than the presence or absence of a criterion A event (Lansing, Plante, & Beck., 2017). Ultimately, our results seem to be driven by cumulative stress rather than criterion A categorizations of trauma exposure alone.

Limitations

Our study had several limitations that should be considered when interpreting our findings. First, our sample size was relatively small, so we were underpowered to detect significant differences between groups for differences in pattern separation and pattern completion performance between criterion A and control groups. Second, our method of categorizing participants into the criterion A trauma-exposed group may not have been specific enough because there are differences in mode of trauma experienced. For example, some trauma experiences were direct (happened to participant) while other trauma was indirect (participant witnessed event happen to others or learned about event happening to close family or friends). Future studies should additionally compare mode of trauma because direct and indirect exposure to trauma can potentially be associated with different cognitive processes. Moreover, the non-exposed control group self-rated their worst stressful event. However, it is possible that the non-exposed control group may have experienced a stressful event, that they did not rate as the worst, that met criterion A. Thus, our groups may not have been accurately divided because the focus on worst stressful event is not encompassing of all lifetime stressful events. Additionally, since our study included a healthy sample, our results cannot be generalized to the PTSD population. Overall, our limitations highlight the need for future studies to be

more precise when operationalizing stressful events to assess trauma-exposure.

Conclusions

Overall, our results elucidate relationships between stressful events and pattern separation and completion performance. The findings of this study parallel previous findings and theories that repeated exposure to stressful events is correlated with deficits in memory processes, like pattern separation and completion. Our findings provide evidence that these relationships are present even in a sample of healthy adults. In order to further examine neural and behavioral differences associated with trauma exposure, future studies should incorporate neuroimaging methodologies like fMRI to examine neural mechanisms underlying these relationships in both healthy and PTSD samples. Additionally, since we found relationships between the processes of pattern separation and pattern completion and number of stressful events, the effects of cumulative stress on memory within a PTSD sample should also be further investigated. Previous literature shows that it is common for individuals to have experienced cumulative stress, or multiple stressful events (Kilpatrick et al., 2013), but most studies examine trauma as a dichotomous variable. Future studies may benefit from the assessment of stressful events on a continuum, which would provide a more specific measure of potential contributors to distress and impairment, resulting in a more comprehensive and nuanced view of relationships between stress, trauma, PTSD symptoms, and memory.

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The Southern Gentlemen or Modern Sexist? An analysis of regional variation in the heterogeneity of sexist beliefs

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Evidence from international comparative studies into sexist beliefs indicate a general decline in sexism across Western nations (Glick et al., 2000). However, in studying how sexist beliefs differ between nations, we may be ignorant of regional variability occurring within nations. The current study indicates an intra-national divide within the United States of America — specifically, cultural differences in the Northern and Southern states. The division of the North and South as two distinct subcultures within the USA is based upon the conceptualization of the South as a "culture of honor" (Cohen & Nisbett, 1994). As a culture of honor, the South maintains sexism through the narrow definition of gender roles and what behavior is deemed appropriate. Upon analysis of Southern gender stereotypes, benevolent sexism was used to assess regional variation in women's attitudes towards sexism. Despite the subjective positive orientation, endorsement of benevolent sexist ideology can be damaging to gender equality as it justifies inequality and rewards conformity. Consistent with our initial hypothesis, individuals who identified as Southern USA showed significantly different levels of sexism than the Northern USA and United Kingdom groups. Women self-identifying as Southern indicated greater endorsement of benevolent sexism, personal support for gender stereotyping, and higher perceived cultural pressure to maintain traditional gender roles. However, the Southern USA group did not indicate a correlation between personal and cultural belief systems, suggesting that although both scales indicate greater endorsement of sexist ideology in the South, relative to other areas tested, these attitudes appear to vary independently of one another. These differences across the regional groups remained significant even after controlling for individual levels of group identification.

Keywords: sexism, regional variation, culture, women, attitude

Sexism is an important, prevalent, and damaging social phenomenon (Eagly & Mladinic, 1989). In particular, sexism impairs the lives of women, negatively impacting physical and mental health (Swim, Hyers, Cohen, & Ferguson, 2001) and their psychosocial wellbeing (Schmitt, Branscombe, Postmes, & Garcia, 2014). In general, sexist beliefs are in decline across Western nations, where societal attitudes are becoming progressively more egalitarian (McHugh & Frieze, 1997),

whereas they continue to remain high amongst non-Western, developing nations (Glick et al., 2000). The current research will consider how women's attitudes to sexism and their support for traditional gender roles can be used to assess the regional variation of persistent gender discrimination within the Southern and Northern regions of the USA, with the UK used an additional example of a developed nation for comparative purposes.

As previous research has focused on how sexist beliefs differ between nations, it risks neglecting variation within nations. There is the potential for ignorance of regional variability due to cultural differences which preserve pockets of sexism. Thus, despite indications of an overall erosion of sexist beliefs in developed nations, we cannot assume these changes are happening everywhere, or indeed at the same rate, within these nations. The overall progression towards equality in developed nations may not be the same when we look within regions. Neglecting to look at the pattern of sexism within regions may provide us with an incomplete picture of this damaging phenomenon.

The literature which will be reviewed throughout this introduction is primarily focused upon the work of Glick and Fiske (1996). Their extensive research into the nuances of sexist ideologies — in particular the variation in hostile and benevolent sexism, and tools for attitude measurement — forms the basis of this study. This issue of female-endorsed sexism will be considered using the concept of the Black Sheep Effect, defined by Marques & Paez (1994) as stricter inter-group regulation on behaviour from in-group members. The current study will also use literature from the work of Cohen & Nisbett (1994) to consider the psychological phenomenon of Culture of Honor. This research will consider how the Culture of Honor literature

is applicable to Southern states of the USA and the subsequent impact upon regional variation in women's attitudes toward sexist ideology.

Sexism

Sexism is prejudice, stereotyping, or discrimination, typically against women, on the basis of sex. In line with this conceptualization of sexism as an overtly negative attitude, previous research has tended to focus on exploring the extent to which individuals hold beliefs which justify discrimination based upon gender. The Modern Sexism Scale (Swim, Aiken, Hall, & Hunter, 1995) and the Neosexism Scale (Tougas, Brown, Beaton, & Joly, 1995) are questionnaires often used in sexism research that look at hostile attitudes towards women. However, current research into the belief system underlying sexist ideology indicates that these measures may be overly simplistic in their conceptualization of sexism as a uniformly negative form of prejudice. Glick and Fiske (2001) suggest that to improve our understanding of sexist beliefs, we must acknowledge that sexism is a fundamentally ambivalent concept. Attitudes encompass both hostile and benevolent sexism, which combine to form an overall evaluation of women, and as such, measures of attitudes must aim to look at both aspects of sexism to ensure a complete and accurate assessment.

Hostile sexism involves a more negative tendency towards overt discrimination and prejudice, particularly towards those women who fail to uphold gender normative behavioral standards. This sexism is clearly negative in tone, focused around beliefs that women use sexuality and feminist ideology to diminish male power in society (Becker & Wright, 2011). Conversely, benevolent sexism counterbalances sexist hostility with paternalistic protectiveness towards women

REGIONAL VARIATION IN SEXIST BELIEFS
- EMILY BESWICK -

(Glick & Fisk, 2001). Subcomponents of benevolent sexism combine to form a subjectively positive representation of women in relation to hostile sexism (Becker & Wright, 2011). However, the patronizing behaviors resulting from such ideology can restrict what is deemed female-appropriate behaviour and result in negative affect towards those women who deviate from these ideals.

The subjectively positive tone of benevolent sexism is often more widely endorsed than hostile sexism by both genders, even in relatively egalitarian societies as well as in traditional societies (Viki, Abrahams, & Hutchinson, 2003). This makes benevolent sexism a particularly interesting aspect of sexism to study as its victims (women) are also involved in its perpetuation. Therefore, we will focus our analysis on female participants to explore how this cultural belief system is endorsed across society, even by those who are ultimately restricted by it.

This greater endorsement of benevolent sexism is often explained as due to the prosocial behaviors it elicits (Glick & Fiske, 1996). Benevolent sexist justifications can lead to greater acceptance of sexist restrictions on behavior, even amongst women who did not actively endorse benevolent sexism ideology (Moya, Glick, Exposito, De Lemus, & Hart, 2007). Benevolent sexism in particular correlates highly with "paternalistic chivalry," the concept that women are generally treated with respect and courtesy, but restrictions are placed on what is deemed female-appropriate behavior (Viki, Abrahams, & Hutchinson, 2003). In short, benevolent sexism is endorsed by both men and women, and rewards women for submissiveness whilst punishing them for assertiveness and "non-feminine" behavior.

Benevolent sexist beliefs appear particularly relevant to Southern culture.

Despite the subjectively positive orientation of benevolent sexism, it works to justify female subordination and maintain gender inequality by acting as a reward for conformity (Glick & Fiske, 2001). It will therefore be an appropriate measure to assess the regional variation in women's attitudes toward sexism in Westernized societies, as it is not uniformly rejected by women as hostile sexism tends to be (Glick et al, 2000).

Female Endorsement of Sexism

In considering explanations for why women might endorse sexist beliefs, we may look at how these attitudes come to be prevalent in society. According to Jost, Burgess, and Mosso (2001), dominant groups encourage system-justifying ideologies, designed to convince others that their power is beneficial to the subordinate group. These ideologies are often accepted by subordinate groups as a means of rationalization for their lesser position in society. Often, the acceptance of a subordinate role in society can be stronger in perpetuating discrimination as intragroup discrimination is less likely to be recognized as problematic as it does not meet our prototypical expectations of discrimination. Therefore, this study will focus on the female endorsement of sexist ideology as a means of maintaining subordination within society as it is a powerful, yet often overlooked, aspect of discrimination.

Female perpetuated sexism involves self-policing and regulation of behavior to conform to expected behavioral standards for women (Jost & Kay, 2005). Conversely, male sexism involves the policing of the behavior of others and attitudes toward what is deemed appropriate for another group. Female endorsement of prejudice can be more powerful in maintaining these patterns of inequality as sexist attitudes become internalized by women and impact identity

formation. Behavioral norms are formed which in turn define membership of the gender "in-group".

Thus, benevolent sexism is not overtly rejected by women as it comes partially from within the female group and defines group norms. As discrimination is typically defined as an intergroup prejudice against women, benevolent sexism is often not recognized as discrimination by women and works effectively and invisibly to maintain gender inequality (Becker & Wright, 2011). This study will consider how female support for these traditional gender identities can be used to assess cultural differences in sexism.

Regulation from within the group, in this case women defining the behaviors of other women, is often a stronger force in maintaining adherence to group norms. The "Black Sheep" effect asserts that in-group members are often judged more negatively than out-group members when exhibiting the same behaviors deviant to group norms (Marques & Paez, 1994). This in-group derogation towards members who are seen to threaten the group's social cohesion with their counter-normative behavior operates to preserve the identity of the group. Group members who do not comply with the group's modal opinion, in this instance the group's attitudes towards female-appropriate behavior, are placed under pressure to conform and thus reduce the threat they pose to group uniformity.

The Black Sheep effect has been demonstrated in a number of situations. In a study by Marques, Yzerbyt, and Leyens (1988, Experiment 3) Belgian students watched a television broadcast depicting a riot between the supporters of two teams. Students were then divided into two conditions: the first involved imagining a scenario in which Belgian football supporters initiated the riot (in-group condition), the second in which German supporters were the initiators (out-group). The findings indicated support for the Black Sheep effect in that negative behavior, in this case initiating a riot, was judged more severely when it was associated with members of the in-group. Therefore, Belgian students were more critical of negative behavior when it was exhibited by members of their own national group.

In applying this principle to women as an exemplar of an in-group, consensus on female-appropriate behaviors form the underlying group rationales (Kiesler, 1978). This can lead to stricter enforcement of norms from within the in-group and rejection of those who betray the group's values. Those women who act in a counter-normative manner may experience greater pressure to conform from within their own group than from members of wider society who are outside the group.

The Black Sheep effect of stricter evaluation of in-group members' behavior, combined with the failure to see intragroup regulation as discrimination, makes female sexism a particularly key phenomenon to study. To understand how prejudices are maintained in progressive societies and differ across regions within these nations, we must consider how they are justified and endorsed by the very individuals they discriminate against. This study will consider how female support for these traditional gender identities, as an exemplar of intragroup discrimination, can be used as a measure of cultural differences in the pervasiveness of sexist ideology.

Cultures of Honor

Despite being a single nation, America is composed of multiple, distinguishable cultures. Foremost amongst these cultures is the Southern and Northern distinction. The theoretical basis of considering the Southern and Northern states of America as distinct cultural entities

stems from the concept of America as divisible into regional subcultures, formed by the diverse groups of settlers that colonized early America (Fischer, 1989). The persistence of this cultural divide in modern day America has been explained by the theory that the South is a "culture of honor" (Cohen & Nisbett, 1996).

In determining the North-South divide, research into the culture of honor has used a dichotomous division system based on census classification (Cohen & Nisbett, 1996). States classified as geographically Southern or Western by the U.S. Census Bureau are labelled "the South" (e.g., Mississippi, Alabama), and those which are Northern or Eastern states form "the North" (e.g., New York, Michigan). Importantly, this cultural difference influences the psychology of Northerners and Southerners.

In a culture of honor society, extreme importance is placed upon reputation and regard within the social group (Cohen & Nisbett, 1994). For men in these cultures, there is a strong emphasis on hyper-masculinity and honor through reputation. The archetype of the hyper-masculine "Southern man" posits that reputation amongst the social group is crucial to the self-concept. From a young age, boys in the South are taught that male honor in this society is achieved through displays of masculine courage, physical strength, and warrior virtue (Fischer, 1989). In short, Southern men emphasize strength and dominance, including over women.

The "Southern man" contrasts markedly with the hyper-feminine archetype of the Southern belle (Fischer, 1989) endorsed by Southern culture. Hyper-femininity encourages female submission to male authority, with a behavioral model of the good Southern lady as a chaste and virtuous individual. Gender is primary to the identity of the "Southern woman" as it defines their role in society, behavioral

norms, and core identity. Deviation from socially prescribed roles has a range of negative consequences. For the individual, it can undermine personal honor, leading to a reputation that the woman is unclean, unworthy, or otherwise tarnished (Brown, Osterman & Barnes, 2009). At the familial level, women failing to adhere to hyper-femininity stereotypes risk the honor of everyone, including the hyper-masculine males who prize their social reputation. To fulfill this role, motherhood and marriage are portrayed as a women's route to happiness and role adherence (Scott, 1970). Women who are obedient wives and caring mothers are idolized within honor cultures.

Previous research into the prevalence of the culture of honor mentality in the Southern states has found this to be a significant socio-cultural variable in behavioral prediction. The culture of honor increases endorsement of violent behaviour, both for self-protection against perceived threat to reputation or physical harm and to socialize children using physical chastisement (Cohen & Nisbett, 1994). It has also been strongly linked to the prevalence of suicide as honor states within the USA exhibit higher rates of suicide and depression, particularly in young males (Osterman & Brown, 2011). Previous research has shown culture of honor mentality to be a strong behavioral predictor and we expect this way of thinking about gender normative behavior and familial reputation to be related to women's attitudes to gender roles in regions where this cultural outlook is prevalent.

This paper will consider how the varying levels of identification with culture of honor ideals in the Northern and Southern states of the USA can be used as an indicator of multiple distinguishable cultures within the nation. The narrow definitions of gender roles prescribed by culture of honor mentality, and the high emphasis on social

regard within the group for those who adhere to these roles, enables us to consider how discrimination based on sex can remain pervasive even in nations showing overall progression towards equality. The regional variability in culture of honor mentality is expected to be a significant socio-cultural variable in behavioral prediction for the level of endorsement for traditional gender roles based on women self-identifying as members of each cultural group.

Current Study

In this paper, we report the findings of a study considering women's endorsement of benevolent sexism in the Southern and Northern USA, with the United Kingdom also tested for comparison.

Research Aim

This research will explore heterogeneity of sexist beliefs, specifically regional variability in the Northern and Southern United States of America. We expect that regional cultural differences between the North and South might be reflected in different levels of sexism endorsement in women. Thus, the current literature's emphasis on the decline of sexism across Western nations may paint an inaccurate, or partial, picture of the reality of levels of sexism in the Western world.

Hypotheses

We propose that women who identify as Southerners will show greater endorsement of benevolent sexism, personal support for gender stereotypes, and cultural pressure to maintain traditional gender roles, relative to the Northern USA and United Kingdom cohort.

We also propose that the level to which the female participants identify as a member of their chosen cultural group, as measured by the Group-Identification Scale, will affect their responses on these scales.

Method

Participants

Of 162 original respondents, 10 were excluded due to incomplete questionnaires. 2 respondents were excluded as they selected "male" when asked which gender they identified with. Therefore, 150 individuals were included in the subsequent analyses and all of these participants identified as female.

Participants ranged in age from 18 to 70 years old, with a mean age of 35 years old.

Subjects were asked to select one of three cultures they identified as a member of: United Kingdom (n = 50, 33%), Northern USA (n = 56, 37%) and Southern USA (n = 46, 30%).

Procedure

Data was collected using the online survey platform Prolific Academic. The questionnaire was designed using Qualtrics, and a link was placed on this online platform seeking individuals who identified as female and considered themselves to be culturally affiliated with the United States of America or the United Kingdom. Participants voluntarily took part in this study in return for financial reimbursement of £1. Before beginning the survey, they were asked to read a brief introduction to the study and provided their informed consent to participate

Materials

Participant demographics. All participants were asked their age and gender and to select the culture they identified with from three options: United Kingdom, Southern USA, or Northern USA.

Benevolent sexism subscale. All participants completed the 11-item Benevolent Sexism subscale of the

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Ambivalent Sexism Inventory (ASI; Glick & Fiske, 1996). This is an established inventory of statements regarding male-female relationships to which participants are asked to indicate their level of agreement. All statements in this section were accompanied by a 6 point Likert scale (1 = disagree strongly, to 6 = agree strongly).

Scale formation. We developed a new scale to assess how benevolent sexism beliefs may manifest in women's attitudes towards traditional gender roles. Previous scales such as The Modern Sexism Scale (Swim, Aiken, Hall, & Hunter, 1995) and the Neosexism Scale (Tougas, Brown, Beaton, & Joly, 1995) were deemed unsuitable in achieving the current study's objective of assessing the belief systems of women within developed nations, as they are outdated in content and would likely result in uniform rejection due to their focus on hostile attitudes towards women. The new scale will assess females' personal beliefs about gender stereotypes and their perception of cultural pressure to conform to prescribed gender roles. In developing this scale, we adopted a strategy of question formation based upon Glick and Fiske's (1996) development of the Ambivalent Sexism Inventory (ASI). As beliefs in the South are more nuanced due to the pervasive culture of honor mentality within the context of a Western nation, we focused on issues relevant to Southern women such as marriage, motherhood, and employment. Attitude items were selected based upon extensive analysis of female behaviors prized by societies with high levels of benevolent sexism (Glick & Fiske, 2011), analysis of sexist ideals (Davis, 1981), and women's roles in cultures of honor (Osterman & Brown, 2011). The representation of Southern femininity in popular culture, traditional gender stereotypes politics (Scott, 1970), and the

antebellum South (Wyatt-Brown, 1982) were also crucial in our understanding of the Southern conceptualization of women. These representations consistently emphasized three key aspects of the ideal Southern woman that formed the basis of our scale: aspiration towards marriage, aspiration towards motherhood, and an acceptance of male authority.

Personal views subscale. Participants then completed a 12-item measure intended to assess the extent to which they endorsed traditional gender roles, particularly focused around motherhood, marriage, and submission to male authority. We generated several statements regarding the stereotypical view within cultures of women as submissive wives and mothers to consider the level of endorsement of these gender stereotypical roles of women. All attitude evaluation items (e.g. "Marriage is essential to my future happiness" and "Becoming a mother would be the most important role I could have in life") were measured using a 7 point Likert scale (1 = disagree strongly, to 7 = agree strongly, with 4 = no opinion).

Cultural views subscale. All participants then completed a further section using the 12 statements from the previous scale, but instead, they were asked to what extent their culture would expect these behaviours from women. The items (e.g. "In my culture it is expected that the husband will have a higher income than his wife") were accompanied by a 7 point Likert scale (1 = disagree strongly, to 7 = agree strongly, with 4 = not relevant to my culture). Participants were required to indicate their perception of the extent to which their self-identified culture endorsed or discouraged these beliefs and behaviours amongst women. However, one question ("My culture would consider the ideal age for a woman to marry is") provided participants with options of age categories to select from.

Group identification subscale. The final section involved a scale intended to measure level of Group Identification (Henry, Arrow & Carini, 1999). This was included to assess if the level to which individuals identified as a member of their culture would affect their internalisation and experience of its values. Here, a 7-point Likert scale required participants to indicate their level of agreement with statements about their cultural group. Statements were often reversed to ensure participants were responding accurately (e.g. "I don't like many of the other people in this culture" and "I don't think of this culture as part of who I am"). For brevity, only a subscale of the full Group Identification scale was included and items that loaded highly on the same factors were removed to ensure each question assessed a different aspect of group identity.

A full account of the questions in each section asked and the related scoring system for responses can be found in Appendix 1.

Upon completion, all participants were fully debriefed about the purpose of the research by reading a brief summary about the study. Participants were then thanked for their participation and contribution to psychological research.

Results

Preliminary Analysis

Scores on each item of each of the sub-scales were averaged to create a mean score per subscale for each participant. Three dependent variables, Benevolent Sexism Scale Score (MeanBS), Personal Views Scale Score (MeanPV) and Cultural View Scale Score (MeanCV), form the basis of future analysis. The independent variable of Cultural Group Identification contained three distinct levels of cultural self-identification: Southern USA, Northern USA and United Kingdom. There is

independence of observations as no individual participant was a member of more than one cultural group.

Prior to statistical testing, Cronbach's alpha was assessed as a coefficient of consistency for each scale to ensure inter-item correlation. All three subscales had a Cronbach's alpha over the reliability coefficient threshold of .80 (Field, 2013) (MeanBS = .89; MeanPV = .85; MeanCV = .83) indicating suitable levels of scale reliability for use in statistical testing.

To assess the impact of univariate outliers on the data, z-scores were computed for each dependent variable. None of the dependent variables indicated z-scores which were outside of the range of ±3.29 standard deviations from the mean, suggesting the data did not contain significant outliers, (MeanBS, z-scores = -1.70 to 2.85; MeanPV, z-scores = -1.99 to 2.15; MeanCV, z-scores = -2.55 to 1.89).

Initial analysis of the data indicated some issues with normality of dependent variable distribution. Three variables returned scores for skewness and kurtosis outside of the ±1 range of normality (MeanBS, Northern USA kurtosis = -1.167; MeanPV, Southern USA kurtosis = -1/347; MeanCV, Southern USA skewness = -1.198).

Normality of these distributions were further assessed using Shapiro-Wilks test and two variables indicated non-normal distribution with significance levels below the .05 threshold (MeanBS, Northern USA = p = .020; MeanPV, Southern USA = p = .013). However, as it was only two out of a total of sixteen dependent variables combinations that indicated this non-normal distribution, we did not transform all the variables and proceeded with the analysis.

Initial analysis of the data indicated higher scores on each subscale for participants culturally identifying as Southern USA, suggesting higher

endorsement of benevolent sexism and traditional gender roles (table 1). Participants in the Southern group also had higher scores on the MeanCV scale, suggesting they experience greater pressure from their culture to conform to these traditional expectations of women. To explore this further, we conducted statistical analyses to consider if the Southern USA participants' responses differed significantly from other cultural groupings across all measures of sexism.

Table 1: Means and Standard Deviations for Measured Subscales Across Cultural Groups

	Benevolent Sexism Sub-Scale		Personal Views Sub-Scale	
	Mean	*SD*	*Mean*	*SD*
Southern USA	3.23	1.22	4.33	1.36
Northern USA	2.39	.92	3.15	1.16
United Kingdom	2.72	.80	3.77	1.27

	Cultural Views Sub-Scale		Group Identification Sub-Scale	
	Mean	*SD*	*Mean*	*SD*
Southern USA	5.28	.93	4.39	1.06
Northern USA	4.29	.97	4.31	1.16
United Kingdom	4.45	-.01	4.46	1.01

Upon analysis of the Pearson's correlations of the data, it is interesting to note the correlation between MeanPV and MeanCV (table 2). Participants in the Southern USA have the highest scores on both of these scales (MeanPV = 4.33; MeanCV = 5.28), yet these are not significantly correlated in this region. However, scores in the Northern USA are significantly correlated. This may indicate

that the South is higher in sexist beliefs overall but also differs in the forms these beliefs take. In the region of the South, individuals' sexist ideals and cultural propensity for gender discrimination exist, but as two separate constructs independent of one another. Those identifying as Southern have higher personal support for sexism and greater perception of cultural pressure to conform, yet the lack of correlation between these attitudes indicate different sources of sexism. This may have an impact upon future research working towards the erosion of sexist beliefs, as targeting only cultural or personal beliefs will not necessarily impact upon the other.

Table 2: Correlation Coefficients Values (Pearson's) between MeanBS, MeanPV and MeanCV Scores for Participants in each Cultural Group.

Southern USA

	MeanBS	MeanPV
MeanBS	——	
MeanPV	.734**	——
MeanCV	.016	.129

Northern USA

	MeanBS	MeanPV
MeanBS	——	
MeanPV	.536**	——
MeanCV	.124	.388*

United Kingdom

	MeanBS	MeanPV
MeanBS	——	
MeanPV	.313*	——
MeanCV	-.057	-.170

* Indicates significance at $p < .05$
** Indicates significance at $p < .01$

Multivariate Analysis of Variance

A one-way multivariate analysis of variance (MANOVA) was conducted to test the hypothesis that there would be a significant difference between cultural group identification (Southern USA, Northern USA, United Kingdom) and a combination of the three sexism measurement scales.

Prior to conducting the MANOVA, a series of tests were performed to ensure the data was suitable for this type of analysis.

To ensure there were no multivariate outliers, Mahalanobis Distance was compared to a Chi-Square distribution with the same degrees of freedom. No probabilities were lower than the .001 threshold, indicating that the data contained no significant multivariate outliers.

A series of Pearson correlations were run between all the dependent variable combinations to test the assumption that they would be correlated with one another within a moderate range. A pattern of correlation was observed amongst most of the dependent variables (table 2). However, the correlations were not so extreme as to indicate multicollinearity; no correlations exceeded the .80 threshold. Therefore, we can assume that the independent variable affected each of the dependent variables separately and all of the measured scales are appropriate to include in future analysis.

The Box's M value of 22.631 was associated with a significance value of .038. Therefore, covariance matrices of the data can be assumed as equal. Linear relationships between all dependent variables were confirmed using a loess local fit line for each scatterplot.

A three-way multivariate analysis of variance was conducted to assess the effect of the Benevolent Sexism, Personal Views, and Cultural Views subscales across the three cultural groups (Southern USA, Northern USA and United Kingdom). A statistically significant MANOVA was obtained, Pillai's trace = .28, $F(6,292)$ = 7.96, $p < .001$. The MANOVA was followed up with discriminant analysis, and as the independent variable was associated with three levels, two eigenvalues and canonical correlations were extracted. The first eigenvalue of .355 accounted for almost all the model variance (94.8%), canonical R^2 = .26, indicating that a significant amount of variance in the discriminant function derived scores was accounted for by scale responses (Wilks $\Lambda = .72$, X^2 (6) = 47.16, $p < .001$).

To interpret the statistically significant MANOVA effect found, the standardized discriminant function coefficients were consulted. These suggested that the three cultural groups were maximally differentiated by the first function with standardized canonical discriminant function coefficients for the MeanBS (.361), MeanPV (.353) and MeanCV (.713) sub-scales. Analysis of the discriminant function plot (see Figure 1) indicated that the centroids for each cultural group showed that the first function discriminated the Southern USA (selected) from the two other cultural groups, Northern USA (2) and United Kingdom (3). This supports the initial hypothesis that the Southern USA will be significantly different from the Northern USA and United Kingdom on measures of sexist beliefs. This suggests that endorsement of sexist beliefs by women, as measured on a combination of attitude scales, did significantly vary across the cultural groups.

Figure 1: Canonical Discriminant Function Analysis of Cultural Grouping and Sexism Subscales
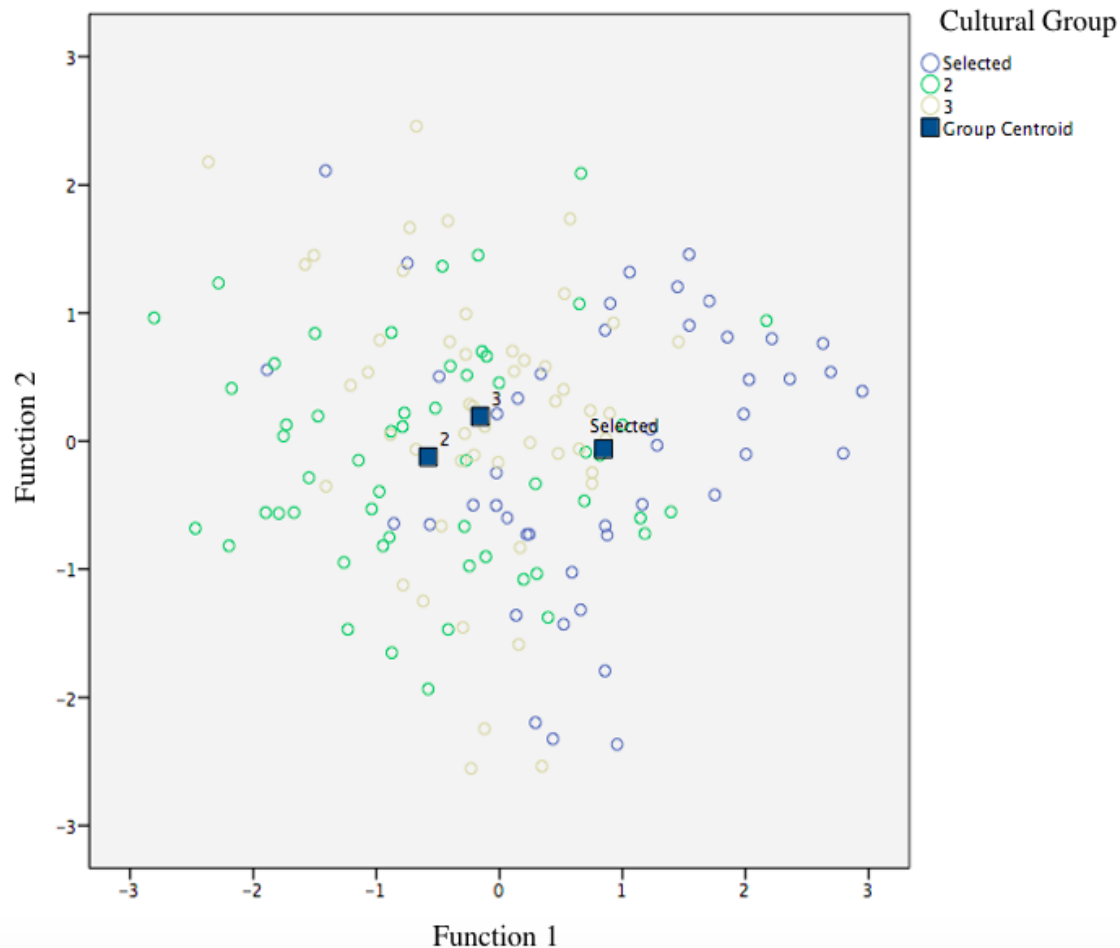
Analysis of Variance

Prior to conducting a series of follow-up Analysis of Variance (ANOVA), the homogeneity of variance assumption was tested for the three subscales to ensure the data was suitable for parametric analysis. Two of the three subscales indicated statistically significant ($p < .05$) Levene's F tests (MeanBS = $p < .001$; MeanPV = $p < .012$), suggesting the variance was heterogeneous. Therefore, the assumption of variance homogeneity was violated and the data was further analysed using the non-parametric equivalent of the ANOVA, the Kruskal-Wallis H test (Field, 2013).

Three Kruskal-Wallis H tests indicated significant differences across the cultural groups for each of the subscales. MeanBS subscale indicated, $X^2 (2) = 12.757$, $p < .002$, with a mean rank BS score of 92.46 for Southern USA, 61.34 for Northern USA, and 75.19 for UK. Thus, as expected, participants who identified as Southern showed greater endorsement of benevolent sexism beliefs than individuals in the Northern USA or United Kingdom.

The MeanPV score between the different cultural groups indicated significant difference across cultural groups, $X^2 (2) = 19.339$, $p < .001$, with a mean rank PV score of 93.73 for Southern USA, 56.10

for Northern USA, and 79.68 for UK. Therefore, personal endorsement of gender stereotypes was also greater for Southern participants relative to their Northern USA or United Kingdom counterparts.

Finally, a Kruskal-Wallis H test on MeanCV showed significant differences across cultural groups, $X^2 (2) = 29.614$, $p < .001$, with a mean rank CV score of 104.24 for Southern USA, 59.79 for Northern USA, and 66.03 for UK. Thus, as expected, women in the South reported experiencing higher levels of cultural pressure to conform to traditional gender roles.

As ANOVAs are relatively robust to assumption violation (Field, 2013), we have also included the parametric equivalent of this analysis for each sub-scale to consider how these differences replicated in an alternative form of testing.

Analysis of variance for each of the subscales indicated that these differences across cultural groupings remained significant in parametric testing. The MeanBS subscale differed significantly, $(F(2,147) = 9.11$, $p < .001) = .110$ and MeanPV subscale scores between cultural groups indicated significant difference, $(F(2,147) = 12.24$, $p < .001) = .143$. A final ANOVA on MeanCV scores across groups also indicated significant differences across cultures, $(F(2,147) = 16.13$, $p < .001) = .180$.

Post-hoc Tukey tests showed the Northern and Southern USA groups differed significantly on the Benevolent Sexism, Personal Views, and Cultural Views subscales at $p < .05$. Further post-hoc Tukey testing indicated the differences between the Northern USA and United Kingdom were not significant at $p < .05$. Therefore, the intra-national differences were more significant than the international differences: the North was closer to the United Kingdom in women's attitudes towards sexism than to the Southern USA group.

Covariate Analysis

The final analysis involved considering how these differences across the cultural groups on a combination of the three subscales were impacted by controlling for the covariate, Group Identification (GI) scores. This inclusion of this covariate was intended to assess how the extent to which an individual identified as a member of their self-selected culture would affect their internalization and experience of cultural pressure.

Before running these tests, the data was tested to ensure it met a further set of assumptions to ensure suitability for covariant analysis. To ensure independence of the covariate from the cultural groups, a one-way ANOVA was conducted. This indicated that Group Identification scores did not differ significantly across levels of the cultural grouping variable, $F(2,147) = .247$, $p > .781$. Therefore, it was suitable for inclusion in the covariant analysis.

To test for the homogeneity of regression, we ran three customized models to include the interaction between the grouping variable and the covariate whilst controlling for each of the dependent variables. The results indicated three non-significant interaction terms (MeanBS = .237, MeanPV = .432, MeanCV = .251). Therefore, the assumption for homogeneity of regression slopes was met and Group Identification was suitable for Analysis of Covariance (ANCOVA).

A multivariate analysis of covariance was conducted and indicated that cultural groups significantly differed in their responses to the sexism subscales, even after controlling for the covariate of GI, (Wilks Λ = .73, $X^2 (6) = .833$, $p < .001$), = .148. This suggests that the level to which an individual identifies as a member of their group does not significantly impact upon their perception of cultural pressure and sexist attitudes. Therefore, the cultural group

with which an individual associates has more of an impact upon their responses than the level of affiliation they express towards this group.

To consider how the covariate impacted upon each subscale, three follow-up ANCOVAs were conducted. The covariate, GI score, was not significantly related to MeanBS score, $F(1, 146) = 1.13$, $p > .281$, $\eta^2 = .008$. Therefore, the effect of cultural group membership on MeanBS score remained significant after controlling for GI score, $F(2, 146) = 9.00$, $p < .001$, $\eta^2 = .11$. The covariate was significantly related to MeanPV score, $F(1, 146) = 7.43$, $p < .007$, however, the effect of cultural group membership on MeanPV score remained significant after controlling for GI score, $F(2, 146) = 12.33$, $p < .001$, $\eta^2 = .14$. The covariate, GI score, was not significantly related to MeanCV score, $F(1, 146) = 1.17$, $p > .102$, $\eta^2 = .018$. The effect of cultural group membership on MeanCV score remained significant after controlling for GI score, $F(2, 146) = 16.42$, $p < .001$, $\eta^2 = .18$. Ultimately, the effect of cultural identification on sexist beliefs could not be explained by greater identification with the group in any particular culture.

Discussion

This research explored the heterogeneity of sexist beliefs, with a specific focus into regional variability in the Northern and Southern United States of America. A sample of individuals from the United Kingdom were also included for the purpose of international comparison.

Main Findings

This study found significant regional variability across the Northern and Southern United States on measures of sexist beliefs.

Women who identified as Southern showed significantly higher endorsement of benevolent sexism, personal support for gender stereotypes, and perceived cultural pressure to maintain these traditional roles, relative to the Northern and United Kingdom cultural groups. This study also found significant differences in the level of cultural pressure women reported experiencing to conform to the role expectations of women, defined by the culture of honor mentality. The findings of the current study provides further evidence for the maintenance of these narrowly defined gender roles in modern Southern society.

Within the current study, the Cultural Views scale was designed to explore how women perceived cultural pressure to conform to traditional gender roles. This scale intended to assess regional variability in sexist attitudes at a cultural level and women's experience of culturally-defined social roles. The findings from this study indicate that although the Southern group reported higher overall levels of cultural and personal sexism, the two were uncorrelated. The higher level of sexism women experienced within their culture was not predictive of their personal attitudes towards sexist ideologies, and vice versa. This lack of correlation between the two forms of attitude is surprising within the wider context of psychological research into cultural and personal attitudes.

The "cultural fit" theory (Lu, 2006) suggests that discrepancy between individual culture (an individual's personal values and behavioral norms) and their wider social context can directly impact upon subjective well-being. Therefore, people are motivated to seek to reduce this discrepancy and improve positive affect by seeking cultural affiliations congruent with their individual culture. The beliefs of individuals may be measured separately

from the beliefs of their culture, but people's choice to either remain or move to cultures that have belief systems congruent with their own are often reflected in results of Lu's (2006) study, which suggests a correlation between personal and cultural attitudes.

Kitayama, Imada, Ishii, and Takemura (2006) present a study into the belief system of residents and settlers to Japan's northern island Hokkaido as an exemplar of a study which suggests a correlation between personal and cultural attitudes. The higher levels of agency exhibited by Hokkaido inhabitants, relative to other areas of Japan, is explained through the self-selection hypothesis. Through the process of voluntary settlement, individuals select the environment they believe is best structured to maintain their ethos.

The lack of correlation between personal sexism and cultural sexism indicated in the Southern US raises an interesting question as to why, in this case, the beliefs do not conform to patterns found in other similar research. Women's personal views on sexism and the cultural expectations for gender are both higher in the Southern group yet appear to vary independently. These results may be explained through the limitations of the sample used in the current study. The use of a relatively small sample size (N=150) may not have been sufficient to replicate the correlations indicated in previous larger studies into personal and cultural belief systems. The unexpected results may also be due to the use of only female participants. A study with a sample that includes both women and men may be beneficial to see if the correlation tendency found in other, universal gender studies can be replicated in this region. It is apparent that there is a necessity to further investigate the correlation between personality and culturally held attitudes toward sexism in order to better understand why both indicate

high endorsement of gender roles yet correlation cannot be established.

Nonetheless, the finding that the Southern and Northern groups showed significant regional differences in sexist attitudes indicates that it may be beneficial to consider them as separate cultures in analysis as the belief systems of those identifying with these cultural groupings are fundamentally different. This distinction is congruent with the theory that the South is a culture of honor (Cohen & Nisbett, 1994). As a "culture of honor", the South is different from the North due to the cultural and personal emphasis placed on traditional gender stereotypes of the hyper-feminine "Southern belle" and the hyper-masculine "Southern man" (Fischer, 1989).

A comparison of the three cultural groups on a combination of measures of sexist beliefs indicated greater similarity between the Northern USA and United Kingdom than the Northern and Southern USA. The intra-national divide between cultures within the USA was greater than the international divide between Northern USA and UK. This suggests the regional variability within the nation is significant and it is theoretically justified to separate these cultures when considering variation in sexist beliefs.

These differences remained significant even after controlling for the covariate, Group Identification. This suggests that the effect of cultural identification on levels of sexist beliefs could not be explained by greater identification with the group in any of the tested cultures. The concept of Southern culture of honor as being a significant socio-cultural variable in behavior prediction, even when level of group identification is controlled for, is consistent with other research. In a study of school violence in the Southern and Northern states of the USA, Brown, Osterman, and Barnes (2009)

included a measure of collectivism to consider how these cultural differences were affected by group assimilation. Collectivism was assessed using Vandello and Cohen's statewide collectivism index (1999) and was found to have no significant impact upon the higher endorsement of violent behavior and higher prevalence of school shootings identified in the South (Brown, Osterman, & Barnes, 2009). These findings support the assertion that the regional variability in sexist attitudes persists irrespective of the level of cultural identification expressed by individuals.

Therefore, regional cultural differences within the United States do result in psychological differences between Northerners and Southerners in their endorsement of sexism. Thus, it is beneficial to separate them in future analysis of erosion of sexist beliefs to ensure we get a full picture of regional variation in egalitarianism.

Limitations and Future Research
Assessing male attitudes. A key limitation to address within the current study is the use of only female participants. However, the decision to use only female participants enabled us to consider how sexist ideology and traditional gender roles remain pertinent in Western cultures through endorsement by women themselves.

Female endorsement of sexism can be powerful in maintaining inequality as intra-group discrimination is less likely to be considered problematic since it does not meet expectations of traditional conceptualizations of prejudice. Female enforcement of behavioral adherence is also likely to be more severe due to the stricter evaluation of in-group members' behavior. The greater severity, combined with the recurrent failure to see intragroup regulation between women as discrimination, made

female sexism a particularly pertinent phenomenon to study.

The current study involved the development of new scales to assess how the hyper-feminine archetype of the ideal "Southern woman" impacted women's attitudes towards traditional gender roles. As a result, only female participants were assessed in the study. In understanding how the culture of honor mentality impacts upon gender stereotypes for men, we may need to develop scales which access behavior associated with the prototypical "Southern man". The emphasis on hyper-masculinity regulates gender normative behavior for men, such as prizing violence, strength, and dominance as ways to maintain honor within the social group (Mosher & Sirkin, 1984).

Therefore, to build upon current findings, which indicate there is regional variability in female endorsement of benevolent sexism and internalization of gender stereotypes across the Northern and Southern USA, we must also consider if this variation persists in male attitudes. The Southern culture of honor mentality has been shown to manifest in greater endorsement of hyper-masculine behaviors, particularly the cultural sanctioning of male violence (Cohen et al., 1996; Cohen & Nisbett, 1994). Individuals with higher personal endorsement of hyper-masculinity have been linked to higher desire for dominance over women (Fox & Tang, 2013) and more aggression towards women who violate gender role expectations (Reidy, Shirk, Sloan, & Zeichner, 2009). Therefore, it would be interesting for further research to consider the impact Southern culture of honor hyper-masculine gender roles has upon male endorsement of sexist beliefs.

Priming and causality. To explore the distinction in endorsement between the benevolent sexism and personal and cultural views identified within the Southern USA group, a limitation regarding the design of

the current study must be addressed. The nature of cultural group measurement here resulted in a quasi-experiment. As the independent variable involved cultural affiliation, participants self-selected as either Southern USA, Northern USA, or United Kingdom and could not be randomly assigned to categories. Cultural identification was considered as an innate characteristic of participants which could not be manipulated by experimental design.

Thus, a procedure is required which enables us to understand causal effects in a situation where the independent variable (in this instance, cultural affiliation) is impossible to manipulate experimentally. To consider how casual effects impact people's responses to questionnaires, it may be beneficial to look at the impact priming can have on behaviors and response patterns. Kelley's (1955) basic model demonstrates that as a variable A has a causal influence on the outcome of variable O, this influence will be more pronounced when variable A is the focus of an individual's attention. To ensure A is salient and accessible to the individual, the relevant values, norms, and attitudes can be primed using tasks designed to cue these associations. Priming is a process in which mental representations are activated, which frame subsequent interpretation of future information (Bargh & Chartrand 2000). In priming an individual's culture by temporarily focusing attention on culture-relevant content, we can increase the saliency of cultural affiliation (for an example of priming culture, see Oyserman & Lee, 2008).

The use of priming studies to vary saliency of culture may have interesting future applications in understanding the different forms of sexism identified within the Southern USA group. Using cultural priming studies to make Southern identity salient may help us unpack the issue of causality. If it is the high levels of cultural sexism that is causing the greater personal endorsement of sexist ideology, then priming culture to be more salient would increase validation of sexism at the individual level. However, if cultural priming was found to have a non-significant effect, this does not necessarily mean the alternative proposed explanation is accurate. To investigate the idea that culture is selecting for people who already hold sexist beliefs, further research into the formation of these attitudes may be required.

Personal and cultural attitudes. Prior research into sexism has focused overwhelmingly on personal attitudes and the conceptualization of sexism at an individual level. The Neosexism Scale (Tougas, Brown Beaton, & Joly, 1995), the Modern Sexism Scale (Swim, Aiken, Hall, & Hunter, 1995), and the Ambivalent Sexism Inventory (Glick & Fiske, 1996) all involve looking at endorsement of sexist ideals at an individualistic level. However, the inclusion of a scale considering perception of cultural sexism in the current study indicates it may also be pertinent to see how these beliefs manifest at a cultural collectivist level.

This may indicate that previous research, with its focus on personal attitudes, may not be providing us with the full picture of sexism. Future research may wish to consider how the correlation between the different genders' endorsement of sexism varies across cultures to understand how sexism persists at both a cultural and an individual level. A second future direction for research to build upon these findings is to assess how cultural and personal sexism differ in their correlation with other variables used to indicate female inequality in society. It would be interesting to explore if these behavioral differences correlate more highly with individual internalization of sexism or cultural expectations of women.

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Conclusion

Despite indications of continuing progression towards gender equality in developed nations, the current study suggests we may be ignorant of regional variability in the rate and extent to which these changes are occurring. Our study explored the heterogeneity of sexist beliefs—specifically, variation between the Northern and Southern United States of America. The findings show dissimilarity in the level of endorsement of benevolent sexism, personal support for gender stereotypes, and experience of cultural pressure to maintain these traditional female roles. Therefore, our findings support the initial hypothesis as the Southern USA cohort indicated higher endorsement of sexist ideology across all measures of sexism.

Comparison of both US cultural groups with the United Kingdom indicated these cultural differences identified in women's endorsement of sexism were more extreme at an intra-national than an international level. This suggests that there is regional variability in the erosion of sexist beliefs within the United States, and in further analysis of sexism, it may be appropriate to consider the Northern and Southern cultural groups separately.

The study also involved considering the potential impact of an individual's level of identification with their cultural group upon their endorsement of sexism. However, the variation in sexist attitudes across culture remained significant even after controlling for individual members' level of group identification. Therefore, the effect of cultural identification on sexist beliefs could not be explained by greater identification with the group in any particular culture.

This study provides evidence of regional variability in female endorsement of sexist attitudes in the Northern and Southern subcultures of the United States of America. To further understand the heterogeneity of sexist beliefs in developed nations, it may be beneficial to look at cultures within the national entities to ensure we are getting a complete representation of progress.

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APPENDIX 1: Participant Questionnaire

1.0 Participant Information Sheet

Project title:
Assessing the changing attitudes towards women in society.

Invitation:
You are being asked to take part in a research study on the roles of women in society and how attitudes change across culture. This study will be conducted by Emily Beswick through The University of Edinburgh Psychology Department and supervised by Dr. Stephen Loughnan. The project has been approved by the Psychology Research Ethics Committee.

What will happen:
In this study, you will be asked to complete a questionnaire online in which you will review statements about women in society and indicate the extent to which you personally agree with them. The second part of the questionnaire will contain statements about women's roles and you will be asking to indicate using a rating scale the extent to which your personal goals fit these statements. The third part of the questionnaire will require you to review these same statements but instead indicate the extent to which you perceive your culture supports or discourages these behaviors for women. The final part will include statements regarding the behaviour of cultural groups where you will be asked to indicate the extent to which you believe these statements apply to your culture.

Time commitment:
The study typically takes 30 minutes in a single session.

Participants' rights:
You may decide to stop being a part of the research study at any time without explanation. You have the right to ask that any data you have supplied to that point be withdrawn/destroyed. You will still receive the course credit for your participation.

You have the right to omit or refuse to answer or respond to any question that is asked of you without removal from the study.

You have the right to have your questions about the procedures answered (unless answering these questions would interfere with the study's outcome). If you have any questions as a result of reading this information sheet, you should ask the researcher before the study begins.

Benefits and Risks:
There are no known benefits or risks for you in this study.

Cost, Reimbursement and Compensation:
Your participation in this study is voluntary. You will receive £1 in return for your participation.
Confidentiality and Anonymity:

The data we collect do not contain any identifiable information, your data will be anonymised. There will be no record that links the data collected from you with any personal data from which you could be identified. The data may be made available to researchers via accessible data repositories and possibly used for novel purposes. Individual participants will not be recognised as all data will be given numeric participant values.

For Further Information:
Dr. Stephen Loughan will be glad to answer your questions about this study at any time. You may contact him at:
steve.loughnan@ed.ac.uk
Room UF40, Psychology Building 7 George Square, Edinburgh, EH8 9JZ

Project Summary:
By signing below you are agreeing that:
1. You have read and understood the Participant Information Sheet
2. Questions about your participation in this study have been answered satisfactorily
3. You are aware of the potential risks (if any)
4. You are taking part in this research study voluntarily (without coercion)
5. Anonymized data only may be shared in public research repositories

2.0 Questionnaire
2.1 Introductory Questions
You will be participating in a short survey about personal and cultural beliefs about the role of women in modern society. Please answer honestly to represent your own views and the views of your community. All responses are completely anonymous as you will be assigned a participant number.

What is your age?
What is your gender?
Please indicate which of these three cultures you identify most with. ● Southern United States of America ● Northern United States of America ● United Kingdom

2.2 Ambivalent Sexism Inventory: Benevolent Sexism Sub-Scale
"Below is a series of statements concerning men and women and their relationships in contemporary society. Please indicate the degree to which you agree or disagree with each statement."

No matter how accomplished he is, a man is not truly complete as a person unless he has the love of a woman.	
In a disaster, women ought not necessarily to be rescued before men.	*
People are often truly happy in life without being romantically involved with a member of the opposite sex.	*
Many women have a quality of purity few men possess.	
Women should be cherished and protected by men.	
Every man ought to have a woman whom he adores.	
Men are complete without women.	*
A good woman should be set on a pedestal by her man.	
Women, compared to men, tend to have a superior moral sensibility.	
Men should be willing to sacrifice their own mental wellbeing in order to provide financially for the women in their lives.	
Women, as compared to men, tend to have a more refined sense of culture and good taste.	

Responses were scored using the following scale: 0 = disagree strongly; 1 = disagree somewhat; 2 = disagree slightly; 3 = agree slightly; 4 = agree somewhat; 5 = agree strongly.
* indicates an item with reverse scoring which used the following scale (0 = 5, 1 = 4, 2 = 3, 3 = 2, 4 = 1, 5 = 0)

2.3 Personal Views Scale
"Please indicate using the scales below the extent to which you agree or disagree with these statements according to your own personal beliefs."

I would prefer to be married before I become a parent.	
Marriage is essential to my future happiness.	
I intend to remain a virgin until marriage.	
The man should always propose marriage to the woman in a heterosexual relationship.	
I expect my husband to have a higher income than me.	
I would expect to complete the majority of domestic chore in the household.	
I would like to become a mother.	
Becoming a mother would be the most important role I could have in life.	
I would expect to take on the majority of childcare responsibilities.	*
Having a successful career is more important to me than becoming a mother.	*
I would prefer to be a stay at home mother than to pursue a career.	*

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Responses were scored using the following scale: 1 = disagree strongly; 2 = disagree somewhat; 3 = disagree slightly; 4 = no opinion, 5 = agree slightly; 6 = agree somewhat; 7 = agree strongly. * indicates an item with reverse scoring which used the following scale (1 = 7, 2 = 6, 3 = 5, 4 = 4, 5 = 3, 6 = 2, 7 = 1)

2.4 Cultural Views Scale

"Please read the following statements and indicate the extent to which your Southern USA/Northern USA/British culture would encourage or discourage these behaviors and beliefs for women."

My culture would consider the ideal age for a woman to marry is	
In my culture marriage is considered to be essential to a woman's future happiness.	
In my culture it is expected that a woman should remain a virgin until she is married.	
My culture believes that all women should aspire to become mothers.	
My culture would consider motherhood to be the most important role a woman could have in life.	
In my culture women would be expected to take on the majority of childcare responsibilities.	
In my culture it is believed that in heterosexual couples the man should always be the one to propose marriage to the women.	
In my culture it is expected that the husband would have a higher income than his wife.	
In my culture it is expected that the woman will complete the majority of domestic chores in the household.	
My culture would consider a woman's career more important than whether she is a mother or not.	*
My culture would consider a successful career essential to a woman's happiness.	*
My culture would expect women to focus on a career rather than aspiring to be stay-at-home mothers.	*

Responses to the 'My culture would consider the ideal age for a woman to marry is:' were selected from 6 options and scored using the following scale (1 = under 20; 2 = 20-22; 3 = 23-25; 4 = 26-28; 5 = 29+; 6 = not relevant to my culture).

Responses using Likert rating scales were scored using the following scale: 1 = disagree strongly; 2 = disagree somewhat; 3 = disagree slightly; 4 = no opinion, 5 = agree slightly; 6 = agree somewhat; 7 = agree strongly.

* indicates an item with reverse scoring which used the following scale (1 = 7, 2 = 6, 3 = 5, 4 = 4, 5 = 3, 6 = 2, 7 = 1)

2.5 Arrow-Carini Group Identification Scale 2.0

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"In this section please indicate the extent to which you agree or disagree with the following statements regarding the culture you belong to. (i.e. Southern USA, Northern USA or British)."

In this culture, members don't have to rely on one another.	*
Members of this culture like one another.	
I see myself as quite different from the other culture members.	*
I don't think of this culture as part of who I am.	*
I don't like many of the other people in this culture.	*
All members of the culture need to contribute in order to achieve the group's culture.	

Responses were scored using the following scale: 1 = disagree strongly; 2 = disagree somewhat; 3 = disagree slightly; 4 = not relevant to my culture, 5 = agree slightly; 6 = agree somewhat; 7 = agree strongly.

* indicates an item with reverse scoring which used the following scale (1 = 7, 2 = 6, 3 = 5, 4 = 4, 5 = 3, 6 = 2, 7 = 1)

Framing of Eyewitness Identification Task

Hussein Ireri
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The present study examines whether the framing of instructions given to witnesses during a lineup administration task can affect the accuracy of the identification decisions. Participants viewed a video of a mock crime and were later shown a simultaneous photo lineup of six men. The participants were randomly assigned to either the target present group, which had the actual culprit present in the lineup, or the target absent group, which replaced the culprit with a familiar-looking person. The participants were then asked to either identify the culprit in the video in the *identify* condition or to rule out the individuals who did not commit the crime in the *rule out* condition. Our hypothesis was that explicitly asking eyewitnesses to rule out people who did not commit the crime would lead to more accuracy in the identification task compared to asking them to identify the culprit. Results showed that in the target absent group, there was a significantly higher rate of accuracy in the *rule out* condition than in the *identify* condition. In the target present group, this difference was only marginally significant. In support of our hypothesis, we argued that participants in the *rule out* condition were more accurate than the *identify* condition because they were more likely to use absolute judgment in the identification task, where the witnesses compared their recollection of the perpetrator with each person in the lineup. In contrast, we argued that participants in the *identify* condition were more inclined to use relative judgment. In other words, they compared each person in the lineup with each other and selected the one who most closely resembled the suspect compared to the rest of the lineup members. We also concluded that the higher significance observed in the target absent condition was because absolute judgment in the *rule out* condition was supplemented by the use of recall-to-reject strategy. This mechanism enabled them to reject a new person that closely resembles the actual suspect who is not in the lineup. Recall-to-reject strategy employed by the *rule out* condition lead to higher accuracy than the relative judgment used by the *identify* condition. We concluded with recommendations for police to implement the *rule out* instructions in criminal identification procedures.

Keywords: target absent, target present, suspect, culprit, perpetrator, absolute judgment, relative judgment, recall-to-reject

The legal system is predicated on human judgment when making decisions on whether suspects are guilty or innocent. Police have to decide whether there is a significant enough link between a crime and a potential suspect before interviewing or interrogating him or her. The prosecutor needs to determine whether the police reports and available

evidence are enough to make a case against a suspect. Finally, the jury must deliberate on the case in question by looking at the evidence provided as well as possible suspect and eyewitness testimonies in order to decide whether the defendant is guilty beyond a reasonable doubt.

It is unsurprising that errors are made by both the law enforcement and eyewitnesses to a crime since they both rely on human judgment and memory recollection. According to the Innocence Project, around 70% of wrongful convictions that have been exonerated by DNA have been based on a mistaken identification (www.innocenceproject.org). Although there are a variety of factors that can influence a witness misidentification (e.g. lineup administrator influence, pressure of making an identification, biased lineup instructions), we will focus on the question of the influence of lineup instructions on memory reliability in witnesses when they are making such crucial decisions that will affect the lives of many people.

Witnesses asked to identify a suspect from a police lineup rely on their memory to match the individuals presented to them with their recollection of who committed the crime. The accuracy of this recollection can be influenced by many internal and external factors within the identification procedure. One of these factors is the concept of relative judgment which is prevalent in simultaneous lineups versus absolute judgment in sequential lineups. Relative judgment involves comparing the lineup members and selecting the person who most closely resembles the perpetrator relative to the other members of the lineup. On the other hand, absolute judgment relies on one's memory if, and only if, the level of match to memory is above some criterion (Fife, Perry & Gronlund, 2014). According to Wells, absolute and relative judgments produce the same results if the target, or suspect, is present (1984, 1993). However, when the target is absent, relative judgment is much less reliable and brings about more error in the identification of suspects. The problem with relative judgment is that there is often someone in a lineup who resembles the culprit relatively more than the other individuals in the lineup. This can be a significant problem if there is an innocent suspect in a simultaneous lineup — where the lineup members are presented concurrently in a photo array — whom the police or witness erroneously believe to be the culprit and who resembles the real perpetrator more closely than the fillers. In this case, the witness would rely on relative judgment and possibly select an innocent suspect. Consequently, the police would be more confident they have the right person, which could potentially lead to a wrongful conviction.

There has been little empirical research done on whether the framing of eyewitness identification instructions has any influence on eyewitness identification behavior and on how these instructions affect the accuracy of identification. Most previous research has focused on the lineup procedure, administrator behavior, and their interactions with the witnesses (e.g. Clark, Marshall & Rosenthal, 2009; Wells, 1984, 1994). For instance, Clark et al. examined whether the lineup administrator comments during the selection process can influence the accuracy of the identification (2009). The present study examines the question of whether the framing of eyewitness identification instructions in simultaneous lineups has any effect on the accuracy of eyewitness identification. We will observe if there is a significant difference in accuracy of the identification procedure between asking witnesses to rule out individuals who did not commit the crime versus asking them to identify the potential culprit.

FRAMING OF EYEWITNESS IDENTIFICATION TASK
- HUSSEIN IRERI -

When the suspect is absent in simultaneous lineups, the efficacy of relative judgment in determining whether the perpetrator is absent or not is influenced by a phenomenon called recall-to-reject or recollection error. This process is the mechanism that enables us to reject a new item that closely resembles the item we are looking for but is not present in the given task (Bowman & Dennis, 2016). For example, in a task where we are told to recall a familiar item, such as a pen, our recall-to-reject would stop us from picking a pencil even though our tendency to generalize could lure us to pick this wrong item. However, this process can err when the choices are quite similar as well as when we are less familiar with the choice we are matching to. By this logic, theoretically, recall-to-reject would be more difficult if a target that resembles the culprit is present when the real culprit is absent. In this case, a witness might be fooled into picking the innocent suspect because it would be difficult for him or her to reject the familiarity of the suspect while relying on memory.

A previous study by Gallo (2004) examined whether the recall of studied words can decrease the false recollection of related lures. Participants studied words in different categories before a final memory recognition test. Half of the participants were given standard instructions for the memory test while the second half were told to use recall in order to reduce false recognition. The results showed that the second half of the participants utilized a recall-to-reject strategy. However, false recognition was reduced only when all of the words in a category could be recalled. When the experimenter used much longer categories, which decreased exhaustive recall, recall-to-reject was not effective at reducing false recognition (Gallo, 2004). The takeaway from the study is that giving

participants explicit instructions can influence their ability to reject false lures. We posit that it is much harder to reject a familiar filler if you give explicit instructions to "identify the culprit." On the other hand, in the same way that the participants in the second half of the study were able to use recall-to-reject after being primed with explicit instructions, it would be much easier to reject this same familiar filler for the suspect if you give explicit instructions to the eyewitness to "rule out the person(s) who did not commit the crime."

In our experiment, we postulate that explicit instructions will have an effect on the type of judgment used and, as a result, influence the accuracy of eyewitness identification. We hypothesize that asking the participants to identify a suspect will increase the use of relative judgment, leading to errors of intuition when the suspect is absent. However, asking participants to rule out the individuals who did not commit the crime will increase the likelihood of them using absolute judgment, relying on their memory to make a decision about whether or not the suspect is present. Target absent lineups usually have five or six photos of fillers who resemble the suspect but did not actually commit the crime. On the other hand, target present lineups have the same number of photos in the lineup, but the actual suspect is one of the choices. For both target absent and target present conditions, we argue that asking participants to rule out suspects who did not commit the crime will lead to more accurate judgment than will asking them to identify the culprit directly. We believe this difference is partly due to the use of absolute judgment in the *rule out* condition versus relative judgment in the *identify* condition. In detail, we hypothesize that the instruction of asking the witness to rule out suspects will cause them to compare each photo to

their recollection of the suspect (absolute judgment), thus yielding more accurate identifications than through instructing them to identify the suspect. In the latter case, the witnesses would use relative judgment to make their decision. Furthermore, we expect that recall-to-reject would be much more likely to occur if you ask the eyewitness to *rule out* the innocent fillers when the suspect is not present in a lineup than if you tell them to identify the perpetrator. Many studies that manipulate recall-to-reject assume that the probability of recall-to-reject is tied with the probability of recall of a learned item (guilty suspect) over the associated distractor (similar looking innocent suspect) in question (Schmid, Herholz, Brandt & Buchner, 2010). We assume that asking the subjects to rule out increases the probability of recall-to-reject being used versus when we ask them to identify the suspect. This is because the nature of the *rule out* instruction will compel them to make more of a concerted effort to reject the wrong suspects in the lineup by using their recollection of the culprit's facial features (absolute judgment) than when they are asked to identify the culprit (relative judgment).

Considering accuracy as either identifying the correct suspect or correctly rejecting all the incorrect suspects, we hypothesize that the most accurate group will be the *rule out* condition in which the real suspect is present in the lineup (target present). Furthermore, we predict that the most inaccurate group will be the *identify* target absent condition. We anticipate participants in the latter condition to be both less likely to use recall-to-reject and to rely on relative judgment, which will lure them into choosing the similar looking innocent suspect. We also expect the participants' confidence on self-reports to be higher in the *rule out* conditions than in the *identify* conditions since their reduced effort in

selecting an innocent suspect who is similar to the real culprit will correspond to a high confidence rating regarding their choices.

Methods

Participants. Participants were 59 college students ranging from freshmen to seniors from Williams College in Massachusetts. None of the participants were familiar with the study. All participants granted their informed consent and were entered into a raffle to win a $5 gift card as a compensation incentive. The participants were debriefed after completing the study.

Design. The experiment was 2x2 design that randomly assigned the participants into four groups done via a computer program called MediaLab. These groups were: *identify* target present, *rule out* target present, *identify* target absent and *rule out* target absent.

Procedure and Materials. The experiment was carried out in a psychology laboratory with several cubicles containing monitors where the participants viewed the video. Before the study, the participants signed a consent form containing a brief description of the experimental procedure. Afterwards, each participant was led into a cubicle where the experiment would take place. The subjects were then randomly assigned into one of the four groups. Next, the experimenter left the room and the participants read instructions before viewing a video. The instructions were as follows:

> *"You are about to view a short video. Please watch the video carefully. There is no sound in the video."*

The participants proceeded to watch a short, grainy, colored video of a mock crime that showed people in a queue at an airport waiting to check their bags in. There

were six people in total waiting in the queue (two women and four men). One woman stood between two white males of similar height wearing the same type of clothes (a black shirt and jeans). The two white males also had similar black bags. The camera focused on the culprit's face for two seconds, then the culprit moved behind the woman and other white male in the queue. While no one was watching, the culprit switched his bag and that of the other white male and walked out of the airport. As he walked out, the camera focused on his face again for about three seconds. The total length of the video was 1 minute and 27 seconds.

The next screen contained the following pre-lineup instructions:

> *"In the video you just watched, the bag that the man switched had a bomb in it. You are now an eyewitness to this crime. In a moment you will be shown photos of a group of individuals. These photos may or may not contain the person who committed the crime you just witnessed."*

The next set of instructions varied depending on what condition the subject was randomly assigned to. For the *rule out* condition, the instructions were:

> *"It is very important that you help us rule out individuals who did not commit the crime. When you view the photos, please indicate which individual(s) did NOT commit the crime in the video. The person(s) who you identify as innocent will not be held for further questioning."*

For the *identify* condition the instructions were:

> *"It is very important that you help us identify the individual who committed the crime. When you view the photos, please indicate which individual committed the crime in the video. The person who you identify as guilty will be held for further questioning."*

On the next screen, the participants viewed a simultaneous photo lineup composed of six headshots of individuals who fit the general description of the culprit (see Appendix A). In both target absent groups, the culprit's photo was removed and replaced with a sixth filler who resembled the culprit. In both of the target present groups, the culprit was part of the photo spread, but the other five photos remained unchanged. In the *rule out* condition (for both target absent and target present), the participants checked the boxes corresponding to the photos of all the individuals they did not see in the video. These could vary from 1 to 7, with a seventh option of "not present" included as well. In both of the *identify* conditions, the participants either picked only one suspect or did not select anyone. After the line-up, the participants rated the confidence level of their choice(s) on a Likert scale (1-10) from 'not at all certain' (1) to 'completely certain' (10). Next, the participants underwent a manipulation check in which they were asked to check the condition they had been assigned to during the procedure (*identify* condition or *rule out* condition). After the experiment, the participants informed the experimenter that they had concluded the study, and they were then fully debriefed and dismissed.

Results

The results of our manipulation check revealed that the participants were 100% accurate in identifying what condition

they were in. Therefore, our analysis included the results of all 59 participants in the study.

The chart below shows the results of the identification accuracy of the target absent and target present groups. Data analysis revealed that for the target present group, the accuracy was 88.9% for the *rule out* condition and 64.7% for the *identify* condition. The overall accuracy of the target present group can be averaged to 77.1%. For the target absent group, the *rule out* condition had an accuracy of 81.8% while the *identify* condition had an accuracy of 38.5%. The overall accuracy of the target absent group was 60.15%.

Identification Accuracy of Target Present and Target Absent Groups
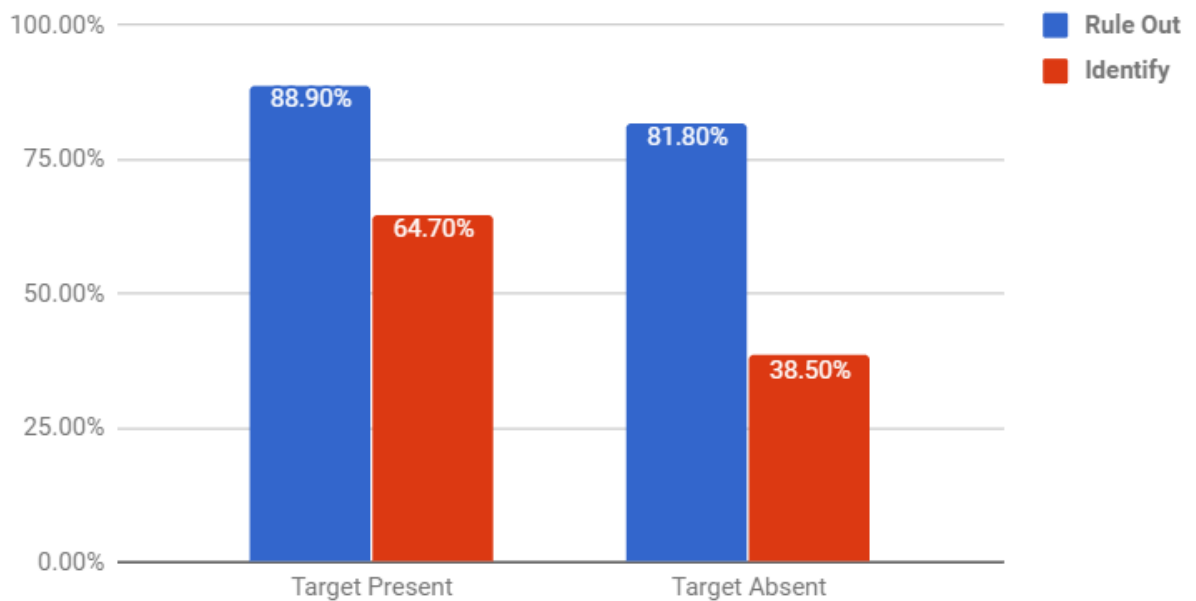
A chi square test for independence was conducted to examine whether there was a significant difference between the accuracy of the *rule out* condition and that of the *identify* condition in both the target absent and target present groups. For the target present group, a chi-square test revealed a marginally significant difference in accuracy between the *rule out* and *identify* conditions, $X^2(1, N=35) = 2.90$, $p =.089$. For the target absent group, the chi-square test showed a significant difference in accuracy between the *rule out* condition and the *identify* condition, $X^2(1, N=24) = 4.61$, $p =.032$.

The results regarding how participants rated their confidence level of their choice(s) in the lineup were correlated with the overall accuracy of the participants. The results revealed that there was no significant effect of confidence and accuracy, r(59)=.035, p>.05.

Discussion

Our research sought to investigate whether explicit instructions of ruling out individuals who did not commit a crime or identifying the culprit would have an effect on the accuracy in eyewitness identification tasks. We hypothesized that eyewitnesses who received the *rule-out* pre-lineup instructions would be more accurate than those who received the *identify* instructions. Our results supported our hypothesis, as a

chi square test revealed that participants in the *rule out* condition in the target absent group were significantly more accurate in the identification procedure than those in the *identify* condition, X^2 (1, *N*=24) = 4.61, *p* =.032. Furthermore, in the target present group, participants in the *rule out* condition were also more accurate in the identification process than those in the *identify* condition, although this difference was marginally significant, X^2 (1, *N*=35) = 2.90, *p* =.089.

According to our hypothesis, the overall significantly higher rates of accuracy in the *rule out* condition were likely because of the use absolute judgment. Participants given the rule out instructions used absolute judgment in matching each person in the lineup with their memory of the culprit they saw in the mock crime. In doing so, these witnesses were able to reject all the lineup members who did not match their recollection of the culprit instead of selecting the best option available. On the other hand, participants given the *identify* instructions relied on their relative judgments, where they compared the members of the lineup with each other and chose the person who resembled the suspect more closely than the others. As such, relative judgment led to more errors of identification when the suspect was replaced by a familiar filler (target absent). This is because in such cases, participants were more likely to pick this person. However, when given the rule out instructions, the use of absolute judgment made it more likely that participants reject this familiar looking filler. This is shown by the significantly higher levels of accuracy in the *rule out* target absent condition than in the *identify* target absent condition.

For the target present group, *rule out* instructions only made the participants marginally more accurate (88.9%) than did the *identify* instructions (64.7%). This could be because, as studies have shown, the use

of relative judgment is typically more accurate when the target is present since the most familiar person in the lineup is usually the culprit (Wells, 1984, 1993). In this case, participants using relative judgment would be lured to make the right choice.

Furthermore, we hypothesized that the participants in the *rule out* condition were more likely to use the recall-to-reject strategy than those in the *identify* condition, since their task was essentially to reject (rule out) the people in the lineup that they thought did not commit the crime. We expected a considerably higher rate of accuracy in the *rule out* target absent condition than in the *identify* target absent condition. The results supported our hypothesis, as 81.8% of participants in the *rule out* target absent condition were accurate in their task whereas only 35% of participants in the *identify* target absent condition had accurate results. We believe that the *rule out* instructions placed the participants in a scenario in which it was easier for them to reject a similar-looking filler suspect. Due to this process, they were able to use the recall-to-reject strategy to avoid falling into the lure of the similar-looking filler. The opposite was true for the *identify* condition, since their default instruction was to identify a suspect. We hence believe it was much harder for those in the *identify* condition to employ the recall-to-reject strategy. This potentially led most of them to choose this filler as the suspect erroneously.

Our findings also showed that there was no significant relationship between confidence and accuracy, r(59)=.035, p>.05. We had predicted that because the participants in the *rule out* condition employed the use of absolute judgment, they would be more confident in their results as opposed to those in the *identify* condition. We hypothesized that those in the *identify* condition used relative judgment and made

more of a mental effort by comparing the participants with one another. The fact that there was no association between confidence and accuracy could be because participants in the *rule out* condition had more choices to make in each identification procedure - that is, ruling out up to 5 people when the target was present. This may have impacted their level of confidence in their accuracy even if they were completely correct.

Our results imply that asking eyewitnesses to rule out individuals who did not commit the crime influences them to use absolute judgment, even in simultaneous lineups. Instructing eyewitnesses to identify a culprit from a simultaneous lineup likely causes them to use relative judgment, which can lead to misidentification when the suspect is not present.

Our findings can be used to improve the procedure of eyewitness identification. As seen by our results, if police officers intend to keep using simultaneous lineups, their efficacy and accuracy can be improved by using the rule out method to instruct the witnesses. This eliminates the false recognition effect of relative judgment by employing the effects of absolute judgment as well as the recall-to-reject strategy. This would mean that fewer innocent suspects would be convicted based off of a false eyewitness identification; in addition, the guilty suspects would be identified more easily.

Our study had a few limitations. First, and most obvious of all, it was difficult to simulate real-world witnessing of a crime by having participants watch a short video of a mock crime. Even though we used a grainy video to try and imitate a real incidence, there are many estimator and general impairment variables that can affect a witness to a real crime. These include: attentiveness of the witness, proximity to actual crime, time spent witnessing the crime, type of crime and time elapsed between the crime and the line up procedure. Secondly, although the sample size was adequate for the study (59), having more suspects in each condition — we recommend at least 30, bringing the total number to 120 — can increase the statistical power and validity of our study. Lastly, our sample might not have been representative of the general population since it consisted of college students of presumed above average intelligence. Future research should strive to be more representative of the demographics of the general population.

Future research could focus on changing the design to have participants witness an actual mock crime and then have them randomly placed into the different conditions. The participants could also view a live simultaneous lineup of suspects instead of using photo spreads. Experimenters could also vary the time between witnessing the crime and the identification process. In addition, future studies could use a similar setup to our own study but change the simultaneous lineup to a sequential one to see if there is a different effect.

Conclusion

Our experiment and findings have shown that there is still a lot to be done to improve the eyewitness identification procedure. Previous studies have recommended the use of blind administrators, as well as having suspects rate the confidence of their identification (Wells, 1988, Wells, 1993; Wells and Seelau 1995). However, there are other factors such as relative judgment and the recall-to-reject paradigm that are also important in the identification task. Consequently, we recommend enforcing a pilot program of the *rule out* condition in the lineup identification procedure. We hope that this will increase the overall accuracy of the witnesses' identification of suspects to make sure that

the actual wrongdoers are the ones convicted, and so we can strive towards having no innocent people in our prison systems.
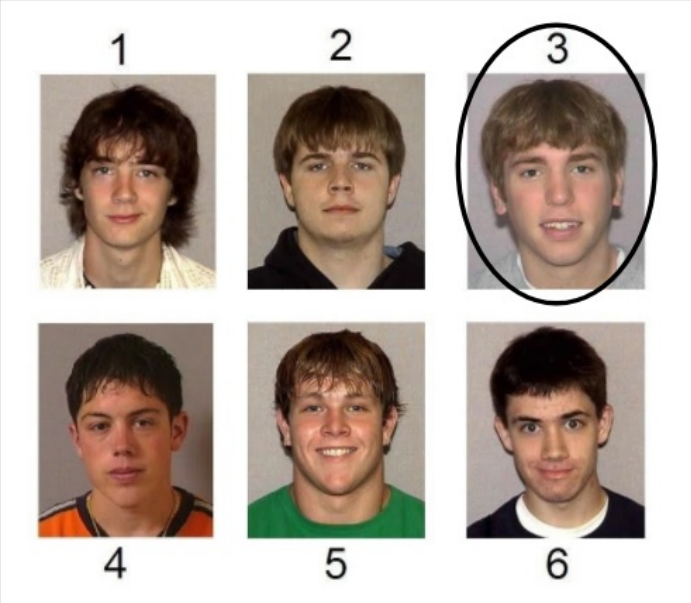
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Appendix A

Photo Lineups

Target Absent Lineup

Photo 3 is the known innocent filler replacement

Target Present Lineup

Photo 3 is the culprit

Television Viewing Habits as Predictors of Physical and Psychological Health

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The current study focused on television consumption and its association with physical and psychological health. Online television streaming services have become increasingly popular in the United States, but little research has been conducted to identify any differences in the relationship between health and television viewing habits. The study hypothesized that overall television consumption and number of binge-watching sessions would be negatively correlated with poor perceived physical health, physical activity, sleep quality, and diet habits as well as symptoms of depression and anxiety. A sample of 235 participants recruited through Mechanical Turk completed an online survey to test the hypothesis. Negative correlations were found between overall hours watched and perceived physical health and physical activity; frequency of eating while watching television and perceived physical health, physical activity, and diet habits; and binge watching sessions and sleep quality–supporting the hypothesis. As a result, changing the studied television-watching behaviors could promote better physical health and sleep quality.

Keywords: television, health, sleep, diet, binge-watching

Television was first widely introduced in American homes in 1948 (Baughman, 1993). In 1960, cable television became even more popular (Stephens, 2000), leading to greater variety of available channels through paid subscription to television networks. In 1970, time-shifted television–previously recorded material that can be viewed at a later date–became available, ultimately making way for digital video recording (DVR) and on-demand television (Bury & Li, 2015). Most recently, streaming television online has begun to replace traditional cable television. However, little research has explored how these changes in television impact consumers.

Americans spend nearly half of their total leisure time watching television; in their 2015 American Time Use Survey, the Bureau of Labor Statistics (2016) found that, on an average day, Americans watched 2 hours and 47 minutes of television. While this is an overall rate of television consumption, it is important to consider the different television modes that are being used. Across traditional television platforms, 30% of the American population watches over five hours of network and cable television per day (The Barna Group, 2014). However, time-shifted and online streaming services are beginning to replace traditional cable. Currently approximately 15% of the general population utilize time-shifted television, and use is increasing, particularly among those ages 18 to 55 (Nielsen, 2012). Online streaming has become very popular with over 145 million people using some

form of Internet streaming service (Nielsen, 2011a); in 2013, 38% of Americans reported subscribing to Netflix, and 18% to Hulu streaming services (Nielsen, 2013). As of 2014, 40% of households reported having some form of internet streaming and on-demand services (Nielsen, 2015). Given increased accessibility to television series and movies, often at more affordable prices, it is crucial to evaluate whether streaming services will result in media consumption at greater rates than traditional cable.

Previous literature found that television-viewing habits are linked with physical health behaviors. Individuals often engage in poor dietary habits, as watching more hours of television is associated with more snacking and emotional eating (Ouwens et al., 2012). Specifically watching familiar and less entertaining television is associated with greater food intake (Chapman et al., 2014; Mathur & Stevenson, 2015). Past studies have also explored the relationship between television viewing and sleeping habits, as television consumption is associated with irregular sleep patterns and experiencing fatigue during the day (Nag & Pradhan, 2012), particularly if television is consumed before bed (Owens et al., 1999; Paavonen et al., 2006). Restricting television use can also lead to improved sleep habits, falling asleep earlier, and sleeping longer (Asaoka et al., 2007). Furthermore, individuals who engage in excessive hours of television viewing often lead sedentary lifestyles, reporting engaging in less physical activity (Hamer et al., 2013; Keadle et al., 2015; Lucas, 2011; Mekary et al., 2012). However, many of these studies were conducted using child samples, (Owens et al., 1999; Paavonen et al., 2006), adolescent samples (Ouwens et al., 2012), or adult samples from other countries (Asaoka et al., 2007). Given how prevalent television consumption is among adults in the United States, more research is needed among this population that explores the relationship between television consumption and physical health behaviors. Therefore, the current study explored the relationship between hours of television consumed and physical health symptoms.

Other studies have confirmed a link between television habits and psychological health, particularly depression and anxiety. In several longitudinal studies, participants who frequently watched television were more likely to be at risk for depression (Lucas, 2011; Primack, Swanier, Georgiopoulos, Land, & Fine, 2009). The finding that greater television consumption is linked to increased risk for depression has been replicated in other countries, including Australia (Teychenne, Ball, & Salmon, 2010) and Denmark (Grontved et al., 2015). It has been found that participants suffering from depression and anxiety disorders consume more television in samples of Canadian youth (Maras et al., 2015). As with studies exploring physical health, there has been a lack of research evaluating these relationships among adults in the United States. Because there is little research to support the correlation between television viewing and psychological health, the current study hypothesized that an increase in television viewing would lead to poor psychological health symptoms.

The present study sought to replicate findings that greater consumption of television is associated with poorer psychological and physical health. It was particularly interested in exploring the habit of binge watching television, which is defined as watching numerous episodes consecutively in a single day (Nielsen, 2013). 88% of Netflix and 70% of Hulu subscribers are reported to watch more than three episodes of a single television show in a day. Due to the lack of research, this study sought to explore how excessive television viewing and binge watching specifically can

be associated with physical and psychological health symptoms. A study conducted by Netflix in 2013 found that 61% of 1,496 individuals who stream television at least once a week reported binging regularly (Netflix, Inc., 2013). Another study found that 35% of individuals self-identify as binge-watchers (Karmakar, Kruger, Elhai, & Kramer, 2015). However, limited studies have investigated binge watching behaviors in terms of prevalence and how binge watching specifically relates to health behaviors beyond consumption of television in general. The studies conducted found that self-identified binge-watchers report more troubled sleep patterns (Kruger, Karmakar, Elhai, & Kramer, 2015a), higher stress and anxiety levels (Kruger, Karmakar, Elhai, & Kramer, 2015b) and greater levels of loneliness and depression (Sung, Kang, & Lee, 2015).

Individuals who consume large amounts of television are more likely to live sedentary lifestyles engaging in less physical activity, with poorer sleep and dietary habits. When exploring psychological health factors, individuals are more likely to report symptoms of depression and anxiety when engaging in long hours of television viewing. Therefore, the current study hypothesized that overall television consumption and number of binge-watching sessions would be negatively correlated with weekly exercise, perceived physical health, and sleep quality and positively correlated with poor diet habits and symptoms of depression and anxiety.

Method
Participants
A priori G*Power analyses indicated 187 participants should be recruited to achieve sufficient statistical power (.80) to detect a medium-sized effect for all analyses. A sample of 250 participants was recruited for the study. After rejecting incomplete surveys or participants who failed attention checks, the final sample was composed of 235 participants between 19-75 years old (M = 38, SD = 12). The sample was 56% women (n = 131), 72% White (n = 168), 48% reported holding a Bachelor's or higher degree (n = 113) , and 52% were single (n = 121); full participant demographics are reported in Appendix B.

Participants were recruited using convenience sampling via Amazon Mechanical Turk; eligibility criteria included being at least 18 years old and currently residing in the United States. Participants were compensated 25 cents. Approval for study procedures were obtained from the university's institutional review board.

Materials
Television-viewing habits. Television-viewing habits were assessed with four questions addressing how many hours in the past week participants spent watching television in general, watching via DVR, watching online streaming (Netflix, Hulu, HBOGo, etc.), or watching live cable television. Additionally, two questions asked how many times they engaged in binge watching (defined as watching more than three episodes of a single television show in a day) and how many times they ate while watching television in the past week.

Physical health. Two subscales of the Lifestyle and Habits Questionnaire (Dinzeo, Thayasivam, Umashanger, & Sledjeski, 2013) were used to measure participants' perceived physical health, physical activity, and diet habits (See Appendix A). Each item was rated on a scale from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*). Items on each subscale were summed to yield three sum scores, with higher scores indicating better perceived physical health, physical activity,

and diet habits. Each subscale had good internal consistency (perceived physical health α = .86; physical activity α = .82; diet α = .78).

The Sleep Quality Questionnaire (Kato, 2014) is a 10-item scale used to measure sleep quality. The scale evaluates two dimensions of sleep behaviors: daytime sleepiness and sleep difficulty (See Appendix A). Each item was rated on a scale from 0 (*Strongly Disagree*) to 4 (*Strongly Agree*). All items were summed together for an overall sleep quality score; higher scores indicate poorer sleep quality. The measure had good internal consistency (α = .88).

Psychological health. The Beck Depression Inventory-II (Osman et al., 2004) is a 21-item scale used to assess severity of depressive symptoms by having participants evaluate symptoms commonly associated with depression in terms of their experiences over the past week (See Appendix A). Each item was rated on a scale from 0 (*Minimal*) to 3 (*Severe*). All items were summed together, with higher scores indicating a greater degree of depressive symptoms. It had excellent internal consistency (α = .95).

The Beck Anxiety Inventory (Beck, Epstein, Brown, & Steer, 1988) is a 21-item scale that assessed severity of anxiety symptoms by having participants evaluate symptoms commonly associated with anxiety (See Appendix A) in terms of their experiences over the past week. Each item was rated on a scale from 0 (*Not at all*) to 3 (*Severely - I could barely stand it*). All items were summed together, and higher scores indicated a greater degree of anxiety symptoms. The scale had excellent internal consistency (α = .93).

Procedure

Participants provided informed consent before completing an online survey created using SurveyMoz. They were then asked to complete a survey that included questions on participants television viewing habits, perceived physical health, and psychological health. Participants were also asked to provide their demographic information, including their sex, age, race, education, and marital status. At the end of the survey, they were provided with a list of online resources regarding physical and psychological health. Three attention checks were included in the survey to assess whether participants were reading the questions. Study participation took approximately 20 minutes.

Data Analysis

SPSS version 24 was used to analyze data. All participants who failed an attention check were removed prior to analyses. Three participants had a missing item on two scales; individual mean replacement was performed to replace missing data. Pearson correlations were performed to evaluate the relationships between television consumption, physical and psychological health, and age. Independent *t*-tests were used to identify any sex and marital status differences regarding television consumption. One-way ANOVAs were performed to identify any differences in television consumption by race and education.

Results

The current study explored participants' television-viewing behaviors and their association with physical and psychological health variables (i.e. see Appendix C). On average, participants reported watching 15.4 hours of television in the past week, or approximately 2.2 hours per day. These numbers are only slightly

below what the Bureau of Labor Statistics (2016) found. It is also important to note the wide range of reported hours watched – from 0 to 100, although few endorsed these extremes with only four participants reported watching no television in the past week and only one participant reported watching 100 hours. However, over a third of the sample – 34.9% ($n = 82$) – watched 20 or more hours of television in the last week, highlighting that a fair amount of our sample consumed a great deal of television.

Television Mode

Participants reported viewing an average of 15.4 hours of television per week ($SD = 12.5$, range = 0-100). They watched more hours of television via online streaming ($M = 6.6$, $SD = 8.1$), followed by live cable television ($M = 4.3$, $SD = 9.8$), and DVR ($M = 2.1$, $SD = 4.6$). Participants reported engaging in 1.6 binge watching sessions per week ($SD = 2.1$, range = 0-10).

Binge-Watching and Physical Health

There was a significant relationship between binge-watching and sleep quality at the 0.05 level, $r = .14$, $p = .04$. This indicates that participants who reported higher rates of binge-watching also scored higher on The Sleep Quality Questionnaire (Kato, 2014) indicating a poorer quality of sleep. This partially supported the hypothesis that number of binge-watching sessions would be associated with poor perceived physical health, as it showed that participants who engaged in higher rates of binge-watching were more likely to have difficulty sleeping. However, there was no significant relationship between binge-watching and perceived physical health, physical activity, and diet habits (i.e. see Appendix B).

Binge-Watching and Psychological Health

There was no significant relationship between binge-watching and participants scores on The Beck Depression Inventory-II (Osman et al., 2004), $r = -.01$, $p = .85$. The Beck Anxiety Inventory (Beck, Epstein, Brown, & Steer, 1988) also showed no significant relationship between binge-watching and anxiety, $r = -.03$, $p = .67$.

Television Viewing and Physical Health

The study found significant correlations between participants' reported scores on The Lifestyle and Habits Questionnaire (Dinzeo, Thayasivam, Umashanger, & Sledjeski, 2013) and overall television consumption. A significant correlation was found between overall television consumption and perceived physical health, $r = -.25$, $p < .001$, and physical activity, $r = -.28$, $p < .001$. The Sleep Quality Questionnaire showed no significant relationship between reported sleep quality and overall hours viewed, $r = -.10$, $p = .129$. There was also no significant correlation between overall television consumption and diet habits, $r = -.10$, $p = .12$. However, there was a significant correlation between eating while viewing and perceived physical health, $r = -.23$, $p < .001$, and physical activity, $r = -.22$, $p = .001$. On average participants reported eating food while watching television 5 times in a week ($SD = 4.7$, range = 0-25). These results showed that individuals who engaged in numerous hours of television viewing were more likely to have a higher rate of eating while viewing, coupled with poor diet habits. Participants who reported higher rates of eating while viewing also engaged in less physical activity and reported having poor perceived physical health.

Therefore, the results supported the hypothesis that excessive television viewing and number of binge-watching sessions

would be associated with poorer perceived physical health, as participants engaged in less physical activity with higher rates of sleep difficulty and poorer eating habits. It can be assumed that engaging in sedentary activities, such as excessive television viewing, may also be associated with negative physical health factors.

Television Viewing and Psychological Health

The Beck Depression Inventory-II showed no significant relationship between overall television consumption and depression, $r = .01$, $p = .87$. Similarly, The Beck Anxiety Inventory showed no significance between anxiety and overall television consumption, $r = -.05$, $p = .42$.

Television Viewing Across Demographics

Appendix B reports mean television consumption by sex, race, education, and marital status. There were no significant differences by sex regarding overall hours watched, hours of live cable, hours of DVR, hours of online streaming, frequency of binge watching, or frequency of eating while watching television. This shows that men and women were reported to watch similar rates of television across all viewing platforms.

Age was significantly correlated with overall hours watched, $r = .28$, $p < .001$, and hours watching live cable television, $r = .26$, $p < .001$. However, age was not significantly correlated with hours of DVR, $r = .12$, $p = .07$; hours of online streaming, $r = -.03$, $p = .69$; frequency of binge watching, $r = -.004$, $p = .95$; or frequency of eating while watching television, $r = .01$, $p = .88$.

There was also no significance between racial groups regarding overall hours watched, $F(4, 228) = 0.93$, $p = .45$, $\eta^2 = .01$; hours of live cable, $F(4, 225) = 0.71$, $p = .59$, $\eta^2 = 0.01$; hours of DVR, $F(4, 224) = 0.59$, $p = .67$, $\eta^2 = 0.01$; hours of online

streaming, $F(4, 226) = 0.89$, $p = .47$, $\eta^2 = .02$; frequency of binge watching, $F(4, 228) = 2.24$, $p = .07$, $\eta^2 = .04$; or frequency of eating while watching television, $F(4, 225) = 1.34$, $p = .26$, $\eta^2 = 0.02$. These results indicate that participants reported similar rates of television viewing across racial backgrounds.

There was a violation of homogeneity in regards to education and overall hours watched; Welch's F correction was used; there was no significant difference in hours watched by education, $F(4, 78.23) = 1.25$, $p = .30$, $\eta^2 = 0.02$. Similarly, there were no education group differences in hours of live cable, $F(4, 226) = 0.33$, $p = .86$, $\eta^2 = 0.01$; hours of DVR, $F(4, 225) = 0.20$, $p = .94$, $\eta^2 = 0$; hours of online streaming, $F(4, 227) = 0.30$, $p = .88$, $\eta^2 = 0.01$; frequency of binge watching, $F(4, 229) = 0.40$, $p = .81$, $\eta^2 = 0.01$; or frequency of eating while watching television, $F(4, 226) = 1.44$, $p = .22$, $\eta^2 = 0.02$. Therefore, participants watched around the same amount of television across all modes of viewing.

There were no significances between single and married individuals regarding overall hours watched, $t(229) = -0.46$, $p = .65$, $d = 0.06$; hours of live cable, $t(226) = -0.664$, $p = .51$, $d = 0.09$; hours of DVR, $t(226) = -0.54$, $p = .59$, $d = 0.07$; hours of online streaming, $t(227) = 0.28$, $p = .78$, $d = 0.04$; frequency of binge watching, $t(229) = 0.87$, $p = .39$, $d = 0.10$; or frequency of eating while watching television, $t(216) = 0.31$, $p = .76$, $d = 0.04$. Therefore, no differences were found between marital status and overall hours watched as well as across television modes.

Discussion
Television Mode

Across ways of viewing television, participants reported more hours via online streaming services than live cable television

or time-shifted television usage. This result was significant because it supported the argument that online streaming services are becoming more popular. However, participants in this sample reported viewing fewer hours of online streaming per week – approximately 6 hours per week – than in other research, which found participants watched an average of 10.9 hours per week of streaming television via Netflix alone (Luckerson, 2016).

Binge Watching and Physical Health

Consistent with previous research with self-identified binge-watchers (Kruger et al., 2015a), greater levels of binge-watching in this study were associated with poorer sleep quality. This finding supports our hypothesis, as participants who engaged in higher rates of binge-watching sessions were found to have greater difficulty falling and staying asleep. This is consistent with previous studies which showed a correlation between excessive television viewing and negative sleep patterns. These results support the argument that higher rates of binge-watching are associated with poor physical health factors. However, this study found no correlation between binge-watching and perceived physical health, physical activity, and diet habits. This finding did not support the hypothesis that a greater number of binge-watching sessions would be associated with poor perceived physical health.

Binge Watching and Psychological Health

Inconsistent with previous research, binge-watching was not significantly associated with anxiety or depression (Kruger et al., 2015b; Sung et al., 2015); this may be tied to methodological differences. Sung et al. (2015) only examined binge-watching among 18-29 year olds, while the current study had a wider age range. This study and Kruger et al. (2015b) both

recruited samples from Amazon Mechanical Turk, but Kruger et al. analyzed data based on whether participants self-identified as binge-watchers, while the current study used participants' reported frequency of binge watching. Overall, this finding did not support the hypothesis that higher rates of binge-watching sessions would be positively correlated with greater psychological health factors, implying that an individual's psychological well-being cannot be predicted by number of binge-watching sessions

Overall Television Viewing and Physical Health

The hypothesis regarding overall television consumption and perceived physical health was supported as watching more hours of television was associated with poorer perceived physical health and engaging in less physical activity–which is consistent with previous literature (Hamer et al., 2013; Keadle et al., 2015; Lucas, 2011; Mekary et al., 2012). This finding supported our hypotheses, providing additional research for television consumption and physical health, and the negative behaviors that accompany watching excessive amounts of television. This finding implies that participants who engage in excessive hours of television viewing are more likely to engage in sedentary behaviors. As a result, individuals spend more time watching television and less time engaging in some form of physical activity. There were no significant relationships between overall television consumption and eating behaviors or sleep quality, which is inconsistent with previous research. However, this discrepancy may be a result of the samples recruited in each study; this study recruited adults over the age of 18 living in the United States, while Owens et al. (1999) and Ouwens et al. (2012) recruited only children, and Chapman et al. (2014), Mathur and

Stevenson (2015), and Nag and Pradhan (2012) recruited adult samples from other countries. Further research is needed to determine how much nationality matters in regards to the relationship between television consumption and health. Additionally, in terms of understanding the relationship between television consumption and health, it may matter more what else participants do while watching television. In the current study, participants who reported more frequently eating while watching television in the past week reported with poorer, perceived physical health, engaging in less physical activity, and less healthy diet habits. Participants reported eating while watching television an average of five times per week. The findings show that participants who spend a large amount of time performing sedentary tasks are less likely to practice healthy physical health behaviors. Therefore it can be implied that, excessive amounts of television consumption is associated with participants being stationary for longer periods of time, which may contribute to a greater degree of hunger over time. Also, a lack of physical activity leaves individuals burning off small amounts of energy which leaves them vulnerable to a greater difficulty sleeping. The results supported our hypothesis that hours of television consumption would be associated with poorer perceived physical health and eating habits. This data is important to the study as it shows how television consumption encourages negative eating habits and poor physical health, leading individuals into a sedentary lifestyle.

Overall Television Viewing and Psychological Health

There were no significant relationships between any of the television outcomes and depression or anxiety symptoms, which is inconsistent with previous research that found greater television consumption is associated with greater depression risk (Grontved et al., 2015; Lucas, 2011; Primack et al., 2009; Teychenne et al., 2010) and that those suffering from depression and anxiety disorders consume more television (Maras et al., 2015). It may be related to only collecting data reflecting on a single week rather than looking at the longitudinal relationship between television consumption and mental health. Using General Social Survey data from 34 years, Robinson and Martin (2008) found that people who rated themselves as happier reported spending less time watching television, even after controlling for other predictors of happiness like marital status and education. This may reflect that television consumption provides short-term pleasure but has negative effects in the long-run, which would be consistent with qualitative research that found individuals consume television because they find it relaxing and uplifting (B. Lee, & R. Lee, 1995). Regarding binge-watching specifically, 73% of individuals in a sample who stream television report having positive feelings towards binge-watching, with a majority reporting that watching multiple episodes of a show enhances their watching experience and provided welcome respite from busy lives (Netflix, Inc., 2013). Furthermore, for 51% of their sample, binge-watching could be a social activity, preferring to watching with at least one other individual rather than be alone. Spending time with other people while watching television may be protective against depression and anxiety, as a longitudinal Australian study found that the more social interactions participants engaged in, the less likely they were to experience psychological distress (Feng & Astell-Burt, 2016). Further research should compare television consumption when done as a solo activity versus a social experience.

Television Viewing Habits
- Averi D'Anna & Erin W. Moore -

Overall Television Viewing across Demographics

There were significant positive correlations between age and overall hours of television watched and hours of live cable watched, which is consistent with previous research that found older adults watched more television than younger individuals (Barna Group, 2014; Bureau of Labor Statistics, 2016). This may reflect that older adults, particularly those over the age of 75, simply have more leisure time than any other age group (Bureau of Labor Statistics, 2016; Goot, Beentjes, & Selm, 2012), owing to being retired or otherwise unemployed due to disability. Older Americans' consumption of television and its relationship to health should be explored further. There were no significant differences in any of the television outcomes by sex, race, education, and marital status. This is inconsistent with previous research that found women consume more television (3.4 hours) compared to men (3 hours) (Barna Group, 2014). Previous research found that Blacks report watching the most television overall, watching on average 6 hours and 24 minutes per day (Nielsen, 2011b), and that White individuals tend to utilize online streaming more (Nielsen, 2012). The lack of significant findings regarding race may be due to having a majority White sample; future research should recruit a more diverse sample to clarify these mixed findings.

Limitations

This study is not without limitations. Firstly, this study used self-report data; it is possible that participants may have over or underestimated their television consumption. Because the study did not require individuals to be television consumers to participate, there may be an inconsistency of results in a sample with lower rates of binge watching, as 25.1% of our sample reported viewing not watching any amount of online streaming in the last week. As such, how binge-watching is operationalized across studies may result in mixed findings. Binge watching was defined in this study as consuming three or more episodes of a single television show in one sitting (Nielsen, 2013); however, individuals may define binge-watching differently. One study found that participants considered binge-watching as consuming between two and five consecutive hours of television (Karmakar et al., 2015). Participants may also have different ideas about what constitutes a "break" from watching television, which may affect their estimation of how many times they have binge-watched in terms of identifying a "sitting". A broader definition of hours consumed may help further clarify the relationship between binge-watching and health; further research should help refine the definition of binge-watching. Methods that may promote more accurate recall – for example, having participants complete a brief daily survey about their behaviors – could be used in future studies. As this study was cross-sectional – evaluating only the past week of participants' behavior – longitudinal research could better capture participants' television behaviors and how they are associated with health behaviors over time. Although this study was conducted online and collected no identifying information, social desirability bias may have affected results regarding both their television consumption and health behaviors. Because this is a correlational study, causation cannot be determined regarding the relationship between television consumption and health behaviors. Additionally, the recruitment of participants through convenience sampling reduced generalizability of the findings. Future studies should use probability sampling to strengthen study design; oversampling from

racial minority groups would provide more power for identifying differences in television consumption.

Conclusion

The purpose of this study was to explore how overall television viewing and binge-watching behaviors were associated with perceived physical and psychological health factors. The central hypothesis of the study argued that a greater rate of television viewing and binge-watching behaviors would be negatively associated with weekly exercise, perceived physical health, and sleep quality. It was also predicted that overall television viewing and binge-watching would be positively associated with poor eating habits as well as symptoms of depression and anxiety.

This study found watching more television and eating while watching television to be linked to worse perceived physical health and less engagement in physical activity, with the latter also related to poorer dietary choices. The specific behavior of binge-watching was related to poor sleep quality. Changing television consumption – reducing overall time spent watching television and frequency of eating when watching television – could promote better physical health. To promote better sleep hygiene, individuals should ensure they are not watching television, particularly binge-watching, right before going to sleep; watching television before going to sleep is associated with more sleeping difficulties (Kruger et al., 2015a; Owens et al., 1999; Paavonen et al., 2006); and restricting television use can improve sleep habits (Asaoka et al., 2007). The study also found no significant relationship between television consumption and psychological health factors. Therefore, no association can be made between overall hours of television and depression and anxiety. This finding did not support the hypothesis that overall television consumption would be associated with a greater degree of psychological health symptoms.

This study did not inquire about the context in which participants consumed television, particularly whether it is always a sedentary behavior. Previous research has noted that simply being more sedentary is associated with poorer health outcomes (Healy et al., 2008; Warren, Barry, Hooker, Sui, Church, & Blair (2010). Spending prolonged times sitting while watching television may be the link between television consumption and poorer physical health. Because of the increased availability of television on portable devices, participants may consume television while standing (i.e., watching while using a standing desk) or when exercising as gyms often provide televisions and people may watch their own devices while exercising; Furthermore, this behavior may be increasingly common as some exercise equipment have televisions embedded in them. Future research should explore the contexts in which people watch television and how often it is a sedentary behavior. Overall, this study provides further research for the field of television viewing behaviors and how it is associated with physical and psychological health factors. It also supports the argument that excessive television viewing is correlated with poorer perceived physical health, exercise, and dietary habits, with higher rates of binge-watching being associated with poorer sleep quality. Therefore, individuals should limit the amount of time spent watching television in order to prevent negative symptoms of physical and psychological health factors.

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Appendix A

In the past week, approximately how many hours did you spend…
1. Watching television in any form (cable, DVR, online streaming)?
2. Watching television with violence?
3. Watching comedy television shows?
4. Watching live cable television?
5. Watching television via digital recording (DVR)?
6. Watching television via online streaming services (Netflix, Hulu, HBOGo, etc.)?

In the past week, approximately how many times did you…
1. Binge watch television? (Binge watching involves viewing three or more episodes of a single television show in one sitting.)
2. Eat food while watching television?

Lifestyle and Habits Questionnaire (Dinzeo, Thayasivam, Umashanger, & Sledjeski, 2013)
The following questions are rated on a 5-point scale. Please type in the number that best fits you response over the past week on the line provided from 1 (Strongly disagree), 2 (Disagree), 3 (Neutral), 4 (Agree) to 5 (Strongly agree).

Health & Exercise:
1. I am as physically fit as most people my age.
2. I have good physical endurance.
3. I spend much of my leisure time involved in physical activities like bicycling, hiking, swimming, gardening, or playing competitive sports.
4. I participate in vigorous exercise like running, swimming, speed walking, or aerobics dance classes for at least 20 to 30 minutes a day and at least three times a week.
5. I try to keep my body healthy and fit.
6. I participate in muscle-strengthening exercise at least several times a week.

Nutrition:
1. I limit my intake of high cholesterol foods such as eggs, liver, and meat.
2. I eat food that is broiled or steamed, not fried or sautéed.
3. I limit the amount of salt and sugar I consume.
4. I eat five or more servings of fruits and vegetables.

The Sleep Quality Questionnaire (Kato, 2014)

The following questions are rated on a 5-point scale. Please type in the number that best fits your daily fatigue and sleeping behaviors over the past week from 0 (Strongly disagree), 1 (Disagree), 2 (Not sure), 3 (Agree), to 4 (Strongly agree).

Daytime Sleepiness:
1. I got drowsy during times when sleeping is not allowed.

2. I sometimes felt sleepy during the day.
3. I sometimes fell asleep when sitting down.
4. I frequently dozed off during break periods.
5. I yawned frequently.
6. My sleepiness interfered with my work.

Sleep Difficulty:

1. I felt like I did not get a deep sleep.
2. I sometimes woke up suddenly after falling asleep.
3. I had trouble sleeping.
4. I was still tired even after waking up in the morning.

Beck Depression Inventory-II (Osman et al., 2004)
The following questions are rated on a 4-point scale. Please type in the number that best resembles what degree you experienced the feelings listed below over the past week from 0 (Minimal), 1 (Mild), 2 (Moderate), to 3 (Severe).

1. Sadness
2. Pessimism
3. Past failure
4. Loss of pleasure
5. Guilty feelings
6. Punishment feelings
7. Self-dislike
8. Self-criticalness
9. Suicidal thoughts or wishes
10. Crying
11. Agitation
12. Loss of interest
13. Indecisiveness
14. Worthlessness
15. Loss of energy
16. Changes in sleeping pattern
17. Irritability
18. Changes in appetite
19. Concentration difficulty
20. Tiredness or fatigue
21. Loss of interest in sex

Beck Anxiety Inventory (Beck, Epstein, Brown, & Steer, 1988)

The following questions are rated on a 4-point scale. Please type in the number that best resembles what degree you experienced the feelings listed below over the past week from 0 (Not at all), 1 (Mildly), 2 (Moderately), to 3 (Severely).

1. Numbness or tingling
2. Feeling hot
3. Wobbliness in legs
4. Unable to relax
5. Fear of the worst happening
6. Dizzy or lightheaded
7. Heart pounding or racing
8. Unsteady
9. Terrified
10. Nervous
11. Feelings of choking
12. Hands trembling
13. Shaky
14. Fear of losing control
15. Difficulty breathing
16. Fear of dying
17. Scared
18. Indigestion or discomfort in abdomen
19. Faint
20. Face flushed
21. Sweating (not due to heat)

Appendix B

Demographic Differences in Television-Viewing Habits in the Past Week

	Overall Hours Watched *M* (*SD*)	Hours Watching Live Cable *M* (*SD*)	Hours Watching Time-shifted (DVR) *M* (*SD*)	Hours Watching Online Streaming *M* (*SD*)	Number of Times Binge Watching *M* (*SD*)	Number of Times Eating While Watching Television *M* (*SD*)

TELEVISION VIEWING HABITS
- AVERI D'ANNA & ERIN W. MOORE -

Sex						
Female (56%, *n* = 131)	15.2 (11.5)	4.3 (8.2)	2.5 (5.3)	6.6 (8.4)	1.7 (2.1)	5.5 (4.8)
Male (43%, *n* = 100)	15.5 (13.9)	4.6 (11.8)	1.5 (3.3)	6.5 (7.8)	1.5 (2.1)	4.4 (4.5)
Race						
White (72%, *n* = 168)	16.2 (12.9)	4.8 (11.1)	2.1 (4.8)	7.2 (8.2)	1.6 (2.1)	5.4 (4.7)
Black (9.4%, *n* = 22)	15 (14.1)	5.5 (6.8)	2.5 (4.5)	5.2 (10.7)	2.4 (2.2)	5.4 (6.0)
Asian (9.4%, *n* = 22)	13.4 (9.6)	2.1 (2.9)	0.7 (1.2)	5.6 (6.8)	0.7 (1.2)	4.1 (4.5)
Hispanic (6.4%, *n* = 15)	13.1 (10.0)	2.1 (5.6)	2.1 (5.2)	5.3 (5.6)	1.0 (1.6)	3.3 (2.4)
Other (3%, *n* = 7)	8.9 (9.8)	2.0 (2.2)	3.0 (5.6)	3.0 (2.6)	1.7 (3.3)	3.0 (3.5)
Education						
High school degree or less (9%, *n* = 21)	18.3 (22.7)	6.3 (21.6)	1.8 (3.9)	6.7 (9.1)	2.0 (2.8)	6.4 (6.3)
Some college (28%, *n* = 65)	15.8 (12.4)	4.5 (8.2)	2.2 (4.3)	7.1 (8.2)		5.1 (5.2)
Associates/Vocational (15%, *n* = 36)	16.9 (12.1)	4.5 (10.1)	1.7 (6.8)	7.5 (7.8)	1.7 (2.2)	5.9 (4.7)
Bachelor's (34%, *n* = 80)	15.0 (10.3)	4.1 (7.6)	2.3 (4.0)	6.0 (8.5)	1.5 (1.8)	4.8 (4.1)
Graduate degree (14%, *n* = 33)	12.3 (8.1)	3.2 (4.2)	1.7 (4.0)	6.1 (6.8)	1.3 (1.9)	3.8 (3.2)

Marital Status						
Single (52%, *n* = 121) Married (47%, *n* = 111)	15.1 (13.5) 15.8 (11.5)	3.9 (10.8) 4.8 (8.8)	1.9 (5.1) 2.2 (4.0)	6.7 (8.9) 6.4 (7.1)	1.7 (2.0) 1.5 (2.2)	5.2 (5.3) 5.0 (4.0)

Appendix C

Correlations Between Television Consumption and Health Behaviors

	Overall Hours Watched	Hours Watching Live Cable	Hours Watching Time-shifted (DVR)	Hours Watching Online Streaming	Number of Times Binge Watching	Number of Times Eating While Watching Television
Perceived Physical Health	$r = -.25$, $p < .001$	$r = -.13$, $p = .051$	$r = -.08$, $p = .24$	$r = -.08$, $p = .25$	$r = -.09$, $p = .19$	$r = -.23$, $p < .001$
Physical Activity	$r = -.28$, $p < .001$	$r = -.13$, $p = .06$	$r = -.08$, $p = .24$	$r = -.07$, $p = .32$	$r = -.03$, $p = .64$	$r = -.22$, $p = .001$
Diet Habits	$r = -.10$, $p = .12$	$r = -.02$, $p = .82$	$r = -.03$, $p = .67$	$r = -.01$, $p = .93$	$r = -.08$, $p = .25$	$r = -.19$, $p = .004$
Poor Sleep Quality	$r = -.10$, $p = .13$	$r = -.03$, $p = .70$	$r = -.03$, $p = .62$	$r = -.01$, $p = .94$	$r = .14$, $p = .04$	$r = .08$, $p = .24$

Depression	$r = .01$, $p = .87$	$r = .003$, $p = .96$	$r = -.02$, $p = .80$	$r = .06$, $p = .36$	$r = -.01$, $p = .85$	$r = .11$, $p = .10$
Anxiety	$r = -.05$, $p = .42$	$r = -.07$, $p = .32$	$r = .03$, $p = .68$	$r = .08$, $p = .24$	$r = -.03$, $p = .67$	$r = .04$, $p = .55$

Evaluating a Measure of Experimental Avoidance in the Context of Self-Harm

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There are many theories regarding why individuals engage in self-harm behaviors and evidence points to experiential avoidance as one of the possible causes. Experiential avoidance (EA) refers to the actions taken by an individual to avoid aversive thoughts and feelings and can manifest in the form of self-harm behavior. This study served to evaluate the psychometric properties of a new scale developed by the current researcher to assess self-harm-related EA. The new measure was designed to evaluate EA in the context of self-harm, and it follows that this measure could be more suitable to assess EA within the self-harm population. This study hypothesized that the new measure would be highly correlated with existing measures of EA, would predict a history of self-harm, and would be a better predictor of self-harm behavior than existing measures of EA. A sample of 151 adults recruited from Mechanical Turk completed an online survey containing questions on EA, distress tolerance, and deliberate self-harm. First, the original 16-item SHEAS was examined for reliability and validity; two items were removed. A principle component analysis was then conducted, which indicated that the new 14-item scale (SHEAS-R) captured four distinct factors. The results of this study indicate that the SHEAS-R is a better measure of EA than current measures, when evaluating individuals with a history of self-harm behavior. Further research could explore the clinical implications of using this measure in therapeutic settings to evaluate patients with a history of self-harm behavior in terms of how they cope with negative thoughts and feelings.

Keywords: experiential avoidance; self-harm; measure development

The act of self-injury is broadly defined as any self-inflicted harm to one's own body, and more narrowly defined as causing destruction to one's own body tissue without suicidal intent (Nock & Favazza, 2009). Tantam and Whitaker (1992) estimated that at least 1 in every 600 people admitted to the hospital are there due to self-inflicted injury. More recent research suggests that at least one in every eight adolescents have engaged in self-harm behavior at some point in their lives (Doyle, Treacy, & Sheridan, 2015). Research also indicates that several common beliefs about the motivation behind self-harm may be flawed. Warm, Murray, and Fox (2003) found that most participants do not view self-harm as an attention-seeking behavior. They noted that those who engage in self-harm also do not see it as a woman's problem, a failed suicide attempt, a sign of madness, or a result of Munchausen's

disease. To better understand self-harm behavior, it is critical to first investigate what motivates people to engage in these behaviors.

Research supports a significant relationship between self-harm behavior and emotional expression. Warm et al. (2003) found that 96.7% of participants viewed self-harm as a method to express emotional pain, and 95.9% viewed it as a coping strategy. Herpertz and colleagues demonstrated that more severe cases of self-injury can be linked to internally-directed feelings of frustration and anger, which indicates that they may have issues with emotional regulation (Herpertz, Sass, & Favazza, 1997). An individual with emotional dysregulation may experience difficulty recognizing and accepting their emotions, working toward goals, and/or restraining impulsive behavior. They may also lack the skills necessary to change the intensity and duration of their negative feelings, and may not be willing to experience negative emotions (Gratz, 2007). Individuals who engage in self-harm behavior may also experience impulsivity, poor future-oriented problem-solving skills, and affective hyper-reactivity to emotional stimuli (Herpertz et al., 1997). Emotional dysregulation can also cause individuals to feel shame, which has been associated with avoidance behaviors (de Hooge, Zeelenberg, & Breugelmans, 2011). Because avoidant tendencies can be due to the shame caused by emotional dysregulation, it is important to consider the implications of avoidance among individuals who engage in self-harm behavior.

There are many studies in the literature that investigate the relationship between self-harm behavior and experiential avoidance. Experiential avoidance (EA) is defined as an individual's unwillingness to remain in contact with aversive personal experiences, and the actions taken by the individual to alter these experiences (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). There is evidence that individuals who have stronger inclinations towards EA will be more likely to worry and dwell on their negative thoughts (Spinhoven, Drost, Rooij, Hemert, & Penninx, 2015). Research also shows that individuals who engage in avoidant coping methods such as EA have heightened levels of negative emotional stress, but only when this coping style is paired with a perceived inability to regulate negative emotions (Fergus, Bardeen, & Orcutt, 2012). This suggests that an individual's perception of their ability to regulate their emotions can cause their EA to be more or less severe.

As previously mentioned, individuals who engage in self-harm behavior almost unanimously agree that it is a way to express emotional pain, and that this expression leads to a feeling of emotional regulation (Warm et al., 2003). These findings support the strong association between self-harm and negative reinforcement, as the emotional relief of self-harm provides negative reinforcement for continued engagement in the behavior (Gratz, Chapman, Dixon-Gordon, & Tull, 2016). Self-harm behavior and EA appear to be closely related constructs, as self-harm behavior can be negatively reinforced and EA is classified as a group of behaviors that are primarily maintained through negative reinforcement. In their research, Chapman, Gratz, and Brown (2006) explained that when an individual engages in self-harm to eliminate unwanted emotions, they are practicing EA and negatively reinforcing their self-harm behavior. Additional studies provide support for the existence of a relationship between EA and self-injury and demonstrate that individuals with increased EA tendencies are more likely to continue self-harm behavior for an extended period of time (Anderson & Crowther, 2012; Howe-Martin,

Murrell, & Guarnaccia, 2012). To better understand the relationship between experiential avoidance and self-harm behavior, an appropriate scale must be chosen to measure experiential avoidance.

The most common scales used to evaluate EA and its associated psychological constructs are the Multidimensional Experiential Avoidance Questionnaire (Gámez, Chmielewski, Kotov, Ruggero, & Watson, 2011), the Brief Experiential Avoidance Questionnaire (Gámez, Chmielewski, Kotov, Ruggero, Suzuki, & Watson, 2014), and the Distress Tolerance Scale (Iverson, Follette, Pistorello, & Fruzzetti, 2012). While these scales are used to evaluate experiential avoidance and distress tolerance (a component of experiential avoidance), there are not any scales in the literature that specifically evaluate self-harm-related experiential avoidance. The purpose of this study was to evaluate the reliability and validity of a new scale developed to measure experiential avoidance in the context of self-harm behavior.

It was hypothesized that: 1) the new measure would be strongly positively correlated with existing measures of experiential avoidance; 2) the new measure would not be highly correlated with the measure of state boredom or the measure of life-satisfaction; this lack of strong correlation would provide discriminant validity evidence; 3) the scale being developed would accurately distinguish those with a history of self-harm from those without a history of self-harm, with those who have a history of self-harm scoring higher on the measure; and 4) this measure would be a better predictor of both frequency of self-harm behavior and duration of self-harm behavior than existing measures of experiential avoidance. Research supports a relationship between EA and self-harm behavior, which led the

current researcher to believe that a measure of EA developed in the context of self-harm could be more suitable to assess EA in the self-harm population than current measures. Being a better predictor of features of self-harm behavior would provide evidence that the new scale is measuring EA and self-harm simultaneously, while current scales solely measure EA.

Methods

Participants

A sample of 151 participants was included in this study after removing individuals who failed attention checks ($n = 58$); *a priori* G*Power analyses indicated 128 participants should be recruited to achieve sufficient statistical power (.80) to detect a medium-sized effect for all analyses. This study recruited participants via Amazon Mechanical Turk and compensated 30 cents. This study used quota sampling to obtain similar numbers of participants of those who have self-harmed ($n = 77$, 51%) and those who have not ($n = 74$, 49%); additionally, participants were required to be at least age 18 and currently live in the United States to be eligible to participate. Approval for all study procedures was obtained from the Institutional Review Board.

Research Design

This study had an ex post facto single-factor design. Participants self-selected into two groups: those with no history of self-harm and those who report a history of self-harm. The main dependent variables were the participants' scores on several self-report measures of experiential avoidance, distress tolerance, and self-harm behavior.

Measures

The MEAQ, BEAQ, and DTS informed the development of and were

measured against the SHEAS-R, to evaluate convergent validity. We used the MSBS and SWLS to evaluate discriminant validity of the SHEAS-R. Finally, we used the DSHI to compare the SHEAS-R against the MEAQ, BEAQ, and DTS. All of these scales are described below. The results from these scales determined which scale was the best predictor of self-harm history, frequency, and duration.

Multidimensional Experiential Avoidance Questionnaire (MEAQ; Gámez et al., 2011). The MEAQ is a 62-item scale that assesses six dimensions of experiential avoidance: behavioral avoidance (11 items; e.g., "I won't do something if I think it will make me uncomfortable"), distress aversion (13 items; e.g., "When I am hurting, I would do anything to feel better"), procrastination (7 items; e.g., "I tend to put off unpleasant things that need to get done"), distraction and suppression (7 items; e.g., "I usually try to distract myself when I feel something painful"), repression and denial (13 items; e.g., "I sometimes have difficulty identifying how I feel"), and distress endurance (11 items; e.g., "People should face their fears"). Each item is rated on a 6-point Likert scale from 1 (*Strongly Disagree*) to 6 (*Strongly Agree*). Two items are reverse-scored, and a total score is created from the sum of all items. Higher scores indicate stronger presence of the EA trait. This scale has excellent internal consistency (Cronbach's α = .93).

Brief Experiential Avoidance Questionnaire (BEAQ; Gámez et al., 2014). The BEAQ is a brief version of the MEAQ consisting of 15 items that assesses four dimensions of experiential avoidance: explicit avoidance behavior (8 items; e.g.., "I'm quick to leave any situation that makes me feel uneasy"), attitudes/beliefs regarding distress (4 items; e.g., "The key to a good life is never feeling any pain"), implicit avoidance (2 items; e.g., "It's hard for me to

know what I'm feeling"), and ability to respond effectively to distress (1 item; "Fear or anxiety won't stop me from doing something important"). Items are rated from 1 (*Strongly Disagree*) to 6 (*Strongly Agree*). One item is reverse-scored, and a total score is created from the sum of all items. Higher scores indicate stronger presence of the EA trait. This scale has good internal consistency (Cronbach's α = .89).

Distress Tolerance Scale (DTS; Simons & Gaher, 2005). The DTS is a 15-item scale that assesses an individual's ability to handle negative emotions. The scale measures four dimensions of distress tolerance: absorption (3 items; e.g., "When I feel distressed or upset, all I can think about is how bad I feel"), appraisal (6 items; e.g., "My feelings of distress or being upset are not acceptable"), tolerance (3 items; e.g., "There's nothing worse than feeling distressed or upset"), and regulation (3 items; e.g., "I'll do anything to avoid feeling distressed or upset"). Items are rated from 1 (*Strongly Agree*) to 5 (*Strongly Disagree*). One item is reverse-scored, and a total score is created from the sum of all items. Higher scores indicate more ability to tolerate distress. This scale has excellent internal consistency (Cronbach's α = .94).

Self-Harm Experiential Avoidance Scale (SHEAS; Jones, 2016). The SHEAS is a 16-item scale developed for this study to assess experiential avoidance specifically among individuals who engage in self-harm behaviors, and was developed as follows: A review of the MEAQ, BEAQ, and DTS informed the development of a semi-structured interview that was administered to 11 individuals with a history of self-harming behavior. Content analysis of the interviews revealed five broad themes related to avoidance and self-harming behavior: avoidant thoughts, avoidant behavior, feelings that lead to avoidance, negative self-view, and causes of self-harm.

Forty candidate items were developed from these themes, and these candidate items were administered to 19 individuals with a history of self-harming behavior. Item responses were inspected for missing-ness, floor effects, ceiling effects, and content redundancy. Items with low item-total correlations and items that significantly decreased the scale's Cronbach's alpha were removed, because these features suggest that the items were not strongly correlated with the scale overall. The final scale measures five dimensions of experiential avoidance: avoidant thoughts (3 items; e.g., "I pretend everything is okay"), avoidant behaviors (2 items; e.g., "I seclude myself"), feelings (5 items; e.g., "I am lonely"), physical sensations (2 items; e.g., "It is easy to relax"), and negative self-view (4 items; e.g., "I deserve to be punished"). Items are rated from 1 (*Strongly Disagree/Never*) to 5 (*Strongly Agree/Always*). Five items are reverse-scored, and a total score is created from the sum of all items. Higher scores indicate stronger presence of the EA trait. This scale had good internal consistency (Cronbach's α = .84).

Deliberate Self-Harm Inventory (DSHI; Gratz, 2001). The DSHI is a 17-item questionnaire that assesses self-harm behavior, and was used to collect demographic information about the self-harm history of participants. The questionnaire outlines 17 different self-harm behaviors and asks participants to respond to follow-up questions for each behavior that they have engaged in (e.g., Have you ever intentionally carved words into your skin? If yes, how old were you when you first did this?). Participants' scores on the frequency questions ("How many times did you do this?") for 17 items were summed to create a variable of the total frequency of self-harm behavior (including "0"). Participants' scores on the duration questions ("How many years did you do this?") for 17 items

were also summed to create a variable of the total duration of self-harm behavior (including "0"). The frequency subscale (Cronbach's α = .73) and the duration subscale (Cronbach's α = .77) had acceptable internal consistency.

Multidimensional State Boredom Scale (MSBS; Fahlman et al., 2013). The MSBS is a 29-item scale that assesses five dimensions of state boredom: disengagement (ten items; e.g., "Everything seems repetitive and routine to me"), high arousal (five items; e.g., "I am more moody than usual"), inattention (four items; e.g., "I am easily distracted"), low arousal (five items; e.g., "I am lonely"), and time perception (five items; e.g., "Time is passing by slower than usual"). Items are rated from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*), and a total score is created from the sum of all items. Higher scores indicate a stronger level of state boredom. This scale had excellent internal consistency (Cronbach's α = .97).

Satisfaction with Life Scale (SWLS; Diener et al., 1985). The SWLS is a 5-item scale assessing life satisfaction (e.g., "In most ways my life is close to my ideal"). Each item is rated on a Likert scale from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*); a total score is created by summing all items. Higher scores indicate more satisfaction. This scale had excellent internal consistency (Cronbach's α = .94).

Demographics. Participants were asked to identify their sex, racial group, age, highest completed level of education, and relationship status.

Procedure

Participants provided informed consent prior to completing a survey created using Survey Gizmo. The survey began with demographics, followed by the DSHI, MEAQ, DTS, SHEAS, MSBS, and SWLS in that order before reading a debriefing

statement that included resources in the event they were distressed after participating. Participation took 15-20 minutes.

Data Analysis

SPSS Version 24 was used to analyze all data. First, item responses on the SHEAS for participants in the self-harm group were inspected for floor and ceiling effects, and item-total correlations were examined to determine if any items should be removed. Next, principal component analysis was performed on the revised version of the scale (SHEAS-R) to identify its dimensional structure. Five Pearson correlations were performed to determine how much the SHEAS-R was correlated with the MEAQ, DTS, BEAQ, MSBS, and SWLS. Four independent t-tests were performed with the participants' history of self-harm (yes or no) as the grouping variable and MEAQ, BEAQ, DTS, and SHEAS-R as dependent variables; significant measures were included in a logistic regression analysis to determine which measure best distinguishes between those with a history of self-harm behavior and those without.

We performed four Pearson correlations between the DSHI frequency variable and BEAQ, DTS, MEAQ, and SHEAS-R; significant measures were included as predictors in a multiple linear regression with the DSHI frequency variable as the dependent variable to determine which measures explained the most variance in frequency of self-harm behavior. We also performed four Pearson correlations between the DSHI duration variable and BEAQ, DTS, MEAQ, and SHEAS-R; significant measures were included as predictors in a multiple linear regression with the DSHI duration variable as the dependent variable to determine which

measures explained the most variance in duration of self-harm behavior.

Results

Participants ranged in age from 19-64 years ($M = 34.7$, $SD = 11.7$). Two-thirds ($n = 99$, 66%) identified as female, and 52 (34%) identified as male. A majority ($n = 116$, 77%) identified as Caucasian, with the rest identifying as African-American ($n = 17$, 11%), Hispanic ($n = 4$, 3%), or multiracial ($n = 5$, 3%); nine participants did not disclose their race. There were 14 participants (9%) who had obtained a high school diploma, 59 (39%) who completed some college, 77 (51%) with a Bachelor's degree or higher; one participant did not respond to the education question. A total of 50 participants (33%) reported being single, 41 (27%) reported being in a relationship, and 60 (40%) were married.

There were two demographic differences between participants with a history of self-harm and those without. The self-harm group ($M = 32.1$, $SD = 10.3$) was significantly younger than the non-harm group ($M = 37.5$, $SD = 12.4$), $t(140.11) = 2.89$, $p = .004$. Participants in the self-harm group were more likely to be in a relationship and less likely to be single or married compared to the non-harm group, $\chi^2(2) = 8.78$, $p = .012$. There were no significant differences between groups regarding sex, race, and education.

Among the participants who reported a history of self-harm, they were an average of 14.6 years old when they started self-harming ($SD = 4.8$, range = 5-42). Twenty-seven (35%) participants reported engaging in self-harm for 1-4 years, 23 (30%) for 5-10 years, 16 (21%) for 11-20 years, and 9 (12%) for 21 or more years. More than half ($n = 48$, 62%) indicated they had self-harmed on 20 or fewer occasions, while 22% ($n = 17$) reported self-harming

more than 100 times, with the remaining participants reporting self-harming between 21 and 100 occasions ($n = 10$, 13%). Most ($n = 58$, 75%) had never been hospitalized due to their self-harm behavior. The most frequently endorsed methods of self-harm were cutting the skin ($n = 57$, 74%), scratching oneself to the point of bleeding ($n = 33$, 43%), and carving words into the skin ($n = 18$, 23%).

SHEAS Reliability and Validity

The 16 SHEAS items were examined for floor and ceiling effects, and two items (item 7 and item 11) were removed due to significant ceiling effects. The revised scale, the SHEAS-R, consisted of the final 14 items. PCA using a generalized least squares method and a varimax rotation was performed on these items. Scree plot inspection based on Cattell's (1966) criterion indicated a maximum of four dimensions. A moderate primary factor was obtained (eigenvalue of 5.039) explaining 35.9% of the total variance, while the second factor (eigenvalue of 1.837) explained 13.1% of the total variance, the third factor (eigenvalue of 1.646) explained 11.8% of the total variance, and the fourth factor (eigenvalue of 1.251) explained 8.9% of the total variance. Other eigenvalues were .886 or less and explained small amounts of additional variance. Examination of item loadings suggested retaining four factors. Factor loadings for all items are displayed in Table 1 and were well above the .30 minimum criterion indicated by Floyd and Widaman (1995). When comparing the 3-component and 4-component solutions, it was clear that four dimensions were substantively interpretable, and interpretation of these factors is explored in the discussion section. Reliability analysis indicated the measure had good internal consistency (Cronbach's $\alpha = .85$).

The SHEAS-R was significantly correlated with the MEAQ ($r = .61$, $p < .001$), BEAQ ($r = .66$, $p < .001$) and DTS ($r = .74$, $p < .001$); all correlations were large and provided evidence for convergent validity. The SHEAS-R was moderately correlated with the SWLS ($r = -.47$, $p < .001$) and strongly correlated with MSBS ($r = .72$, $p < .001$); these results did not provide evidence for discriminant validity.

Predicting a History of Self-Harm

Participants who indicated a history of self-harm scored significantly higher on the DTS than those who did not have a history of self-harm, $t(149) = -6.71$, $p < .001$, $d = 1.09$. Participants who indicated a history of self-harm scored significantly higher on the MEAQ than those who did not have a history of self-harm, $t(149) = -3.88$, $p < .001$, $d = -0.63$. Participants who indicated a history of self-harm scored significantly higher on the BEAQ than those who did not have a history of self-harm, $t(149) = -4.63$, $p < .001$, $d = 0.76$. Participants who indicated a history of self-harm scored significantly higher on the SHEAS-R than those who did not have a history of self-harm, $t(149) = -6.15$, $p < .001$, $d = 1.07$. Group means and standard deviations for independent t-tests are reported in Table 2.

The DTS, MEAQ, BEAQ, and SHEAS-R were all included as predictors of a history of self-harm in a logistic regression. The overall model was significant, $\chi^2(4) = 47.07$, $p < .001$. The full model with four predictors increased the correct group classification from 51% with no predictors to 74.2%. For every unit increase on the SHEAS-R, an individual was 11% more likely to have a history of self-harm; for every unit increase on the DTS, an individual was 6% more likely to have a history of self-harm. Full results are displayed in Table 3.

Frequency and Duration of Self-Harm Behavior

There were significant positive correlations between the DSHI frequency variable and the SHEAS-R ($r = .37$, $p < .001$), the DTS ($r = .35$, $p < .001$), the MEAQ ($r = .17$, $p = .034$), and the BEAQ ($r = .24$, $p = .003$); therefore, all measures were included as predictors in a multiple linear regression. Inspection of standardized residuals indicated three notable outliers, but removal of these cases did not affect the fit of the model, so they were retained for analysis. The regression model was significant, $F(4, 146) = 7.20$, $p < .001$, and it explained 17% of the variance in frequency of self-harm behavior. As shown in Table 4, the SHEAS-R contributed significantly to the model and explained 3.6% of variance in frequency of self-harm behavior.

There were significant positive correlations between the DSHI duration variable and the SHEAS-R ($r = .45$, $p < .001$), the DTS ($r = .43$, $p < .001$), the MEAQ ($r = .21$, $p = .009$), and the BEAQ ($r = .29$, $p < .001$); all measures were included in a multiple linear regression. Inspection of standardized residuals indicated three notable outliers, but removal of these cases did not affect the fit of the model, so they were retained for analysis. The regression model was significant, $F(4, 146) = 11.86$, $p < .001$, and explained 25% of the variance in duration of self-harm behavior. As shown in Table 5, the SHEAS-R and the DTS contributed significantly to the model. The SHEAS-R explained 5.3% of the unique variance in duration of self-harm behavior, while the DTS explained 2.6% of the unique variance in duration of self-harm behavior.

Discussion

This study sought to develop a measure of experiential avoidance that was more suitable to assess experiential avoidance in the context of self-harm. While

it has been demonstrated that there is a relationship between self-harm and EA, there are not any measures in the literature that evaluate EA in the context of self-harm. The current researchers aimed to further develop the SHEAS and then compare it with existing measures of EA and distress tolerance, in order to demonstrate the potential improvement of the new measure over existing measures.

Dimensional Structure of the SHEAS-R

Prior to completing the main data analyses, we assessed the dimensional structure of the SHEAS-R through principal component analysis; this analysis revealed that there were four distinct factors of the SHEAS-R. After careful analysis, these factors were interpreted to measure vulnerability to negative emotions and behaviors, self-worth, presentation of feelings to others, and actions taken to address negative emotions.

Vulnerability to Negative Emotions and Behaviors. The primary factor was represented by six items, and analysis of these items suggests that this dimension is measuring vulnerability to specific negative emotions and behaviors. This is consistent with research conducted by Kashdan, Barrios, Forsyth, and Steger (2006), who found that individuals who report higher levels of experiential avoidance are prone to develop emotional disturbances when confronted with psychological distress, including anxiety and depression.

Self-Worth. The second factor was represented by four items, and analysis of these items suggests that this dimension is measuring self-worth. These findings are supported by the research of Fergus et al. (2012), who established a relationship between EA and one's capacity to regulate negative emotions. The inverse relationship between self-worth and EA is supported by the literature, as Moroz and Dunkley (2015)

found that individuals who are more self-critical have a strong inclination for experiential avoidance.

Presentation of Feelings to Others. The third factor was represented by two items, and analysis of these items suggests that this dimension is measuring how the individual presents their feelings to others. An individual who is private about their feelings is less likely to endorse these items than somebody who is open about their feelings. These findings are supported by the research conducted by Vogel, Wester, and Larson (2007), who explain that the attitudes of family and friends can play an influential role in how an individual handles their feelings of distress.

Actions Taken to Address Negative Emotions. The fourth and final factor was also represented by two items. This dimension is likely evaluating the actions taken by an individual to address their negative emotions; in this case, by disregarding them. These findings are in line with the research conducted by Gratz (2007) on emotional dysregulation, as one of the characteristics of emotional dysregulation is an unwillingness to experience negative emotions.

Performance of the SHEAS-R

The SHEAS-R was significantly positively correlated with the existing measures of experiential avoidance (MEAQ, BEAQ) and distress tolerance (DTS), which supports our first hypothesis. These results provide convergent validity evidence and suggest that the SHEAS-R is measuring EA, the construct that it was intended to measure. Having a higher score on the SHEAS-R was a significant predictor of a history of self-harm, and the SHEAS-R was a better predictor of both the frequency and duration of self-harm behavior than the existing measures of EA and distress

tolerance. These results support our third and fourth hypotheses, respectively.

Our second hypothesis was not supported, as the SHEAS-R had a moderate negative correlation with the measure of life-satisfaction (SWLS) and a strong positive correlation with the measure of boredom (MSBS). The goal of examining these relationships was to establish discriminant validity evidence, and it is likely that the measures chosen were not appropriate for this study. It follows that there would be a negative correlation between the SHEAS-R and the SWLS, because having high levels of EA is positively correlated with a tendency to dwell on negative thoughts and feelings (Spinhoven et al., 2015). Research shows that prolonged boredom is related to several dysfunctional traits, which supports a correlation between experiential avoidance and state boredom (Todman, 2003). While the results of the study overall are valid, discriminant validity still needs to be investigated in future research by choosing measures that assess constructs theoretically unrelated to experiential avoidance.

Limitations

There were several limitations in this study. The sample was not very diverse, as the majority of participants was female and Caucasian; furthermore, quota sampling was used to ensure equal groups based on history of self-harm. Future evaluations should have a more diverse sample recruited using probability sampling to enhance finding generalizability. A second limitation of the study was the choice of measures for discriminant validity evidence. The measures used proved to be correlated with the SHEAS-R, which means that discriminant validity evidence could not be established. To address this issue, it is important to more thoroughly research constructs in the literature that are

demonstrated to have little or no correlation with experiential avoidance. This study also did not evaluate test-retest reliability; future research should collect longitudinal data to determine the consistency of responses. Finally, in the context of evaluating the importance of EA in relation to self-harming, item-stems could be more specific to self-harm. Future research could involve item-stems that are modified to read "When I hurt myself…" rather than "When I am upset…" and "In general…".

Conclusion

This is the first measure created to evaluate EA among people who engage in self-harm behaviors. This study indicates that the SHEAS-R is a valid and reliable measure of self-harm-related EA, and a better predictor of multiple components of self-harm history than existing measures of EA or distress tolerance. This could be useful in clinical settings, because clinicians could potentially use the predictive measures of the SHEAS-R to identify EA tendencies in patients with a history of self-harm and evaluate how likely a patient is to self-harm in the future. By addressing EA specifically, we could theoretically reduce self-harm behavior overall, because EA contributes to the maintenance of self-harm behavior. Furthermore, if clinicians were able to evaluate the likeliness of future self-harm, they could develop strategies that may prevent patients from engaging in the behavior in the first place.

The current study served to further develop and validate the SHEAS-R, but the actual clinical utility of the measure has not yet been determined. Further research should explore the use of this measure in therapeutic settings to evaluate patients with a history of self-harm in how they cope with negative thoughts and feelings.

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Appendix A

Table 1

Factor Loadings for Principal Component Analysis with Varimax Rotation of

Self-Harm Experiential Avoidance Scale (Revised)

	Factor Loadings			
SHEAS-R item	1	2	3	4
I seclude myself	**.636**	.231	.179	.385
I am overwhelmed by something	**.696**	.309	.002	.186
I am anxious	**.629**	.167	.102	-.226
I am depressed	**.687**	.358	.178	-.062
I am lonely	**.663**	.245	.042	.129
I feel hot and/or flushed	**.567**	.105	.020	-.188
I am not good enough	.256	**.803**	.044	.010
I am important	.183	**.700**	.272	-.081
I deserve to be punished	.113	**.637**	.093	.014
I hate myself	.272	**.897**	.155	-.006
I share my thoughts with others	.123	.080	**.813**	.115
I talk about my problems	.039	.236	**.861**	.049
I ignore my feelings	-.240	-.045	.053	**.604**
I pretend everything is okay	.222	-.016	.110	**.834**

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Table 2

Sample Descriptives Using t-test for Equality of Means

	Self-Harm Group		Non-Harm Group	
	M	SD	M	SD
DTS	35.3	11.5	22.5	11.9
MEAQ	238.8	36.5	216.8	32.7
BEAQ	56.5	12.7	47.4	11.2
SHEAS-R	29.3	8.4	21.1	6.8

Note. DTS = Distress Tolerance Scale; MEAQ = Multidimensional Experiential Avoidance Questionnaire; BEAQ = Brief Experiential Avoidance Questionnaire; SHEAS-R = Self-Harm Experiential Avoidance Scale (Revised).

Table 3

Predictors for History of Self-Harm

Variable	*B*	*SE B*	Wald	*p*	Exp(*B*)	95% CI Exp(*B*)
DTS	.060	.026	5.260	.022	1.062	1.009, 1.118
MEAQ	-.007	.013	.254	.614	.993	.968, 1.019
BEAQ	-.004	.045	.007	.933	.996	.913, 1.088
SHEAS-R	.103	.036	8.170	.004	1.108	1.033, 1.189
Constant	-2.681	1.488	3.245	.072	.069	

Note. CI = confidence interval; DTS = Distress Tolerance Scale; MEAQ = Multidimensional

Experiential Avoidance Questionnaire; BEAQ = Brief Experiential Avoidance Questionnaire;

SHEAS-R = Self-Harm Experiential Avoidance Scale (Revised).

Cox & Snell = .27; Nagelkerke = .36.

Table 4

Predictors of Frequency of Self-Harm Behavior

Variable	*b*	*SE b*	*β*	*p*	*b* 95% CI
DTS	.093	.056	.230	.096	-.017, .204
MEAQ	-.031	.026	-.211	.237	-.084, .021
BEAQ	.024	.088	.058	.781	-.149, .198
SHEAS-R	.177	.070	.290	.013	.038, .315
Constant	1.233	3.056		.687	-4.806, 7.273

Note. CI = confidence interval; DTS = Distress Tolerance Scale; MEAQ = Multidimensional Experiential Avoidance Questionnaire; BEAQ = Brief Experiential Avoidance Questionnaire; SHEAS-R = Self-Harm Experiential Avoidance Scale (Revised).

Table 5

Predictors of Duration of Self-Harm Behavior

Variable	*b*	*SE b*	*β*	*p*	*b* 95% CI
DTS	.094	.042	.293	.026	.011, .177
MEAQ	-.028	.020	-.238	.160	-.067, .011
BEAQ	.015	.066	.045	.822	-.115, .145
SHEAS-R	.169	.053	.351	.002	.065, .272
Constant	.844	2.295		.714	-3.693, 5.380

Note. CI = confidence interval; DTS = Distress Tolerance Scale; MEAQ = Multidimensional Experiential Avoidance Questionnaire; BEAQ = Brief Experiential Avoidance Questionnaire; SHEAS-R = Self-Harm Experiential Avoidance Scale (Revised).