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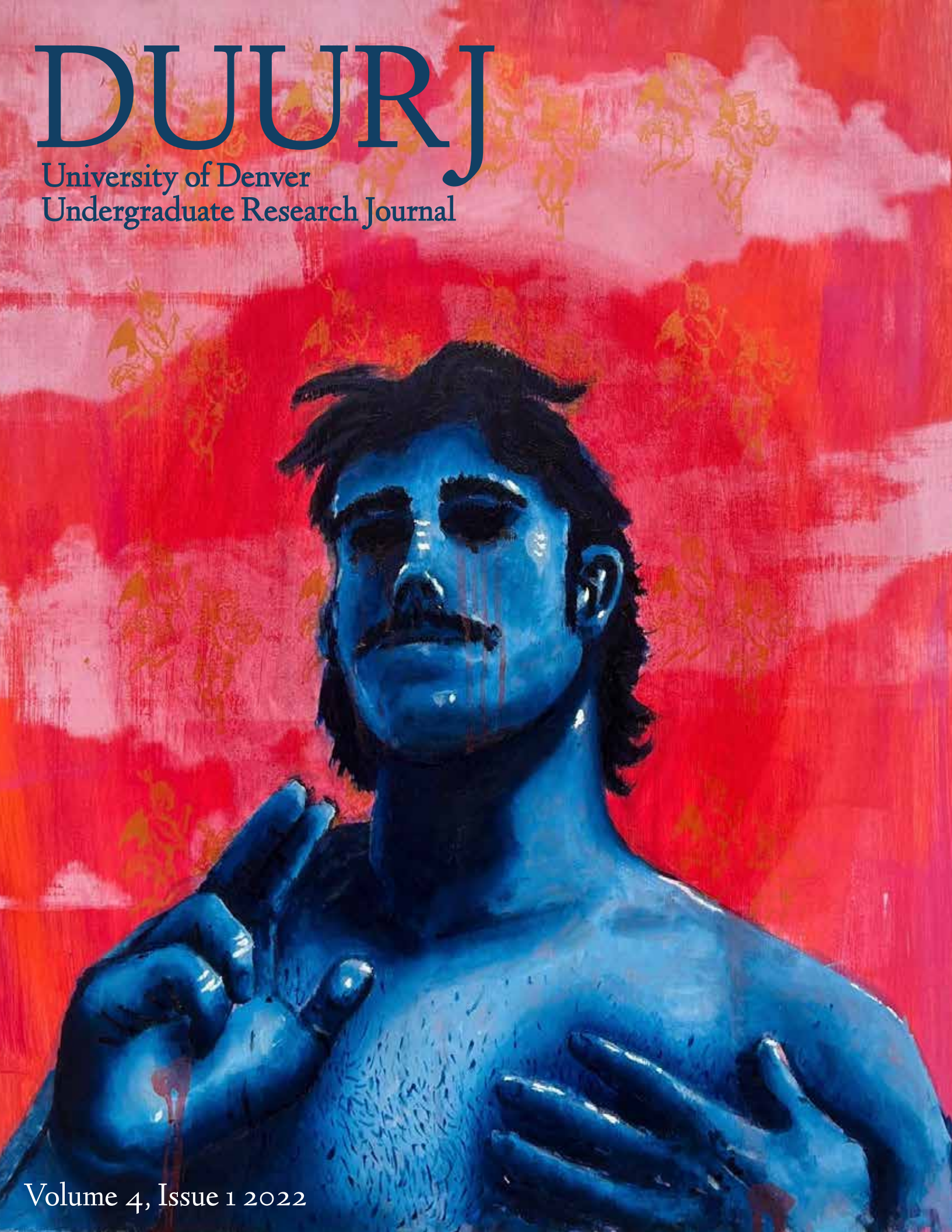
University of Denver
Undergraduate Research Journal



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Dear Reader,

Question everything. Questions create a space where evolution is expected, discomfort is encouraged, and the envelope is pushed, inspiring others. Undergraduate research allows students a voice to push boundaries, present important questions, and challenge the readers to go beyond what they have asked. The value of this publication lies within the platform it provides and the variety of student interests we are able to share.

Good art elicits a reaction. Strong writing and research seek to generate a similar reaction. It is meant to be consumed, discussed, contested, and enjoyed as we celebrate the efforts of those that have taken the time within this publication to inspire us to think more deeply.

Within this issue, we discuss a variety of topics in the areas of psychology, consumerism, capitalism, performing arts, ecological patterns, urban studies, and sustainability. Our publication ranges from discussions of empathy, stigma, and compassion around mental health, to effects of consumerism and capitalism on activist efforts, and factors impacting marabou stork populations. This issue also includes two faculty interviews of DU professors in the Department of Geography and the Environment doing research on Urban and Transportation Studies and valuing ecosystem services, respectively. Interspersed throughout these articles are beautiful art pieces spanning a multiplicity of forms.

This publication has been a labor of love. After some of the originally assigned staff stepped away, we were left to fill a lot of gaps. I assumed the roles of Tech Director and Senior Copy Editor in addition to Editor in Chief, while my wonderful counterparts Eva Chappus and Amanda Kyle took on the role of Managing Editor in addition to their Senior Section Editor positions. It was not an inconsequential amount of work to fulfill these other roles, and this publication would not have been successful without them. Their willingness to step into these positions with enthusiasm and their ongoing support of both me and this journal is invaluable.

As Editor in Chief, it is important to me that our journal provides a space where people, who share a passion of research and editing, feel like they are part of a community. Being a part of this journal is a commitment in effort and time, and I am grateful to have the opportunity to build connections with each of our incredible editorial staff and so proud of the work they have put into this issue.

To all of our readers, we are pleased to invite you into Volume 4 Issue 1 of this publication of the DU Undergraduate Research Journal. We hope you find the research and art within to be thought-provoking and enjoyable. We encourage you to question more, think deeply, and take inspiration to push the envelope in all of your areas of pursuit.

Sincerely,

Makenzie Bell
Editor in Chief

DUURJ
DU Undergraduate Research Journal

DUURJ

Zapata Falls by Mya Vander Pol

Articles

Faculty Spotlight

Front Cover

Reconcile
by Alex Blom

Back Cover

Stone Cold Expression
by Grace Gonzalez

Broken Entanglement by Alex Blom

Do Semantics Matter in Empathetic Person Perception of Children or Adults with Mental Illness?

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Abstract

Experiences of stigma, discrimination, or aggression negatively affect the well-being of people experiencing symptoms of psychopathology. However, empathy is thought to undermine prejudice and discrimination and is linked with positive outcomes (e.g., greater well-being, more social support, etc.) among those with stigmatized mental illnesses. The current work investigates the influence of target age (adult or child) and language type (person-first or identity-first) on how much empathic concern perceivers report toward individuals with a hypothetical mental health condition. This research contributes to an ongoing debate about whether person-first or identity-first language carries stigmatizing or protective effects, while also considering a novel potential moderator: target age (i.e., does person-first and identity-first language similarly affect perceptions of adults and children?). To this end, we employed an experimental vignette design examining empathy expressed toward individuals with a mental health condition, where age was manipulated within subjects and language was manipulated between subjects. The results determine that perceivers report greater empathy towards children than adults. However, the use of person-first and identity-first language did not result in significant findings. Thus, whether language type influences empathic concern remains uncertain. These findings suggest a need for increased empirical examination of interventions to inspire empathy towards people, perhaps especially adults, experiencing symptoms of psychopathology.

Keywords: Empathy, Age, Language, Mental Health, Stigma, Person Perception.

1 INTRODUCTION

It is estimated that people with severe and consistently stigmatized mental illness experience a 15-to-20-year reduction in life expectancy compared to those without a stigmatized mental illness[1]. This mortality difference is theorized to, in part, result from negative experiences of stigma[2] and associated treatment avoidance[3]. For example, 9 out of 10 people with mental health diagnoses report experiences of stigmatization and discriminatory treatment[4]. The current work contributes to a growing literature on the stigmatization of mental illness by focusing on predictors of empathy – a more broadly critical construct in the field of mental health and well-being. Empathy toward people with stigmatized mental illnesses is thought to be associated with decreased perceptions of prejudice and increased positive outcomes (e.g., increased well-being and social support;[5]). Importantly, greater empathy evoked toward an individual with symptoms of psychopathology may be associated with decreased stigma toward the diagnosis itself[6]. Given the importance of empathy, researchers have invested great effort in understanding the ways in which empathy is supported and undermined[7]. Among these factors, language is theorized to be an important determinant of humanizing and compassionate treatment of those experiencing mental illness[8].

Experiences of stigmatization related to insensitive language referring to mental illness and psychological diagnoses are prevalent across the lifespan from childhood to older adulthood[9]. Strikingly, the fear of stigmatization prevents children from seeking mental health support with estimates suggesting that as many as 85% of children with mental illness do not seek treatment due to perceived stigma[10]. Despite the evidence of prevalent stigmas across a lifespan, some programs of work suggest stigma may be more readily expressed toward certain age groups[11;12;13]. Based on this, the current work aims to explore perceptions of individuals with mental illness across their lifespan. Considering the potential impact of language on a person's

perception toward people with mental illness[14], the current work experimentally examines person-first versus identity-first language on empathy for individuals differing in age (i.e., children or adults).

1.1 Person- and Identity-First Language in Impression Formation

For years, researchers have debated the best terminology to empathetically communicate about mental illness with some endorsing person-first language (e.g. people with mental illness)[14] and others endorsing identity-first language (e.g. mentally ill person)[15]. Given that the ongoing debate on person-first and identity-first language lacks clear empirical evidence, we identified three theoretically-derived hypotheses for how these types of language may inform empathic concern.

First, scholars have speculated that person-first language may lead to more empathy and less prejudice towards stigmatized conditions than identity-first language[14]. To this point, the American Psychological Association[16] has recommended using person-first language because it is theorized to emphasize the identity of the person and their humanity as well as promote inclusivity and a sense of community. Providing empirical evidence for the benefits of person-first language, Granello and Gibbs[17] randomly assigned participants to report their attitudes toward either "people with mental illness" (i.e., person-first language) or "the mentally ill" (i.e., identity-first language) and found that participants in the person-first condition expressed more tolerance than participants in the identity-first condition. We intend to extend the theoretical framework of this work by assessing whether language carries similar consequences for empathy towards individuals with a hypothetical mental illness. Based on this theory and evidence, we would hypothesize that language will influence empathy such that perceivers will direct more empathy towards individuals described with person-first versus identity-first language.

Conversely, proponents of identity-first over person-first language suggest that identity-first language allows individuals to claim their condition or identity with pride[16]. This allows stigmatized populations to have more control over the narrative surrounding the value and experience of their mental illness[15]. Further, other researchers theorize that person-first, relative to identity-first, language may actually reinforce stigma by avoiding condition labels, leading perceivers to assume greater severity or negativity about the identity[18]. However, there is a dearth of empirical evidence that supports this perspective. Nonetheless, we hypothesize that language will influence empathy such that perceivers will direct more empathy toward individuals described with identity-first versus person-first language.

Third, a less polarizing approach is to use both person-first and identity-first language interchangeably when contextually appropriate[19] and with thoughtful consideration of the language preferences of the target group[20]. Person-first language receives more support in substance use and criminality research[21], whereas identity-first language gains support in Autistic and Deaf communities[22]. The conflict between the former perspectives may reflect that there is not one accepted framework for understanding language type. Ultimately, the effects of each type of language may be mixed or contextually dependent. Thus, it is possible that neither person-first nor identity-first would yield more empathy than the other in the current literature. To this point, a pilot study was conducted testing the effects of language type (person-first and identity-first) on prejudice and dehumanization of a target individual experiencing a hypothetical psychological disorder[23]. This study revealed no significant effect of language type on prejudice or dehumanization of an individual with symptoms of psychopathology. Therefore, we similarly hypothesize that no difference in empathy will emerge across language types.

In short, there is contradicting evidence as to whether and how person- and identity-first language influence critical aspects of perception including stigmatization, dehumanization, and prejudice[24]. Beyond experimentally examining the effect of language (person-first vs. identity-first) on expressed empathy, the current work also aims to extend this literature by examining empathetic concern across the lifespan. In other words, how does the age of an individual influence empathy towards them and does age interact with language in determining perceiver empathy? Below, we overview the literature on target age in impression formation (specifically within mental health contexts) before discussing the potential interactive effects of age and language. Thereby, the current work aims to build upon existing research to explore how language type (person-first and identity-first) and target age (child and adult) influence empathy toward individuals with a hypothetical mental illness.

1.2 The Role of Age in Impression Formation

Symptoms of psychopathology can emerge early in life and persist across the lifespan[25]. Perceptions of an individual with mental illness may vary by the age (child or adult) of the target individual. Therefore, it may be the case that children with a mental illness are evaluated more negatively than adults with a mental illness; however, some argue that these negative perceptions are a result of greater concern for children relative to adults, rather than greater prejudice[26]. One examination found that Americans expressed more concern for children,

compared to adults, with the same mental health condition[26]. Thus, it seems likely that children, compared to adults, with mental illness may be stigmatized less and therefore perceived with greater empathic concern.

Supporting this idea, one study found that children, relative to adults, were associated with feelings of more warmth[11]. Similarly, in human infants, relative to adults, facial expressions evoked more implicitly positive emotional expressions[27]. In sum, perceptions toward children may differ from adults with the same mental health condition[28]. Based upon previous work, we anticipate that children with a mental illness will elicit greater empathy from perceivers relative to adults. While there are some inconsistencies in previous work on how a target's age informs empathy or negativity in other domains, we believe that our findings will be consistent with the literature on perceptions of individuals with mental illnesses with children evoking more empathy ascriptions than adults[26]. It is possible that this anticipated effect of target age interacts with language type (i.e., person-first and identity-first) and influences empathy.

1.3 Potential Interactive Effects of Age and Language on Empathy

In addition to considering the separate effects of language type (i.e., person-first and identity-first) and target age (i.e., child and adult) on empathy towards individuals experiencing a hypothetical mental illness, we must also consider the interactive effect of language type and target age. The possible interaction between language type and target age is a novel research inquiry with little existing literature. However, there is some evidence that person-first language may be used more frequently to refer to children with disabilities, such as mental illness, than to adults with the same conditions[18]. Despite this frequency of use, one of the main critiques of person-first language is that it is disfluent[29] and disfluency tends to lead to less positive evaluations[30]. However, given that person-first language is used more regularly when referencing children than adults, this disfluency may be lessened when person-first language is referring to children relative to adults. Ultimately, this may suggest that person-first language will have more deleterious effects on perceptions of adults, but neutral or positive effects on perceptions of children. Based on the work thus far, we anticipate a significant interaction between language type and age such that person-first language towards children will lead to greater empathetic concern than identity-first language. Comparatively, we do not anticipate an effect of language type on empathy for adults.

1.4 Hypotheses of the Current Work

Previous research provides contradictory evidence regarding the effects of language type (person-first versus identity-first) on outcomes; in addition, we observed no significant effect of language type on prejudice and dehumanization for people with a fictitious mental health condition in a pilot study[23]. Thus, we hypothesize that language type will not significantly impact empathy towards people with mental illness. Past research on target age and empathy[11;26;28] informs our second hypothesis. We predict the main effect of target age on empathy such that adults will be regarded with less empathy than children. Lastly, the higher frequency of using person-first language when referring to children with disabilities compared to children without disabilities[18] informs our final hypothesis predicting interaction between language type (person-first versus identity-first) and age (child versus adult). Specifically, we expect that identity-first, relative to person-first, language will result in less empathy for target children, and hypothesize no significant effect of language type on empathy toward target adults.

1.5 Overview of the Current Work

To test the hypotheses outlined above, we conducted an experimental study examining the effects of hypothetical patient age (adult and child) and language (person-first and identity-first) on participants' self-reported empathy toward the target individuals. The language was manipulated in a between-subjects fashion via random assignment to one of two versions of a vignette describing a fictitious mental health condition. For half of the participants, the description employed person-first language; for the other half, identity-first language. Target age was manipulated within subjects with all participants viewing two patient profiles of hypothetical individuals experiencing the fictitious condition, one depicting a child and one an adult. Following the presentation of each patient profile, participants self-reported their empathy toward the hypothetical patient. This design enabled examination of our key questions: whether language type and target age independently or interactively influence empathy.

2 METHODS

2.1 Participants and Power

This project had a limited research budget of $166, therefore we could recruit 126 participants with our planned compensation of $1.00 per participant. Given this budget, a total of 128 participants were recruited through the CloudResearch crowdsourcing software, Mechanical Turk. A sensitivity power analysis was conducted in G*Power[31]. Overall, a total of 128 participants were

recruited and completed the study. This analysis indicated that 128 participants would enable us to detect a small to medium (f=0.28);=η_p^2=.07 effect with 95% power in a mixed model factorial ANOVA. Each participant was compensated $1 upon debriefing. No participants were excluded from the analyses.

Participants self-reported demographic information such as age, gender, ethnicity, and race. Participants varied in age from 19 to 75 years old (*M*= 39.23, *SD*= 11.50). Of the 128 responses, 59.4% of participants identified as men, and 40.6% identified as women. Additionally, 89.8% of participants did not identify as Hispanic/Latinx, 9.4% of participants identified as Hispanic, with 1.28% abstained from answering. The participants were primarily White (76.56%), with an additional 8.59% identifying as East Asian, 7.8% identifying as Black/African American, 6.3% identifying as bi- or multi-racial, 0.8% identifying as other, and 0.8% who preferred not to say. Participants' level of education ranged from no high school diploma (0.8%) to a doctorate degree (0.8%), with the majority of the participants receiving a bachelor's degree (42.2%) as their highest level of education. Less than half of the participants were a parent (35.2%) and a majority of participants had never worked in childcare (85.9%).

2.2 Procedure

Participants first completed a consent form, confirming that they were at least 18 years old and were aware they would be participating in a research study. If participants chose to not consent, the study was terminated. Following the consent form, participants were instructed to read about a hypothetical mental health condition and respond to questions about two patients with that condition. The instructions also encouraged them to trust their gut when answering the questions. Following the instructions, participants were shown the vignette, a brief description of a hypothetical mental health condition named Munder. Participants were randomly assigned to view a vignette using either person-first or identity-first language to describe Munder; vignettes were otherwise identical across conditions. Then, participants saw two patient profiles depicting patients experiencing Munder, one child, and one adult. Following each patient profile, participants indicated their empathy toward the patient via the Empathic Concern Scale[32]. The order in which the child and adult profiles were shown was randomized between participants. Between patient profiles, participants re-read the vignette to refresh their knowledge of Munder. Upon completion of primary measures, participants completed a brief demographic questionnaire. Participants were asked about the quality of their self-reported data and were given a chance to provide feedback to the researchers. Lastly, participants were debriefed on the current work, compensated $1, and thanked for their participation in the study.

2.3 Materials

2.3.1 Manipulation of Language Type

Participants were randomly assigned to view either the identity-first (Table 1A) or person-first (Table 1B) version of a vignette describing the hypothetical mental health disorder, Munder. The vignette was identical across conditions beyond the manipulation of language type. The described condition included a mixture of Attention Deficit Hyperactivity Disorder, Obsessive-Compulsive Disorder, and Autism Spectrum Disorder symptoms.

(A) "Imagine you hear about a new disorder called Munder that is diagnosed at equal rates in children and adults. **[Munder children and adults]** have equal chances of expressing the various symptoms caused by Munder. The possible symptoms that **[Munder people]** may display include difficulty focusing on tasks, repeated disturbing/intrusive thoughts/impulses, an inability to control/suppress these repeated thoughts/behaviors, low frustration tolerance, and poor social skills. **[Munder people]** may begin demonstrating these symptoms at any age."
(B) "Imagine you hear about a new disorder called Munder that is diagnosed at equal rates in children and adults. **[Children and adults with Munder]** have equal chances of expressing the various symptoms caused by Munder. The possible symptoms that **[people with Munder]** may display include difficulty focusing on tasks, repeated disturbing/intrusive thoughts/impulses, an inability to control/suppress these repeated thoughts/behaviors, low frustration tolerance, and poor social skills. **[people with Munder]** may begin demonstrating these symptoms at any age."

Table 1 The vignettes are shown to participants in the identity-first language condition (A) and the person-first language condition (B). The language manipulation is indicated with brackets and bolding.

2.3.2 Manipulation of Target Age

Two patient profiles (one adult, one child) and two versions of each profile (one with person-first ("patient with Munder") and one with identity-first ("Munder patient") were created (Fig 1). All four profiles provided the same sex, insurance provider, and the patient's city and state. To manipulate age, two of the patient profiles

consisted of a blurred image of a male child wearing a red shirt while the other two profiles consisted of a blurred image of a male adult wearing a red shirt. The adult profiles also differed from the child profiles by listing a different age (i.e., 10 vs. 40 years old), birthday (i.e., 02/23/12 vs. 01/22/82), height (i.e., 4'7" vs. 5'9"), and weight (i.e. 70 vs. 190 lbs) to account for the difference of weight and height between an average male adult and an average male child. To manipulate language type, all patient profiles provided the patient's diagnosis using different language. One of the adult profiles and one of the child profiles described the diagnosis as "Munder Patient," while the other adult and child profiles described the diagnosis as "Patient with Munder." Participants viewed one adult and one child patient profile. However, both patient profiles a participant viewed used the same language type (person-first language or identity-first language). All other information provided on the profiles was blocked out.

2.3.3 Outcome Measure

For both patient profiles, participants completed the Empathic Concern Scale[32] to assess feelings of empathy towards each target individual. The scale included six items assessing the extent to which participants reported feeling sympathetic, softhearted, compassionate, warm, moved, and tender toward each target. Participants responded to each item on a Likert-type scale ranging from 1 ("Not at all") to 7 ("Extremely"). Items were modified to reflect the language type (person-first or identity-first) that the participant was randomly assigned, and the target age (adult and child). For example, participants randomly assigned to the person-first condition viewing the adult patient profile saw items such as "How warm do you feel toward this adult with Munder?," whereas participants assigned to the identity-first condition viewing the adult patient profile saw items such as "How warm do you feel toward this Munder adult?" Two composite variables were created for each participant prior to performing the analysis. For participants who were randomly assigned the identity-first language condition, a composite variable for empathy towards target adults (M= 4.62, SD = 1.42, α= .97) was created and a composite variable for empathy towards target children (M= 5.51, SD= 1.33, α= .96) was created by averaging the participant's responses to the six scale items. Similarly, for participants randomly assigned to the person-first language condition, composite variables for empathy towards target adults (M= 4.76, SD = 1.27, α= .96) and target children (M= 5.40, SD= 1.40, α= .97) were computed.

3 RESULTS

The primary goal of this study was to examine whether empathy is affected by age, language type, or interaction. We had three a priori hypotheses: 1) there would be no effect of language type on empathy, 2) participants would report greater empathy toward children than adults (i.e., the main effect of target age), and 3) identity-first language would lead to less empathy than person-first language in judgments of children but language type would not influence perceptions of adults (i.e., an interaction between target age and language type). To this end, we conducted a 2 (age: child, adult) x 2 (language type: person-first, identity-first) mixed model factorial ANOVA on empathy with age as the repeated factor and language type as the between-subjects factor.

Consistent with our predictions, we did not observe a significant main effect of language type on empathy, $F(1, 126) = 0.00$, $p = .963$, $\eta_p^2 = .00$. Also consistent with predictions, there was a significant main effect of target age on empathy ($F(1, 126) = 84.69$, $p < .001$, $\eta_p^2 = .40$) such that participants reported greater empathy toward the child patient (M= 5.46, SD= 0.12) compared to the adult patient (M= 4.69, SD= 0.12). However, contrary to our a priori interaction hypothesis, we did not find a significant interaction between language type and target age on empathy, $F(1,126) = 2.26$, $p = .135$, $\eta_p^2 = .02$ (Fig 2).

These results indicate that participants felt more empathy toward children than toward adults. However, whether person-first or identity-first language was used to describe the condition did not seem to impact empathy toward patients with that condition. Additionally, we did not find evidence that the effect of language type on empathy depended on the target's age.

4 DISCUSSION

We found evidence to support two of our three a priori hypotheses. Specifically, we found no significant effect of language type on empathy. We did, however, find a significant effect of target age on empathy such that participants indicated feeling more empathy toward children, compared to adults, diagnosed with a hypothetical mental illness. However, we also anticipated that language type and target age would interactively inform empathy such that person-first, relative to identity-first, language would yield greater empathy for target children, but not for target adults. This hypothesis was not supported in this study as language type and target age did not interactively inform empathy. The current work provides insight into how language and target age may impact empathy towards people with mental illness. Because increased empathy is associated with positive mental health outcomes (e.g., increased response to therapy[33]), understanding how factors such as language choice and target age influence empathy could be an important foundation for improving the quality of life for people struggling with mental

Figure 1. Example of the child (A) and adult (B) patient profile shown to participants in the identity-first condition.

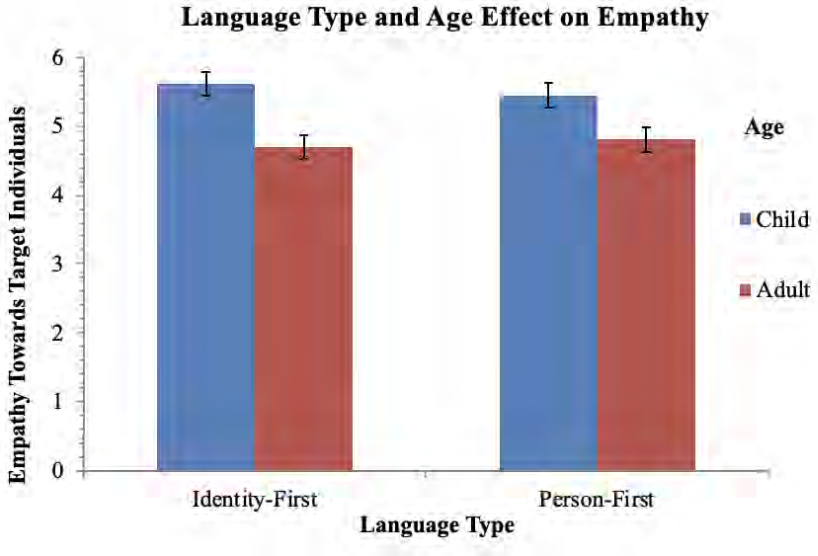

Figure 2. Graph depicting the effect of language type (person-first and identity-first) and target age on empathy. Error bars indicate standard error.

illness.

4.1 Practical Applications

Past work has yielded mixed findings and support for the influence of person-first versus identity-first on stigmatization[24]. The current work extends this literature, documenting the null effects of language (person-first vs. identity-first) on empathy for *both* children and adults with mental health symptomatology. These null effects are important to document as we continue to build an understanding of how and when language may or *may not* play a role in stigmatization and discriminatory action. Based on the current work, as well as past research[23], person-first versus identity-first language does not seem to affect ascriptions of empathy when referencing those experiencing symptoms of psychopathology; therefore, time, funding, and effort dedicated to reducing stigmatization of mental health may be better allocated to predictors or interventions other than language type.

Given the finding that children evoked greater empathic concern than adults in the current work, it seems that mental health symptomatology may differentially affect person perception across target ages. These findings suggest that educational programming relating to increased empathic concern and decreased stigmatization may need to vary by age of the target population (children or adults). For example, it might be the case that some educational approaches for mental health awareness may work better for children than adults, possibly because of the actual or perceived empathy of educators.

4.2 Limitations and Future Directions

The primary limitation of the current work was our achievable power. With our budget, we recruited 128

participants. This number of participants allowed us to detect a small effect (f =.28) with 95% power in a mixed model factorial ANOVA. In particular, our limited sample size resulted in lower statistical validity for the interaction effect ($\eta_p{}^2$ =.02). Given our statistical power to detect an effect, and the results of our interaction effect, we conclude we were significantly underpowered to detect an effect. This deficiency of power provides a significant limitation in the current work. Additionally, we were unable to conduct pre-testing on the symptomatology and we did not conduct a language manipulation check for the vignettes.

Despite limitations, the current work provides a strong starting place for future research that may recruit larger samples and strengthen generalizability. Using real symptomatology instead of a fictitious disorder could enhance empathy or, conversely, stigma for our target populations. We predict that using a real disorder would enhance empathy or stigma by assessing real-world prejudices and biases towards people with a disorder rather than a hypothesized illness. Assessing perceptions of a highly stigmatized disorder (e.g., bipolar disorder or depression) may result in stronger stigmatization and, therefore, less empathy in adults or children given real-world applicability. This would expand upon the current study and may increase generalizability.

Similarly, increasing the generalizability and real-world applicability of the current findings, mental health treatment providers' empathy toward patients may vary by age. Provider empathy has been found to play an important role in mental health treatment outcomes[34]. Our research suggests that providers may have varying levels of empathy for adults vs. children with the same disorder. This research may prove useful for family therapists, where age could interfere with the treatment of different family members due to varying levels of empathy towards clients. Expansion upon the findings in this study seeks to increase generalizability and real-world applicability.

4.3 Conclusion

Notably, our findings suggest that people may be more empathetic toward children as compared to adults with mental illness. However, there was no effect of person-first versus identity-first language nor an interaction between target age and language type. This implicates the possibility that efforts towards education and public policy surrounding language type may not have the effects originally assumed. Our research also provides insight into future directions for research such as assessing perceivers' stigma or assessing perceptions of known disorders.

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Authors' Note: All authors contributed equally to the work. Correspondence concerning this article should be addressed to Rylie Hansen at rylie.hansen@du.edu.

6 EDITOR'S NOTES

This article was peer-reviewed.

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Time, Onwards
by Katelyn Allen

Environmental Activism: Pro-Environmental Behavior, Consumerism, and Environmental Justice

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Abstract

This literature review examines established research on the concept of pro-environmental behaviors (PEB) and its subsects: activism and consumerism. There are competing opinions regarding the salience of pro-environmental activist behavior. This dichotomy is characterized by the role of social media, which can be simultaneously used for performative identity signaling and as a platform to facilitate global collective activism. The research shows a stark contrast between pro-environmental activism and pro-environmental consumerism, with the former acknowledging historical injustices and addressing the social, economic, and environmental disparities created by neo-liberal policies designed with the purpose of profit extraction at the expense of marginalized communities. This review concludes with a question not addressed in current research: does pro-environmental consumerist behavior create a sense of complacency that hinders the necessary actions for systemic change? This is important to consider going forward as corporations continue to lead consumers to believe their products and practices are sustainable, perpetuating the neoliberal conservation narrative that fundamentally prioritizes capitalism over systemic environmental change.

Keywords: pro-environmental behavior, conservation, activism, consumerism, identity-signaling, social media, environmental justice

1 INTRODUCTION

The Western concept of environmental conservation stems from a late 19th-century ideology known as *environmentalism*. Settler colonialism heavily influenced the environmentalism movement within the United States. National Parks were initially created by seizing wilderness areas to preserve for the sake of colonizers' enjoyment, rationalizing the displacement of Native Americans up to the present day[1,2]. Many pioneers of environmentalism were proponents of eugenics, associating white supremacy as a goal of environmental conservation. John Muir, the supposed father of environmentalism, is still highly regarded by many scholars as a "wilderness prophet" despite the wealth of evidence of racist and colonial narratives in his writings[3,2]. Environmental activism, or the environmental justice movement, can be interpreted as distinctly separate from traditional environmentalism, as it focuses on fighting against the systemic environmental injustices that predominantly affect Black and Native populations and promoting the decolonization of the basis of conservation ideology[4,2]. Pro-environmental behaviors can predict the extent of one's active participation in the environmental justice movement; however, examining the difference between activist and consumer behavior is imperative to understand the true impacts of both fully. Within the scope of this literature, one could argue that pro-environmental consumerist behavior and the status symbol that purportedly sustainable brands provide create a sense of complacency that does not align with the inherent values of environmental justice nor the collective action that is needed for systemic change.

2 PRO-ENVIRONMENTAL BEHAVIOR (PEB)

Pro-environmental behavior is understood as conscious behavior that reduces the negative environmental impacts of one's actions[5]. Multiple types of pro-environmental behavior have been identified and thoroughly researched at both the individual and collective identity levels. A person's *nature connectedness* can be a predictor of individual PEB[6,7]. Nature connectedness is a personal identification with nature or perception of the self as one with nature[8]. The level of nature connectedness can be quantified by the Nature Connectedness

Scale and similar surveys that assess one's emotional bonds with and relatedness to nature. Personal bonds with nature can inform one's propensity to engage in PEB, but this is limited by access to natural spaces, cultural integrity, and conservation education. It is important to note that for generations, systemic environmental injustice has fortified barriers for oppressed communities[1]. Exclusivity and colonialism have denied these communities the ability to connect and exist in nature, a reality that must be acknowledged when considering the nature connectedness model's legitimacy[7;2]. Further research on the drivers of PEB and environmental activism has found that collective political and social identity with the environment is a stronger predictor of PEB, specifically pro-environmental activist behavior (PEAB), rather than an individual connectedness to nature[5;8]. Pro-environmental consumer behavior (PECB) differs in that it is inherently capitalist, where economic growth will ultimately take precedence over sustainability[4].

3 PRO-ENVIRONMENTAL CONSUMER BEHAVIOR (PECB)

Pro-environmental consumer behavior is characterized by people participating in presumably sustainable consumer trends[8]. Individual consumer trends can include anything from using reusable bags, purchasing energy offsets, buying from "eco-friendly" fashion brands, or participating in eco-tourism. While these small-scale individualistic behaviors have some merit for furthering sustainability, PECB is still promoted by neoliberal conservation ideology. Profitability is often prioritized over environmental impact, with many people unaware of the actual unsustainable sources of their consumer lifestyles[4;2].

Social identity is one of the main catalysts for eco-consumerism through *identity signaling*[9]. This is known as the *green-to-be-seen* concept, in which people participate in eco-friendly consumer trends specifically to boost social standing and signal their alignment with environmental friendliness[10]. Analysis of PECB indicates that people are more likely to choose eco-friendly products over luxury brands when it is clearly displayed on the label to flaunt their pro-environmental stance. For example, consumers will spend a premium price on recognizable car models like Prius or Tesla, despite more affordable hybrid and electric vehicle options on the market[10]. The rapid increase in PEB identity signaling can be largely attributed to the ever-growing presence of social media influencers and celebrity performative activism[9].

Neoliberal conservation ideology proclaims that capitalism's inherent innovation is the primary vector to achieving the traditional environmentalist goals of conservation. However, unregulated corporations exploit consumers through performative advertising and mismarketed "eco-friendly" clothing, products, and experiences[4]. Ecotourism and commercial wildlife experiences like safaris operate under the guise of conservation while disrupting and commodifying native communities and ecosystems due to a lack of governmental regulation on what defines "eco." Historical trends in research have shown that systemic change toward sustainability and environmental justice requires people to expand beyond their individual consumer behaviors[2;11;4]. Collective action toward social justice needs to occur hand-in-hand with collective environmental activism, as both systemic issues are inextricably linked[8].

4 THE NEED FOR PRO-ENVIRONMENTAL ACTIVIST BEHAVIOR (PEAB)

Before looking at PEB activist behavior, it is important to address the systemic injustices that cause the need for such activism. Colonial ideology has led to government-sanctioned theft and privatization of land since the beginning of European colonization around the 15th century, or the Age of Discovery[2]. White colonizers have invaded Native populations globally, committing heinous injustices to minority populations even in the present day[1;2]. In doing so, they destroyed native ecosystems in the name of expansion, mirroring the neoliberalist rationalization for the continued destruction of wildlife[4].

There is no denying that structural racism and classism are direct factors in the systematic destruction of ecosystems. This is blindingly apparent in urban ecosystems that are being deemed as "ecological sacrifice zones"[4]. Sacrifice zones are communities within the immediate range of heavily industrialized areas or military installations that result in high exposure to toxic pollutants (Bullard, 2011). In urban areas throughout the United States, Black Americans were forced into segregated neighborhoods through *redlining* to suppress their economic growth[1]. Redlining was an urban segregation policy where neighborhoods were graded from most desirable (greenlined) to most hazardous (redlined)[1]. Black Americans were refused housing loans in greenlined neighborhoods and confined to the redlined neighborhoods. Although technically outlawed through the Civil Rights Act of 1968, the racist systems behind redlining still prevail and are seen in present-day urban segregation maps[1;11]. The same neighborhoods created through redlining continue to be populated by impoverished and oppressed BIPOC (Black, Indigenous, and people of color) communities and are often within sacrifice zones. Evidence on the ecological impacts of systemic racism shows that income inequality in the United States predicts biodiversity loss[1]. There is statistically less green space, tree cover, and ecosystem diversity in Black neighborhoods. The gov-

ernment and fossil fuel industry continue to seize Native land and further climate destruction through oil pipeline construction, fracking, mining, and mass deforestation, among other resource exploitation methods[1;2]. There has been a need for environmental justice reform since the beginning of colonization, and with the current neoliberal conservation ideologies in place, the need for collective action and resistance grows exponentially.

5 THE CHARACTERIZATION AND EXAMPLES OF PRO-ENVIRONMENTAL ACTIVIST BEHAVIOR

Bamberg argues that while the social and environmental justice movements share commonalities, they possess different motivations. "Group-based anger" within environmental justice movements often centers around corporations, financial institutions, and government policies, just to name a few. This competitive and collective action, paired with group-based anger, aids in unifying their cause[6]. Conversely, he suggests that the environmental justice movement is a form of conversionary collective action, lacking that same anger and unified resistance against a single entity. Many directly oppose this critique, citing examples where grassroots environmental activists have exemplified group-based anger spurring immense resistance to fossil fuel and mining industries[4;2;11]. They argue that the convergence of both conversionary and competitive methods of collective action is a necessary catalyst for change.

Just as social media can be a stage for performative activism and commodification of the climate crisis, it also brought around a new wave of global collective activism that was impossible before the age of the internet[9]. Platforms such as Twitter and TikTok have enabled the awareness of localized grassroots activism and amplified the voices of those most affected by environmental injustice. So-called "ordinary people," like Greta Thunberg, have arisen in the wake of social media, becoming internationally recognized symbols of environmental activism[9]. The Blockadia Map, an online atlas created by multiple international research universities, documents grassroots environmental activism worldwide. This online resource was created to allow activists to unite and create stronger collective resistance and showcases several circumstances where such resistance has spurred environmental policy changes[12].

Under the umbrella of environmental activism, collective creation and regeneration are vital components in order to create substantial change. Society must increase its adaptive capacity and collective environmental and social resilience to combat the climate emergency and the persistence of neoliberalist conservation ideology[2]. Bamberg highlighted the Transition Towns movement, a successful example of collective creation. This community-led movement strives to establish localized energy autonomy, a localized food economy, and restore green spaces, with groups active in several countries worldwide[6]. The establishment of community gardens and rooftop green spaces are common forms of collective creation and regeneration in urban environments. There has also been an uptick in natural regeneration efforts like converting privatized nature spaces to protected areas. Privately owned nature areas such as beaches, lakes, parks, golf courses, and resorts are often implicated in the overexploitation of natural resources and the degradation of native species. Due to the increasing privatization of nature areas in Cancun, Mexico, local fishermen collectively protested the environmental injustices of increased pollution and ecosystem destruction caused by the tourist industry, garnering global attention. This activism then spurred the United Nations Educational, Scientific and Cultural Organization (UNESCO) to establish the Sian Ka'an Biosphere Reserve, an internationally recognized protected ecological marine area off the coast of the Yucatan Peninsula (Grady-Lovelace, 2017). It is clear that the pathway to environmental justice must be forged through not only PEB and activism but through collective creation and regeneration.

6 A GAP IN RESEARCH: DOES COMPLACENCY CREATED BY PECB LEAD TO LESS COLLECTIVE ACTION FOR ENVIRONMENTAL JUSTICE?

Substantial research has been done on what PEB is and what factors influence it. The characteristics of pro-environmental activist behavior and consumer behavior are clearly defined. However, the possible adverse effects of increasing pro-environmental consumer behavior on the overall environmental activist movement are underexplored. The age of social media has brought a wave of performative activism and eco-consumerism[9]. It can be argued that consumerism as the dominant form of PEB results in a sense of complacency to neoliberal, capitalist conservation solutions.

Pro-environmental consumer behavior does nothing to address or rectify past environmental injustices, and participating industries often misinform consumers about their actual environmental impacts. This begs the question: does the increase in eco-consumerism discourage collective environmental action? If pro-environmental consumers are satiated by their contributions towards a sustainable society, could this result in the stagnation of the environmental justice movement? Exploring the damaging effects pro-environmental consumer behavior can have on the progression of systemic change would be conducive to further sustainable development and environmental justice strategies.

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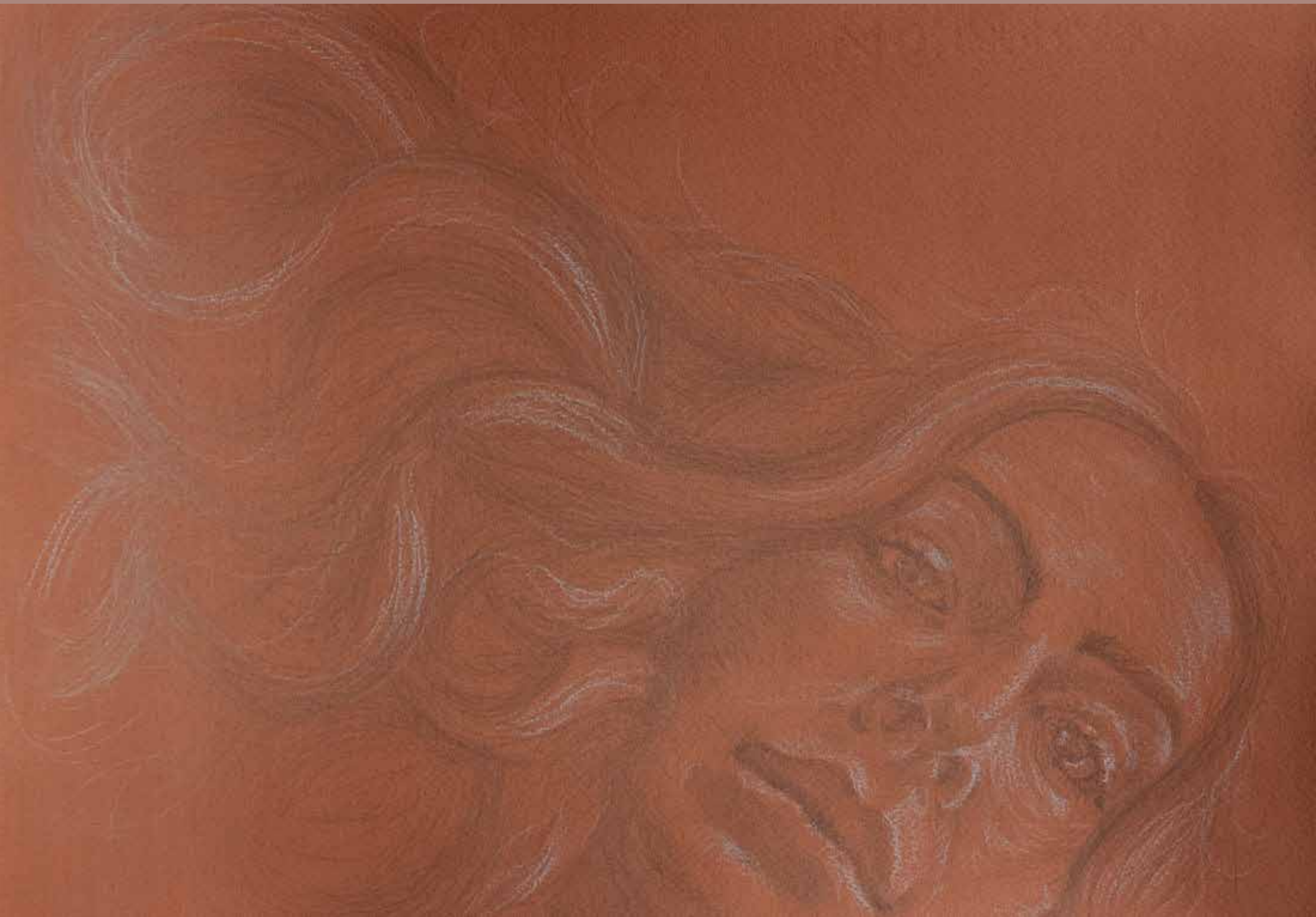

The Effect of Language Type and Perceived Controllability on Stigma and Compassion

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Abstract

Previous research suggests that mental health stigma creates significant barriers to treatment seeking and adherence, diminishes treatment outcomes, and motivates social rejection towards people experiencing mental illness; by contrast, compassion seems to offer protective effects, improving treatment outcomes and helping behavior. The current work extends the established literature by experimentally examining the independent and interactive effects of two factors theorized to influence stigma and compassion: controllability and language. Participants read vignettes about hypothetical mental illnesses explained with a genetic attribution (indicating low controllability) or a behavioral attribution (indicating high controllability) and completed measures of perceived controllability, stigma, and compassion. We found that genetic etiology, compared to behavioral etiology, decreased stigma and increased compassion. Although not statistically significant, preliminary evidence suggests that language might interact with etiology to affect stigma. In the behavioral etiology condition, identity-first language (compared to person-first) exacerbated stigma, whereas, in the genetic etiology condition, this effect was descriptively reversed, though statistically nonsignificant. Our findings provide evidence that emphasizing the contribution of uncontrollable factors (e.g., genetics) to psychopathology could help reduce stigma and increase compassion for people experiencing mental illness. Language may also interact with controllability to inform stigma. This work could aid in advising empathetic and supportive language practices dependent on condition characteristics (e.g., perceived controllability), however, replication is needed to demonstrate the reliability of these effects.

Keywords: person-first language, perceived controllability, etiology, stigma, compassion

1 THE EFFECT OF LANGUAGE TYPE AND PERCEIVED CONTROLLABILITY ON STIGMA AND COMPASSION

An estimated 52.9 million adults in the United States live with a mental illness, and an estimated 90% of those adults say that stigma negatively impacts their lives[1;2]. Stigma encompasses value judgments (stereotypes), emotional responses (prejudice), and behavioral discrimination toward members of a group[3]; this poses potentially deleterious effects on psychological and physical health, such as decreased self-esteem and self-efficacy[4;5;6;7;8]. Research suggests that stigma is a major barrier to treatment seeking and is associated with impaired treatment outcomes[9;10;11]. Whereas stigma is associated with negative outcomes, compassion – care and concern for another person – positively affects people with mental illness[12]. For example, compassion improves treatment outcomes, leads to helping behavior, and facilitates comforting caregiving exchange[13;14;12]. Because stigma and an absence of compassion create obstacles for people with mental illness, researchers have sought to understand their antecedents.

Some work suggests that perceived controllability – the extent to which it is believed that an individual can prevent a disorder from developing – is strongly associated with the stigmatization of mental illness and other conditions[6;15;16]. Beyond the perceived controllability of a condition, the language used to describe that condition may also inform stigma and compassion. To this point, research suggests empathetic and inclusive language can reduce stigma and increase compassion toward people experiencing mental illness[17;18;19]. Extending upon past research, current literature investigates the independent and interactive influences of controllability (whether a condition originated from an individ-

ual's behavior or genetics) and language (person-first or identity-first language) on stigma and compassion towards people with mental illness.

2 THE EFFECTS OF LANGUAGE TYPE ON STIGMA AND COMPASSION

There is an ongoing debate in communities, including the disability rights and mental health communities, regarding whether person-first "person with a mental illness" or identity-first "mentally ill person" language is more stigmatizing[20]. Person-first language is theorized to deemphasize disability status as one aspect of a person instead of their entire identity, whereas identity-first language is theorized to allow group members to claim their disability or condition as part of their identity with pride[21;22]. Some communities, like the autistic and deaf communities, explicitly advocate for identity-first language[23]; American Psychological Association, 2021. Other communities, like substance abuse and mental illness, do not endorse a specific language type, so the American Psychological Association (APA) and American Medical Association (AMA) recommend using person-first language when referring to people with mental illness or substance use disorders.

For communities that do not endorse a specific language type, some researchers have sought to experimentally test how the language used to describe conditions informs judgments of individuals experiencing those conditions. For example, research suggests that identity-first, relative to person-first, language yields greater stigma toward people with substance use disorders[17;18;24;24]. Other studies found that identity-first language (i.e., "mentally ill people" and "schizophrenics") led to greater stigma than person-first language (i.e., "people with mental illness" and "people with schizophrenia")[25;19]. Some studies have also provided evidence that person-first, relative to identity-first, language led to greater benevolence, which may be a good proxy for compassion[17;19;26].

Though several studies have found that language type informs stigma, others yielded nonsignificant effects[17;18;25;19]. Other studies found a nonsignificant effect of language type on stigma for either mental illness (e.g., schizophrenia) or substance abuse disorders[27;28]. In addition, our pilot study examined the effect of language type (person-first vs. identity-first) on prejudice and dehumanization towards people with hypothetical psychological conditions and yielded nonsignificant effects of language on both prejudice and dehumanization[29]. Another study found a nonsignificant effect of language type on benevolence[25]. Given contradictory evidence and null effects in previous work, we did not predict a main effect of language type on stigma or compassion in the current work.

3 THE EFFECTS OF PERCEIVED CONTROLLABILITY ON STIGMA AND COMPASSION

A wealth of research has investigated the impact of perceived controllability on stigma. One such study found that perceived controllability predicted social rejection towards people with mental illness better than 16 other factors[6]. Other work found that perceived controllability accounted for 18% of the variance in stigma toward a variety of stigmatized conditions and identities and 24% of the variance in stigma toward people with mental illnesses[15;16]. Additionally, research indicates that alcohol use disorder was perceived as more controllable and was more stigmatized than schizophrenia or depression[30].

To test the effect of perceived controllability on stigma, many studies have operationalized perceived controllability with genetic (low perceived controllability) and behavioral (high perceived controllability) etiological conditions. Researchers have hypothesized that describing conditions with genetic etiological attributions (compared to behavioral etiological attributions) would reduce stigma by also reducing perceived controllability[31]. Some research has found that genetic etiological attributions, relative to behavioral etiological attributions, predicted more pity, sympathy, and desire to help people with schizophrenia and depression[32]. However, there is some contradictory evidence in the literature on the impact of etiology on constructs related to stigma and compassion[33;32;34]. To this point, Angermeyer et al found no differences in pity, empathy, and desire to help people with anorexia or bulimia between genetic and behavioral etiology groups. Additionally, a meta-analysis found that genetic attributions (relative to behavioral attributions) were associated with reduced blame but similar stigma[35].

In sum, there is notable complexity in the literature surrounding perceived controllability and etiology in stigma and compassion for individuals experiencing mental illness. The current study resembled past work[31;32] because we operationalized high and low controllability via manipulation of etiology. However, the current work departs from past work by employing hypothetical mental illnesses, thereby eliminating existing expectations of controllability that might accompany a known diagnosis. We reasoned that inconsistencies in the extant literature might be attributed to preconceived beliefs about controllability or stigmatizing attitudes toward recognizable mental illnesses[32;35]. Thus, by employing hypothetical mental illnesses we aimed to mitigate the effects of preconceived attitudes and beliefs, allowing us to better capture the direct effects of perceived controllability on stigma and compassion. Therefore, we aligned our predictions with the literature that has studied the effects of perceived controlla-

bility on stigma[6;15;16]. We predicted behavioral etiology (high perceived controllability) would result in greater stigma and less compassion than genetic etiology (low perceived controllability).

4 INTERACTIVE EFFECT OF LANGUAGE TYPE AND PERCEIVED CONTROLLABILITY

Though previous work has not considered language and controllability in tandem, it is also possible that controllability and language may interact to inform perceptions of those experiencing mental illness. Taking smoking, for example, person-first language ("person who smokes") describes a person who engages in a behavior, whereas identity-first language labels people as their behavior ("smoker"). Williamson and colleagues (2020) found that labeling people as their behavior ("smoker") led to more negative perceptions of tobacco dependence. This study only examined the influence of language on stigma but did not investigate the perceived controllability of smoking. However, other work suggests smoking tends to be perceived as a controllable action and lifestyle choice[36], so we believe the effects found by Williamson and colleagues might be most applicable to conditions perceived as highly controllable. If so, then it may be the case that person-first, relative to identity-first, language yields more positive perceptions of individuals with conditions perceived as highly controllable.

Work investigating language-type of substance use disorders has found converging evidence. Specifically, work assessing perceptions of individuals with substance use disorders – a disorder that is often perceived as controllable – has found strong support that person-first language yields less stigma relative to identity-first language[37;17;18;24] . Thus, it may be the case that person-first language leads to relatively less stigma for conditions perceived as controllable. Conversely, conditions with lower controllability aspects such as autism and deafness, which have biological etiology, are more likely to advocate for identity-first language compared to person-first[38;39;40;41]. While this is anecdotal evidence, it could indicate that these populations interpret identity-first language as less stigmatizing and more compassionate by valuing their disorder as part of themselves in an empowering, positive light[39;23].

Thus, we hypothesize the perceived controllability of a condition may modulate whether identity-first or person-first language yields more positive judgments and reactions. Disorders perceived as controllable may be more subject to stigmatization when also labeling individuals using identity-first (relative to person-first) language, but perhaps disorders perceived as uncontrollable are more positively perceived when identity-first language (relative to person-first) is employed.

5 OVERVIEW OF THE CURRENT WORK

Separate research inquiries have examined the effects of perceived controllability and language type on stigma and compassion, but research has yet to consider potential interactive effects. This study contributes to the ongoing debate of person-first versus identity-first language by experimentally investigating the language used to describe individuals with mental illness and examining consequences for stigma and compassion toward those individuals. There is also empirical evidence suggesting that the perceived controllability of conditions predicts constructs adjacent to stigma and compassion, such as prejudice and discrimination. However, there is still some inconsistency in the literature, that we theorize might be attributed to preconceived notions, beliefs, and attitudes about specific disorders. The current work uses hypothetical mental health illnesses to mitigate such preexisting beliefs and focuses on the direct effects of language and controllability on stigma and compassion towards known mental illnesses.

In the current work, we studied the effects of language type and perceived controllability on stigma and compassion. Specifically, we assessed perceivers' stigma and compassion towards individuals with a hypothetical mental illness across language type (i.e., person-first vs. identity-first language) and controllability, which was operationalized via manipulation of etiology (i.e., behavioral [high controllability] vs. genetic [low controllability]). We used a mixed-model design with language type as a within-subjects variable and etiology as a between-subjects variable. That is, all participants saw one condition described with person-first and one described with identity-first language, and participants were randomly assigned to learn about conditions with either genetic or behavioral etiology.

We did not anticipate a significant main effect of language type on stigma or compassion. We predicted a significant main effect of etiology on stigma and compassion. Specifically, we anticipated that behavioral etiology would result in greater stigma and less compassion than genetic etiology. Further, we predicted an interaction between language type and etiology on stigma and compassion. Within the behavioral etiology condition, we predicted participants would exhibit greater stigma and less compassion toward conditions described with identity-first, compared to person-first, language. Within the genetic etiology condition, we predicted participants would report less stigma and greater compassion toward conditions described with identity-first, compared to person-first, language.

If hypotheses are supported, our findings could help advise healthcare workers and clinicians on language use and framing of psychological disorders that will minimize stigma and encourage compassion toward those affected by mental illness. For example, if high

perceived controllability results in greater stigma and less compassion, psychoeducation efforts could emphasize uncontrollable factors (e.g., genetics) that contribute to the development of mental illness. Additionally, the projected interactive effect between language type and perceived controllability could contribute to the public good by informing specific recommendations for when to use person-first and identity-first language. For mental illnesses perceived as controllable, person-first language may be best whereas mental illnesses perceived as uncontrollable may benefit more from identity-first language. If the data from the current study and additional studies do not support our hypotheses, then resources may be better allocated to the explanation of other variables to combat stigma. In sum, the current work seeks to document the antecedents of supportive and harmful responses to mental illness with the ultimate hope of identifying interventions to reduce stigma and promote compassion toward mental illness. Given the importance of stigma and compassion in treatment-seeking, adherence to care, treatment success, and well-being, it is crucial to better understand the ways in which language and perceived controllability influence these key constructs.

6 METHODS

6.1 Participants

Constrained by our class research budget ($166) and planned participant payment amount ($1.00), we aimed to recruit 127 participants. We recruited 129 participants from Amazon Mechanical Turk via CloudResearch. A sensitivity analysis conducted in G*Power[42] indicated that 129 participants enabled us to detect a small $n_{p2} = .02$ effect with 80% power in a 2 × 2 mixed model factorial ANOVA.

Our sample ($M_{age} = 44.59, SD_{age} = 14.51$) was predominantly White (102 White, 11 Black/African American, 10 Asian, 2 American Indian/ Alaskan Native, 2 as Bi- or multiracial, 1 as other, and 1 did not disclose). About half of the participants were women[1] (65 women, 63 men, 2 as nonbinary, 1 as agender, and 1 did not disclose), and most did not identify as Hispanic or Latinx (113 not Hispanic/Latinx, 11 Hispanic/Latinx, and 5 did not disclose). Participants were compensated $1.00 for their participation, and no participants were excluded from the analyses.

6.2 Procedure

After providing informed consent, participants viewed two vignettes in random order: one vignette used identity-first language, and the other vignette used person-first language. Each participant was randomly assigned to either the genetic etiology (low controllability) or the behavioral etiology (high controllability) condition, so each participant viewed vignettes with the same etiological attribution. Thus, the vignettes viewed by a given participant varied only in name (i.e., Grespar or Munder) and language type (i.e., person-first or identity-first). Which name was paired with which language type was counterbalanced between participants.

After viewing each vignette, participants completed measures of stigma, compassion, and perceived controllability. All scales were modified to incorporate the mental illness name and language type from the preceding vignette. After participants responded to both vignettes, they completed an assessment of inclusion of self with mental illness and a demographic questionnaire that included age, gender, race, ethnicity, education, and political orientation items. Lastly, participants were debriefed, thanked, and compensated.

7 MATERIALS

7.1 Vignettes

We manipulated language type (person-first vs. identity-first) and etiology (genetic vs. behavioral) via vignettes that described a mental illness in a new hypothetical society. The names of the hypothetical mental illnesses (Grespar and Munder) were selected based on pre-testing indicating they were the two most negative names from a set of randomly created names (see pre-registration document for more details about pre-test procedure and findings;[29]). Each participant viewed two vignettes that differed in name (Grespar vs. Munder) and language (person-first vs. identity-first). The etiology (genetic vs. behavioral) was consistent across both vignettes for each participant (i.e., manipulated between subjects). Both the genetic and behavioral vignettes are presented below.

Genetic Etiology Vignette. "Imagine you learn about a new hypothetical society where a subset of individuals has a mental health disorder named [*Grespar/Munder]. [Grespar/Munder people or people with Grespar/Munder*] were born with it and have no control over the mental health disorder. [*Grespar/Munder*] is passed down through generations."

Behavioral Etiology Vignette. "Imagine you learn about a new hypothetical society where a subset of individuals has a mental health disorder named [*Grespar/Munder]. [Grespar/Munder people or people with Grespar/Munder*] people were not born with it and developed the mental health disorder through behavioral and lifestyle choices."

[1] Participants could identify with more than one gender category

7.2 Perceived Controllability

Perceived controllability was assessed as a manipulation check via a modified version of the Attributions for Serious Illness Scale, adapted from Mantler et al. (2003). The Attributions for Serious Illness has a four-item controllability subscale that includes questions like, "It was something that [*Grespar/Munder people or people with Grespar/Munder*] did that caused their illness." Two items were reverse-coded following the procedures from Mantler et al. (2003). We scored perceived controllability as a composite variable by averaging each of the four items separately for each language type and etiology condition. See Table 1 for statistics.

7.3 Stigma

Stigma was assessed using a 5-item modified version of the Self-Stigma of Mental Illness Short Form, adapted from Corrigan et al. (2012). Participants viewed two versions of the scale: one evaluated anticipated public perception and the other evaluated personal perception. Items on the scale evaluating anticipated public perception were prefaced with "*I think the public would believe…*," whereas items on the scale evaluating personal perception were prefaced with "*I believe…*". All items were modified to incorporate the language type manipulation (person-first vs. identity-first) and condition name (Grespar vs. Munder). Participants rated items on a nine-point Likert scale from 1 (*strongly disagree*) to 9 (*strongly agree*). An example of an identity-first item is "Most [*Grespar/Munder*] people will not recover or get better." An example of a person-first item is "Most people with [*Grespar/Munder*] are dangerous." We scored stigma by creating a composite variable for each condition by averaging all ten items (i.e., five items assessing public perception and five items assessing personal perception). See Table 2 for statistics.

7.4 Compassion

Compassion was evaluated on a 9-point Likert-type scale. Participants were instructed: "Compassion is care and concern for another person who is experiencing hardship. It often leads to helping behavior. Please rank on a scale of 1 (*very little*) to 9 (*very much*) how much compassion you feel towards (_____ *people/people with* _____)." Compassion was compared for person-first ($M_{genetic} = 7.17, SD_{age} = 1.91; M_{behavioral} = 6.25, SD_{behavioral} = 2.09$) and identity-first language ($M_{genetic} = 7.17, SD_{age} = 1.88; M_{behavioral} = 6.36, SD_{behavioral} = 2.01$).

7.5 Assessment of inclusion of self with mental illness

Self-identification with mental illness was modified from Aron et al. (1992) to assess as an individual difference. Participants were instructed to "Please choose the picture below that best describes how you see yourself in relation to mental illness. Selecting '1' would indicate you do not identify at all with mental illness, while '7' would indicate you perceive a great deal of overlap" (M = 3.20, SD = 1.91; see Figure 1).

8 RESULTS

As a manipulation check, we conducted an independent samples t-test comparing ratings of the genetic etiology condition and the behavioral etiology condition on controllability. We predicted that participants in the behavioral etiology condition would perceive the hypothetical mental illnesses as more controllable than participants in the genetic etiology condition. This analysis yielded a significant result, $t(127) = 18.52$, $p < .001$, 95% CI = [4.20, 5.21], $d = 1.44$. Consistent with our hypothesis, participants assigned to read about conditions with behavioral etiology ($M = 6.63$, $SD = 1.58$) judged these conditions as more controllable than those who read about conditions with genetic etiology ($M = 1.93$, $SD = 1.30$).

8.1 Stigma

We hypothesized a significant main effect of etiology on stigma, such that behavioral etiology would cause greater stigma than genetic etiology. We hypothesized a null main effect of language type on stigma. Further, we predicted an interaction between etiology and language type. Specifically, we expected participants in the behavioral etiology condition would exhibit greater stigma towards the identity-first condition than the person-first condition, whereas we expected participants in the genetic etiology condition to exhibit less stigma in the identity-first condition, compared to the person-first condition.

To test these hypotheses, we conducted a 2 (language type: person-first, identity-first) × 2 (etiology: genetic, behavioral) mixed model factorial ANOVA on stigma, with language type as a repeated factor and etiology as a between-subjects factor. Consistent with predictions, this analysis yielded a nonsignificant main effect of language type on stigma, $F(1,127) = 0.17$, $p = .683$, $\eta_p^2 = .00$. There was a significant main effect of etiology on stigma, $F(1,127) = 14.25$, $p < .001$, $\eta_p^2 = .10$. In accordance with our hypothesis, participants exhibited greater stigma towards the behavioral etiology condition $M = 4.85$, $SD = 1.34$) than they did towards the genetic etiology condition ($M = 3.91$, $SD = 1.51$). Of particular interest,

Condition	*Mean (M)*	*Standard Deviation (SD)*	*Cronbach's alpha (a)*
Person-first, Genetic Etiology	1.93	1.40	0.74
Person-first, Behavioral Etiology	6.59	1.94	0.76
Identity-first, Genetic Etiology	1.93	1.38	0.83
Identity-first, Behavioral Etiology	5.00	0.71	0.77

Table 1 Descriptive Statistics and Cronbach's alpha for Perceived Controllability.

Condition	*Mean (M)*	*Standard Deviation (SD)*	*Cronbach's alpha (a)*
Person-first, Genetic Etiology	3.95	1.50	0.84
Person-first, Behavioral Etiology	4.78	1.42	0.79
Identity-first, Genetic Etiology	3.62	1.59	0.85
Identity-first, Behavioral Etiology	4.91	1.37	0.76

Table 2 Descriptive Statistics and Cronbach's alpha for Stigma.

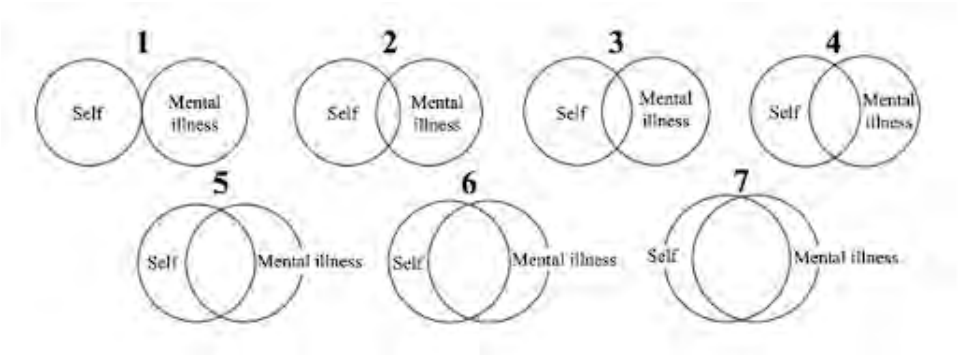

Figure 1. Inclusion of Self with Mental Illness Measure.

the interaction between language type and etiology on stigma was marginally significant, $F(1,127) = 3.80$, $p = .053$, $\eta_p^2 = .03$ (See Figure 2). We examined the simple effects to better understand the nature of this interaction. Within the behavioral etiology condition, identity-first language ($M = 4.92$, $SD = 1.37$) yielded marginally greater stigma than person-first language ($M = 4.78$, $SD = 1.42$), $p = .099$. Within the genetic etiology condition, there was a descriptively reversed but nonsignificant effect of identity-first language ($M = 3.86$, $SD = 1.52$) and person-first language ($M = 3.95$, $SD = 1.50$) on stigma, $p = .276$. In sum, language type did not independently impact stigma, but behavioral etiology (high perceived controllability) led to greater stigma than genetic etiology (low perceived controllability). Additionally, there is preliminary evidence that identity-first language may exacerbate stigma in conditions that are perceived as highly controllable. See Figure 2.

8.2 Compassion

We expected stigma to be inversely related to compassion, so our hypotheses here are the same as above but reversed. We hypothesized a significant main effect of etiology on compassion, such that genetic etiology would yield greater compassion than behavioral etiology. We again hypothesized a null main effect of language type on compassion. Additionally, we predicted an interaction between language type and etiology on compassion. Within the behavioral etiology condition,

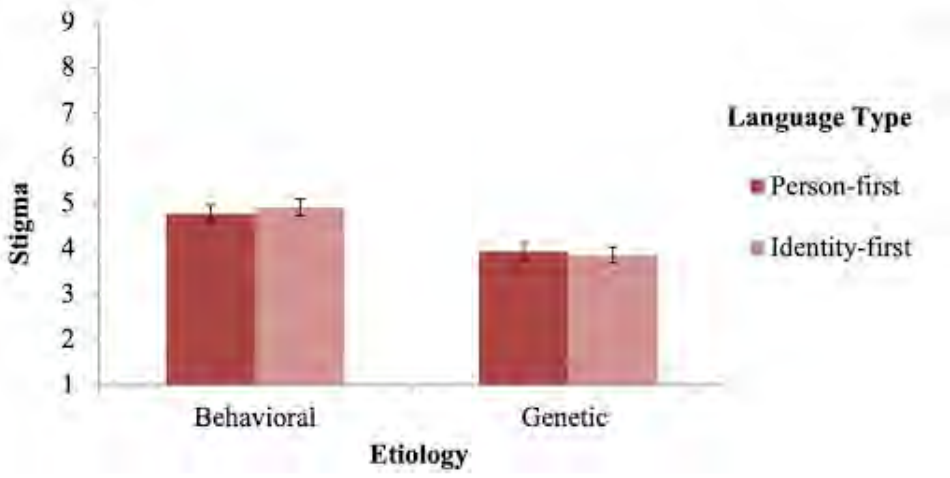

Figure 2. The effect of etiology and language type on stigma. Error bars indicate 95% confidence intervals.

we predicted that participants would exhibit greater compassion in the person-first condition than in the identity-first condition. Within the genetic etiology condition, we predicted that participants would exhibit greater compassion in the identity-first language condition compared to person-first.

To test these hypotheses, we conducted a 2 (language type: person-first vs. identity-first) ×2 (etiology: genetic, behavioral) mixed model factorial ANOVA on compassion, with language type as a repeated factor and etiology as a between-subjects factor. This analysis yielded a non-significant main effect of language type on compassion, $F(1,127) = 2.60$, $p = .109$, $\eta_p^2 = .02$. There was a significant main effect of etiology on compassion, $F(1,127) = 5.88$, $p = .017$, $\eta_p^2 = .04$. Consistent with our prediction, participants assigned to read about conditions with genetic etiology ($M = 7.14$, $SD = 1.89$) exhibited greater compassion towards individuals with those conditions than those who read about conditions with behavioral etiology ($M = 6.30$, $SD = 2.02$). Contrary to hypotheses, the interaction between language type and etiology on compassion was not significant, $F(1,127) = 0.20$, $p = .652$, $\eta_p^2 = .00$ (See Figure 3). Congruent with our findings on stigma, language type did not impact compassion, but etiology did. Specifically, genetic etiology (low perceived controllability) led to greater compassion than behavioral etiology (high perceived controllability); however, there was no evidence of an interactive effect between language type and etiology on compassion. See Figure 3.

9 DISCUSSION

In summary, genetic etiology (low controllability) led to less stigma and greater compassion than behavioral etiology (high controllability). There were no main effects of language type on stigma or compassion nor statistically significant interactions between language type and etiology on compassion or stigma. Although nonsignificant, we found a marginal interaction between language type and etiology on stigma but not compassion. In the behavioral etiology condition, identity-first language yielded marginally greater stigma than person-first language; in the genetic etiology condition, this effect was nonsignificant and directionally reversed.

Our manipulation of controllability through etiology was effective as mental illnesses described with behavioral etiological attributions were perceived as more controllable than mental illnesses described with genetic etiological attributions. Previous work has yet to demonstrate the effects of etiological attributions on perceived controllability [43]. Our vignettes and manipulation check could serve as a model for future research investigating the effects of perceived controllability.

Additionally, our research contributes to the disparate literature on the effects of perceived controllability on stigma and compassion toward people with mental illness. One notable departure from past literature, which uses recognized mental illnesses to examine the influence of controllability on stigma and compassion, is the hypothetical mental illnesses employed in current work [43;35]. Some previous work indicates that perceived controllability is strongly associated with stigma [6;15;16]. However, when researchers have used genetic and non-genetic etiological explanations to manipulate perceived controllability, inconsistent effects of etiological explanations on stigma were found [2]. The current work found conditions that were perceived as highly controllable were more stigmatized and viewed less compassionately than conditions that

[2] for meta-analyses, see Angermeyer et al., 2011; Kvaale et al., 2013 [43;35]

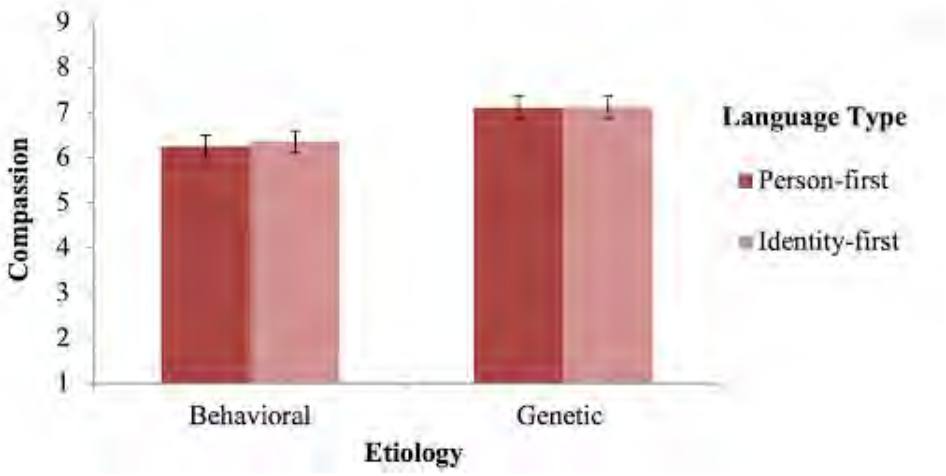

Figure 3. The effect of etiology and language type on compassion. Error bars indicate 95% confidence intervals.

were perceived as uncontrollable. Using hypothetical mental illnesses may have mitigated preconceived attitudes and beliefs about mental illness including perceived controllability and perceived dangerousness – this could aid in explaining why the current work observed robust effects of etiology whereas past work has observed inconsistent findings[43;35].

Although statistically nonsignificant, we found preliminary evidence that language type may moderate the effect of etiology on stigma. Future work should try to replicate this effect with a larger sample size or stronger manipulation. Given the debate among language preferences for different communities[20], our study suggests that person-first language may help reduce stigma when referring to conditions that are perceived as controllable. More research is needed to understand the interactive effect between language type and perceived controllability on stigma. Importantly, our findings highlight the variety of perceptions of different mental illnesses, as well as the different dimensions of stigma that may contribute to illnesses differently. In short, language-type and anti-stigma strategies must be carefully considered and will vary, based on the specific condition or mental illness.

10 LIMITATIONS & FUTURE DIRECTIONS

As stated above, the current work employed hypothetical mental health illness and did not include actual symptoms of psychopathology which allowed us to hold constant participants' condition-level stereotypes; however, these decisions limit the generalizability of our findings. Outside of the laboratory, people have preconceptions and stigmatizing beliefs about the etiology of recognized mental illnesses. So, emphasizing genetic etiological attributions and minimizing behavioral etiological (compared to minimizing genetic attributions and emphasizing behavioral attributions) may not result in significantly less stigma and greater compassion, as demonstrated in the current work. To test this hypothesis, a future study could use our genetic and behavioral attribution vignettes to describe recognized mental illnesses (e.g., schizophrenia, depression) and then measure perceived controllability, stigma, and compassion.

The development of mental illness is widely understood through a biopsychosocial model that encompasses social and individual psychological factors in addition to genetics[44], so it is important to understand how these additional factors influence perceived controllability and stigma. Future research could have participants read vignettes with four etiological attributions for mental health symptoms: behavioral, genetic, psychological, and social. Subsequently, participants should complete measures of perceived controllability, stigma, and compassion. We hypothesize that participants will perceive the conditions in the following order from most controllable to least controllable: behavioral, psychological, social, and genetic. Furthermore, we expect levels of stigma and compassion to correlate with perceived controllability; the more controllable a condition is perceived to be, the more stigmatized and less compassionately the condition will be viewed.

In addition to varying dimensions of language, future work could expand by varying dimensions of stigma. Research indicates that distinct mental illnesses are stigmatized differently[3], so we recommend that future research examines the effects of perceived controllability on dimensions of stigma within distinct mental illnesses. The current work focused on overall stigma and did not deconstruct specific dimensions of stigma such as personal blame, desire for social distance, and perceptions of dangerousness and unpredictability. Previous work indicates that different dimensions of stigma respond

differently to genetic attributions[43;45;35]. There is strong evidence that genetic attributions reduce perceived responsibility, blame, and presumed character flaws toward people with mental illness[46;47;48] but increase perceived dangerousness and unpredictability[43;45;35]. Future research should explore how behavioral and genetic etiological attributions affect various dimensions of stigma for hypothetical or recognized illnesses. We hypothesize that genetic etiological attributions would increase perceived dangerousness and unpredictability but reduce personal blame.

Notably, our sample was composed of lay participants, likely including many friends and family members of individuals with mental illness. Given that friends and family are crucial members of the support systems for those with mental illnesses, understanding their stigmatization and compassion toward mental health is paramount. Nonetheless, future work should investigate other relevant populations (i.e., clinicians) to understand if the difference we found in stigma and compassion across behavioral and genetic conditions is replicated. Research shows that clinician compassion is associated with better treatment outcomes, so it is important to understand the antecedents of clinician compassion[13;12]. Expanding and testing our findings on other populations will inform the generalizability of our initial study.

11 CONCLUSION

The current work found that conditions perceived as highly controllable were more stigmatized and viewed less compassionately than conditions that were perceived as less controllable. Further, a marginally significant interaction between language type and etiology on stigma shows that person-first language may exacerbate stigma in conditions that are perceived as controllable; whereas identity-first language may reduce stigma in conditions that are perceived as uncontrollable. Importantly, this research contributes to our understanding of the antecedents of stigma and compassion toward people living with mental illness. These findings provide novel evidence on how perceived controllability may interact with language-type to inform stigma.

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Authors' Note: All authors contributed equally to the work.

13 EDITOR'S NOTES

This article was peer-reviewed.

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Memory #1 by Katelyn Allen

The Importance of Our Performing Arts

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"Art is truth setting itself to work." – Heidegger

Art is one of the driving forces of humanity, humility, and inspiration in our society. Although quickly declining, the values that art teaches us have supported our foundations and understanding for centuries. With an increase in focus on STEM (science, technology, engineering, and mathematics) fields and the desire for technical workers, schools have begun stripping their arts programs from their curriculum in hope of sparking more STEM interests in adolescents and teens, while neglecting the fields of the arts and humanities. While STEM fields have taken a large portion of both funding and focal points in the education system, "nearly 1.5 million elementary students are without music, nearly 4 million are without the visual arts, and almost 100% of them, more than 23 million, are educated without dance and theatre"[1]. The arts and humanities are the key values that teach us how humanity has evolved and capture aspects of our past. Specifically, in modern society, art has become more and more scarce due to the heavy focus on technology and societal advancements. If something does not have a utility, then it is of no use to us. This is the main argument found in Aesthetics Theory, or why art is so important to humanity. Aesthetic Theory aims to develop an understanding of how and why specific aesthetic experiences occur, as well as the importance of art in our lives. This paper seeks to break down the importance of the performing arts and how and why art can teach us defining lessons.

STEM plays an important part in any common curriculum across the nation. From mathematics to natural and social sciences, STEM fields have held the advancement in technology for decades. According to Institutional Research conducted by the University of Wisconsin-Madison, two federal organizations, the National Science Foundation and the National Endowment for Humanities gave STEM programs $500 million in funding for research between 2013 and 2014. Meanwhile, arts and humanities funding and research have received just $37 million in grants over the last 50 years. The data illustrated the differences between these fields, but what is the long-lasting impact?

Rather than pinning the fields against each other, the conversation should be guided to discuss the importance of the integration of each field with one another. When an emphasis is placed solely on STEM education, often students will find themselves with enough knowledge to advance in further STEM education and work but without the social, ethical, and emotional abilities needed to create strong relationships both with themselves and other people. Due to the focus mainly being on the memorization and formulation of information from textbooks, social and emotional skills are often placed on the back burner. When speaking in terms of technological evolution, the arts and humanities help us better understand the impact these new inventions could have on our society; "developments in artificial intelligence, for example, have significant ethical, philosophical, and economic implications. We must study those implications from outside the field as well as inside it"[2]. To better understand the long-lasting implications of our advancing technology, research to support the arts and humanities, as well as funding, must be emphasized. The implication of both the arts and humanities and STEM curriculum has proven incredibly important to the development of adolescents, and together can advance our studies in both fields, all while providing the backbone to the youth's education and social development.

When speaking in terms of Aesthetics Theory, arguments surrounding art's lack of purpose while still being purposeful arise. In truth, art has no real utility to us, but we still enjoy the consumption of different media to learn and evolve with our society. Theatre and the performing arts have represented raw human emotions, reactions, and experiences since the beginning of time, not only benefiting our knowledge of history but also the significant personal impacts shared through this medium. Concerning personal and social development in adolescents, the performing arts define relevant skills, qualities, capacities, and resources to help young people make successful transitions into adulthood, leading to healthy, confident, and independent lives[3]. With a highlighted exposure to art, one can grasp the significance of independence and gain an appreci-

ation for self-expression. Aesthetics Theory helps us understand how the performing arts are so crucial to our personal growth, or, in other words, how we learn through storytelling. Lessons are more impactful at a younger age, hence the importance of exposure early on. The encouragement placed in the environment of the performing arts often allows students to acquire creative problem-solving abilities as well as interpersonal skills. As Hughes and Wilson state, "You work it out yourself, you use your own imagination. Youth theatre helps young people develop a range of personal skills and resources... The creative processes of youth theatre utilize and develop initiative and imagination by providing freedom for young people to plan and carry out their own ideas and intentions." By demonstrating the ability to put ideas into action, theatre builds a type of outlet for adolescents to explore and create in many ways, such as making bold character choices or trying a new type of dance routine. These social skills can ensure the success of someone in their adult life, allowing the benefits of creative thinking, self-expression, and inspiration for change to push them further in life.

Involving both visual and musical storytelling, theatre can share stories in one of the most unique ways offered in our society, capturing every aspect of the human condition and portraying it in ways beyond language. Whether it be a Shakespearean tragedy, modern comedy, or classical melodrama, performing arts illustrate experiences one may never have put thought to due to their lifestyle, thus broadening one's ability to hold empathy for others. Any play or performance will engage the audience with ideas of love, betrayal, and sin while teaching them how to grapple with those issues. The key to impacting one's audience through theatre lies within the multi-perspective view of the same conflict or story, a view often found in melodramas.

The dual perspective of impact on different characters not only allows the audience to view the changes and effects of conflicts but also to understand how different types of people could deal with the same situation, illustrating that nothing is just black and white. Hughes and Wilson explain the multi-faceted ways acting and engaging in theatre can impact a young person's life: "Playing a part in a play can bring young people face to face with personal, moral, political and social issues and dilemmas–helping them refine personal opinions, develop empathy for other people and explore new issues and experiences from a variety of perspectives... Many young people welcome opportunities to explore a wide range of subject matter and confront difficult, sensitive, controversial issues through theater"[3]. Hard lessons can be portrayed through acting, singing, and dancing, opening the audience's minds to different stories, reactions, and emotions. When placed into this world, teens can create an open-minded way of thinking and form their own opinions regarding issues in our world, thereby creating a call-to-action type of attitude when portraying these different stories. A desire for change begins to spark, only to be fed through the changes and realizations that occur during one's youth.

Having the confidence to be vulnerable on top of a stage while spotlights beat down is incredibly anxiety-inducing. The constant push that theatre requires forces people away from their comfort zone. Youth theatre can drive adolescents to grow their self-confidence through performing. In their case study "surrounding the key takeaways from the youth theatre community," Hughes and Wilson found that "the most frequently mentioned impacts reported by young people... were... improved confidence," "improved ability to be" themselves, and "greater open-mindedness"[3]. With an increase in confidence, other social skills and abilities increase as well, such as self-expression and self-reflection.

Theatre can also demonstrate the harsh feeling of being embarrassed and wanting to improve skills to achieve a personal goal or to improve the outcome of the company. The risk of making different artistic choices when acting, singing, or dancing can drastically impact a person's drive and confidence. This also ties into youth art theory, which "suggests that young people benefit from opportunities to assert their independence and to take risks and responsibility" because these opportunities offer transferable skills inside and outside of performing[3]. Risk-taking is often overlooked in the professional world when involving self-advocacy, but it can build the stepping stones to rewarding adult life.

One of the most beneficial aspects of art is that it is endless. There will always be new paintings, sculptures, and stories to relay to a developing society. As discussed earlier in the essay, the performing arts allow the youth to be able to express emotions in ways larger than just language. With new societal and social injustice issues coming to light in our community, art is one of the most impactful forms of protest and speaking out. Specifically, the performing arts can inspire youth to create change with new pieces of art. Hughes and Wilson explain just how impactful advocating skills become through "Developing a more reflexive self-ability to reflect on others and their interpretations of us helps us negotiate social relationships and contexts. Role theorists emphasize an ability to 'take the role of the other' as a crucial skill of coping and becoming competent in social interaction"[3]. In other words, theatre showcases the development of empathy. The emblematic concept of putting yourself in someone else's shoes provides adolescents with a foundation of care and a drive for equality. One of the most interesting theories surrounding this is the idea of liminal and liminoid space as written by Victor Turner, a Performance Theorist[4]. Liminal space is "the part of the ritual within which

participants experience or play out an experiment with different ways of behaving" and "investigate alternative possibilities during a period of inversion of normal roles and settings"[4]. Exploring these emotions is similar to the idea of the sublime in Aesthetics Theory, or a powerful feeling that washes over one when creating or observing art. Creating this space allows adolescents to further their empathy and understanding of a different perspective and raise a drive for advocacy.

Art will change as time drags on, evolving with the human experience along the way. This is one of the most impactful aspects of art: There will always be more to create. Our society will continue to advance, make mistakes, and learn from them for as long as the human mind can comprehend stories. The impact that the performing arts have on the youth goes far beyond acting and singing skills. It also includes the abilities of self-expression, confidence, risk-taking, advocacy, and self-mindedness. With a shifting focus on the common curriculum of many schools across the nation, funding and emphasis have been stripped from many of the arts programs. The push to engage the youth in strictly STEM fields has limited society's advancements in emotional intelligence and personal skills that can make adult life more admirable. Although the need for STEM technology is increasingly important, it should not trump the importance of the arts and humanities in the education of our youth. Aesthetic theory helps explain the utter importance of art to the human race; though holding no physical utility, art allows the human soul to capture lessons created by those that lived centuries of years before us. We observe the earliest depictions of human civilization, emotions, and reactions through hundreds of different art mediums. Specifically, the performing arts are able to not only impact the observer's thoughts and mindset but the minds of the performers as well. With advanced social skills, confidence, and the ability for total self-expression, performing arts can teach and transform the youth into emotionally developed adults for the professional world. It provides a safe space for exploration, friendship, and mentorship that, in turn, will catapult our youth into successful adult lives. Art is the key to our humanity, and we cannot let technological advancements blind us from that truth.

1 EDITOR'S NOTES

This article was peer-reviewed.

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Luck
by Katelyn Allen

Blood of a Still Life
by Grace Gonzalez

Memory #3 by Katelyn Allen

Examining the Effect of Physician Language on Physician Impressions

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Abstract

Previous research provides evidence that stigma can be perpetuated through language with consequences for well-being and quality of care[1;2]. For example, providers who use stigmatizing language transmit bias toward patients with implications for care provided by other healthcare professionals[3]. The current work extends upon this research by investigating perceptions of physicians who use stigmatizing or humanizing language. The current work sought to document the negative consequences of providers' indelicate language on impressions of the provider, thereby motivating thoughtful language choices. To this end, the current work experimentally manipulated the language (stigmatizing, identity-first and destigmatizing, person-first) that hypothetical providers used to describe individuals with substance use disorder and examined participants' judgments of the providers (likeability and positive behavioral intentions). We predicted that the provider using stigmatizing, identity-first language would elicit more negative responses than the provider using destigmatizing, person-first language. However, the results provided no support for this hypothesis; instead, we observed only an effect of the vignette content: participants had more positive perceptions of the physician who spoke first, compared to the physician who spoke second. Although the current work did not observe significant effects of language, past work indicates the importance of empathy, warmth, and respect from providers for patient well-being and outcome[4;5]. We suggest directions for improving upon the current study, as well as possible topics for future research that may aid in understanding these important antecedents of inclusive and successful patient-physician interactions.

Keywords: stigmatizing language, impression formation, healthcare, substance use disorder, behavior

1 EXAMINING HOW PERSON-FIRST OR IDENTITY-FIRST LANGUAGE USED BY PHYSICIANS IMPACTS IMPRESSIONS OF PHYSICIANS

Individuals with substance use disorder face stigmatization and discrimination across numerous domains, including healthcare, employment, and insurance coverage[6]. Negative attitudes towards individuals with substance use disorder are associated with adverse outcomes (e.g., poorer well-being;[6]) and more punitive, less treatment-oriented policies surrounding substance use disorder[7]. Concerningly, among healthcare professionals, negative attitudes toward patients with substance use disorder are common and contribute to problematic outcomes such as diminished empowerment of patients and poorer treatment outcomes[8]. Negative attitudes can be communicated and transmitted across modalities (e.g., written, non-verbal behavior;[3]), including through the use of microaggressive language. Such negative communications can perpetuate negative stereotyping and demonstrate personal bias, damaging patient-provider relationships[9]. Research consistently indicates verbal communication and language used to reference individuals with substance use disorder are important factors in the stigmatization of and discrimination toward individuals with substance use disorder[10;6].

Despite research suggesting language matters to the treatment and well-being of those experiencing substance use disorder, medical providers continue to utilize stigmatizing communication[11;12]. The current work explores the consequences of physicians' language surrounding substance use disorder for the impression formation of physicians, a departure from the past research tradition that focused on impressions of individuals with substance use disorder. We examine how perceiver's impressions of physicians are impacted by

provider language; specifically, we focus on the implications of providers' use of destigmatizing, person-first language ("person with substance use disorder") versus stigmatizing, identity-first language ("substance abuser"). Understanding how language informs impressions of doctors may be leveraged to reduce stigma and motivate more inclusive, empathetic practices in healthcare.

2 STIGMATIZING LANGUAGE INFLUENCES PERCEPTIONS

Previous scholarship suggests language impacts judgments[7]. Derogatory terms, stereotypes, and colloquialisms are associated with, and can even causally influence, stigmatization of substance use disorder (e.g., stereotypes like 'dangerous' and 'self-destructive,' as well as derogatory terms such as 'junkie,' 'addict' and 'crackhead')[13;11;14]. Furthermore, perceivers reported more stigmatizing attitudes toward individuals labeled as a "drug addict" versus those described as having an "opioid use disorder"[10]. Persistent use of stigmatizing terms widens the treatment gap for substance use disorders more than other mental health or psychiatric conditions[15]. Language choices have the power to influence providers in healthcare[6]. To this point, physicians exposed to the term "substance abuser" compared to "substance use disorder" were significantly more likely to judge the target individual as more personally culpable[7]. In sum, language has the capability to bias perceptions, and substance use disorders seem to be particularly susceptible to stigmatization through stereotyping and derogatory terms.

Previous work suggests the importance of understanding whether the language doctors use informs others' judgments. For example, the language used by doctors can influence subsequent behaviors, illustrating that people are sensitive to these subtle differences in language. Past research utilizing real-world electronic medical records (EMR) with a variety of languages to describe patients' medical conditions then evaluated the provider's plan of care and overall attitude toward the patient. The results indicated that when healthcare workers display bias by using stigmatizing language, it increases negative attitudes in others who hear or read those notes[3]. This has the potential to negatively impact treatment outcomes and behavioral actions. We predict that physicians' who use stigmatizing language will be perceived more negatively than those who use less stigmatizing language, given that perseveres may be sensitive to these subtle differences in language. Specifically, we anticipate that perceivers will judge physicians who use stigmatizing, identity-first language more negatively than physicians who use destigmatizing, person-first language.

3 PERSON-FIRST VERSUS IDENTITY-FIRST LANGUAGE

There is an ongoing debate about whether using person-first or identity-first language may be more inclusive and less stigmatizing when referring to psychological and physical health conditions, neurodiversity, and ability status[16;17]. This reflects that beyond the specific terms used, the order in which words are presented is also theorized to affect stigmatization. Person-first language was developed as an alternative to identity-first language to emphasize that a condition is not defining; rather is one of many aspects of creating identity. At a legal level, within healthcare, the movement toward person-first language was illustrated in 1990 when the Federal Education for All Handicapped Children Act was renamed Individuals with Disabilities Education Act[18], of which demonstrates an evolving consideration for identifying language and stigmatization.

Person-first language has been argued to elicit positive, less stigmatizing attitudes[19;17]. For example, identity-first language (i.e., "substance abuser") leads to relatively negative attitudes toward individuals with substance use disorder[11;19;12]. The American Psychological Association recommends the use of "person with substance use disorder" and "person with alcohol use disorder" instead of "addict" or "alcoholic"[20]. The APA argues that person-first language emphasizes the individual, rather than their condition[21]. Additionally, person-first language has been theorized as beneficial in treatment because it is viewed more positively by people with diagnoses, family members, and healthcare professionals whereas identity-first language or "disability language" is perceived to perpetuate stigma[22;17].

Others argue that although the use of person-first language is well intended, it may signify that the identity is devalued, and therefore it has the potential to be more stigmatizing than identity-first language[16]. Identity-first language may be less awkward in the English language, as some argue that person-first language is disfluent and repetitive by not following typical English conventions[23]. The current study contributes to this ongoing debate by adding a new perspective by experimentally assessing whether person-first versus identity-first language impacts positive impressions and behavioral intentions toward physicians. Different perspectives on person-first and identity-first language may reflect differences across contexts or conditions, such as the language spoken, or mental health or physical health condition. In the current work, we focus on substance use disorder because the effects appear more consistent and recommendations for language appear to be more agreed upon. In sum, previous works provide evidence that language can have a meaningful impact on the stigmatization of those experiencing substance use disorder with extant evidence suggesting

that person-first, relative to identity-first, language may be stigmatizing.

4 TRANSMISSION OF STIGMA THROUGH LANGUAGE IN HEALTHCARE

Stigmatization is characterized by expressions of judgment, stereotyping, status loss, or discrimination towards a group, and commonly instills fear of negative perceptions or identity loss. This fear of being stigmatized explains why nearly half of the 60 million Americans with mental illness do not seek treatment[24]. Previous work provides evidence that language choices increase this stigmatization. Furthermore, language is theorized to impact behavioral outcomes (e.g., adherence to treatment and quality of treatment received), which may contribute to healthcare disparities and treatment biases rooted in unconscious bias[25]. Importantly, researchers have found that bias can be transmitted through language from one physician to another[26;1]. This is crucial given evidence of the negative impacts of stigmatizing attitudes on the level of care and treatment outcomes for individuals with substance use disorder[6]. Exposure to written stigmatizing language (compared to neutral language) led physicians-in-training to feel more negatively toward the patient, impacting medication prescribing behavior with less aggressive treatment for the patient's reported pain[6]. Additionally, healthcare workers who held relatively more negative attitudes displayed less personal engagement and diminished empathy when treating individuals with substance use disorder[12]. Embarrassment and fear of others' perceptions adversely affected individuals who acknowledged their need for professional help for substance use, causing a decreased willingness to seek treatment, potentially resulting in them not seeking treatment[27]. Similarly, stigmatizing language can also have implications for how patients view themselves. To illustrate, exposure to physicians' written, stigmatizing language resulted in subsequent behavioral changes, changes that possibly stemmed from decreased self-worth along with increased mistrust[3]. Understanding biases in healthcare and the ways in which they may impact patients is essential to providing high-quality and equitable patient care. One approach to reducing bias in healthcare is gaining an understanding of what factors inform patients' impressions of physicians, particularly based on the language physicians use in conversations. This will allow future work to design interventions aimed at educating physicians about common biases and how these biases adversely affect patients.

5 PATIENT PERCEPTIONS OF PHYSICIANS BASED UPON LANGUAGE USE

Although previous research has examined the role of language in stigmatization within medical settings, how patients form impressions of physicians based on physician language has yet to be examined. Examining the impressions of the physician is important, as physicians' impressions have meaningful consequences for patient care[4;5]. Research has shown that individuals form judgments regarding the intelligence and trustworthiness of a speaker based on semantic and non-semantic verbal and written cues[28;29;30;31]. Extending to a medical setting, it is consequential to patient adherence and comfort that patients view their providers as trustworthy and competent[6]. Furthermore, physicians' use of negative language for some medical conditions has impacted participants' decision to seek a new doctor. Thus, there is some evidence that the language that a physician uses has the potential to impact patients' actions and impressions. The current work focuses on impressions of hypothetical doctors based on how they communicate through two hypothetical, written vignette conversations. Although the current work does not recruit patients in a medical setting, the average American interacts with medical providers about four times per year[32]. Thus, we believe the current lay participant sample may reasonably approximate patient impressions of providers in a hypothetical healthcare scenario.

6 OVERVIEW OF CURRENT WORK

Given findings from past work, we anticipate that participants will exhibit liking and positive behavioral intentions (i.e., willingness to recommend, likelihood to go to that physician in the future) toward the physician using person-first, destigmatizing language (e.g., "person with substance abuse disorder," "someone who abuses substances"), compared to the physician using identity-first, stigmatizing language (e.g., "substance abuser," "substance abuse patients"). Specifically, we predict language type (person-first versus identity-first) will influence likability, which will in turn inform positive behavioral intentions, such as willingness to recommend that physician or see that physician for a future appointment. Indeed, previous work found that favorable, positive perceptions were associated with behavioral intentions, such as willingness to recommend to others[33].

The current work employs an experimental vignette study design to assess whether the language that a physician uses (destigmatizing, person-first, or stigmatizing, identity-first) when referencing a hypothetical patient experiencing substance use disorder influences perceivers' impression of that physician. To this end, participants read a vignette describing a hypothet-

ical conversation overheard between two physicians regarding a patient with substance use disorder. In the vignette, one of the physicians used destigmatizing, person-first language (e.g., "person with substance use disorder," "someone who uses substances"), and the other physician used stigmatizing identity-first language (e.g., "substance abuser," "substance abuse patients"). Participants rated each physician on likeability and then reported their willingness to recommend each physician to friends or family and their likelihood to book an appointment with that physician in the future (both of which are referred to as positive behavioral intentions henceforth). This enabled us to examine whether language type impacts the likeability of and positive behavioral intentions toward hypothetical physicians, as well as to investigate whether the effect of language on perceiver behavioral intentions is mediated through attitudes toward the physician.

7 METHODS

7.1 Participants

One hundred twenty-seven American participants were recruited via CloudResearch. We recruited as many participants as possible given a budget of $166 and a planned participant payment of $1. A sensitivity analysis conducted in G*Power (V3.1)[34] indicated that 127 participants enabled us to detect a small effect (d = 0.20) with 80% power in a sensitivity in a 2 x 2 mixed model Analysis of Variance (ANOVA), used to determine statistical differences between group means. In this study, 127 American participants (51.6% men, 46.7% women, 0.8% nonbinary; M_{age} = 40.70; SD_{age} = 11.98) from Amazon's Mechanical Turk completed the study in exchange for $1.00. The participant sample was primarily White (80.3% White; 6.6% Black/African American; 5.7% East Asian; 2.5% South Asian; 1.6% Native Hawaiian/Pacific Islander; 0.8% American Indian/Alaska Native; 0.8% Bi- or Multi-Racial; 0.8% Prefer not to say) and primarily Not Hispanic/Latinx (87.7% Not Hispanic/Latinx; 11.5% Hispanic/Latinx; 0.8% Prefer not to say). We eliminated a total of five participants because they either indicated we should not include their data (two participants) or did not finish the experiment (three participants).

7.2 Materials

7.2.1 Vignettes

In this study, we employed two versions of one vignette that counterbalanced which hypothetical physician (Dr. Smith, Dr. Johnson) used which language type (person-first, destigmatizing versus identity-first, stigmatizing). The physician who used stigmatizing language used identity-first language in the vignettes (i.e., "substance abuser," "substance abuser patients") whereas the physician who used destigmatizing language used person-first used in the vignettes (i.e., "person with substance use disorder," "someone who uses substances"). Each participant was randomly assigned to read one version of the vignette. Structurally, the vignettes were the same and described a hypothetical conversation between two physicians, Dr. Smith and Dr. Johnson, about a patient with substance use disorder[1]. The physician names, Dr. Smith and Dr. Johnson, were selected, as Smith and Johnson are the two most popular surnames in the U.S.[35].

7.2.2 Likeability

Participants' perceptions of each physician's likeability were measured using a modified version of the Reysen Likability Scale[36]. The unmodified scale has eleven statements to which participants would respond on a scale from 1 ("very strongly disagree") to 7 ("very strongly agree"). Three statements were removed because they were not relevant to the medical context.[2] The remaining eight statements included statements such as "Dr. [Smith / Johnson] is likable." All eight items were averaged together to create composite likability scores for each physician separately ($M_{Dr.Smith}$ = 4.96, $SD_{Dr.Smith}$ = 0.87, $\alpha_{Dr.Smith}$ = 0.93, $M_{Dr.Johnson}$ = 4.73, $SD_{Dr.Johnson}$ = 1.00, $\alpha_{Dr.Johnson}$ = 0.95).

7.2.3 Behavioral Intentions

To assess participants' positive behavioral intentions toward the physicians we asked two questions for both Dr. Smith and Dr. Johnson. Participants were asked "How likely are you to recommend Dr. [Smith / Johnson] to friends or family?" and "Based upon this experience, how likely are you to make an appointment with Dr. [Smith / Johnson]?" These two items were averaged together to create composite behavioral intentions scores for each physician separately ($M_{Dr.Smith}$ = 3.62, $SD_{Dr.Smith}$ = 1.05, $\alpha_{Dr.Smith}$ = 0.95 $M_{Dr.Johnson}$ = 3.40, $SD_{Dr.Johnson}$ = 1.08, $\alpha_{Dr.Johnson}$ = 0.94). After answering the questions assessing behavioral intentions for each doctor, participants chose the picture that best described how they see that physician, Dr. Smith or Dr. Johnson, in relation to substance use disorder with the same 1-7 scale ($M_{Dr.Smith}$ = 3.56, $SD_{Dr.Smith}$ = 1.87, $M_{Dr.Johnson}$ = 3.30, $SD_{Dr.Johnson}$ = 1.84). Participants also answered "Yes" or "No" to "Are you (or have you ever been) close to someone with substance use disorder?" They then completed an Identity of Self section, where they chose a picture that best described how they see themselves in relation to substance use disorder. Selecting "1" indicated they did not identify at all with substance use

[1]Refer to Appendix 11 for the full conversation

[2]These statements were "I would like this person as a roommate," "I would like this person as a friend," and "This person is physically attractive."

disorder, whereas "7" indicated they identified a great deal of overlap between themselves and substance use disorder (M = 3.8, SD = 2.10).

7.3 Procedure

Participants were provided with information regarding the study and completed informed consent. The vignette was then presented: first, the vignette described being at the general practitioner's office and then detailed the hypothetical conversation overheard between the two physicians, counterbalancing for the physician's name. After the vignette, measures of likeability, willingness to recommend, and likelihood to book an appointment in the future were given, followed by the perceived overlaps of the physicians with substance use disorder. Participants then completed the identity of self and substance use disorder. Finally, participants answered demographic questions (i.e., age, gender, ethnicity, race, education level, and political orientation). Participants were then given a debriefing form describing the research goals of the current work, providing contact information should they have any additional questions or concerns, and thanking them for their participation in the study.

8 RESULTS

The primary hypothesis was that using a destigmatizing, person-first language type ("someone who uses substances") would predict greater perceived likability of the physician and positive behavioral intentions towards the physician (i.e., willingness to go back, likelihood to recommend) compared to stigmatizing, identity-first language ("substance abuser"). To test our hypothesis, we conducted two 2 (Physician using stigmatizing language: Dr. Smith, Dr. Johnson) x 2 (language counterbalance condition: 1, 2) mixed model factorial ANOVAs on likeability and positive behavioral intentions with physician as the repeated factor. The findings of these analyses are reported below.

8.1 Likeability

We did not find a statistically significant effect of the counterbalance condition (F(1,120) = 0.46, p = .499, η_p^2= .00) nor a significant interaction between the counterbalance condition and physician (F(1,120) = 0.00, p = .999, η_p^2= .00) Therefore, we focused on the effect of physician. Here, we found a significant main effect of physician (Dr. Smith vs Dr. Johnson) on likability, F(1,120) = 15.02, p < .001, η_p^2= .11. Participants rated Dr. Smith (M = 4.97, SD = 0.87) as more likable compared to Dr. Johnson (M = 4.73, SD = 1.00). This main effect persisted regardless of whether Dr. Smith or Dr. Johnson was the one who used stigmatizing language. This effect is illustrated in Figure 1 below.

8.2 Behavioral Intentions

Next, a 2 (Physician using stigmatizing language: Dr. Smith vs. Dr. Johnson) x 2 (Positive Behavioral Intentions: Dr. Smith vs. Dr. Johnson) Mixed Model ANOVA on positive behavioral intentions (willingness to recommend and likelihood to see that physician in the future) was assessed with physician as the repeated factor. Once again, we found no statistically significant effect of the counterbalance condition (F(1,120) = 0.075, p = 0.388, η_p^2= .001) nor a significant interaction between the counterbalance condition and physician (F(1,120) = 0.08, p = .778, η_p^2= .00). We also again found a significant main effect of physicians on positive behavioral intentions for Dr. Smith (M = 3.62, SD = 1.05) compared to Dr. Johnson (M = 3.40, SD = 1.08). When Dr. Johnson used stigmatizing, identity-first language, participants indicated less positive behavioral intentions for Dr. Johnson than for Dr. Smith. However, when Dr. Smith used stigmatizing, identity-first language, participants still indicated less positive behavioral intentions towards Dr. Johnson than Dr. Smith. This effect is illustrated in Figure 2 below. There was a significant main effect of language type (stigmatizing, identity-first vs. destigmatizing, person-first) was found on positive behavioral intentions, F(1, 120) = 9.79, p = .002, η_p^2= .08, however, our design was not powered to detect this effect.

8.3 Planned Mediation

We also anticipated that the effect of language type (stigmatizing, identity-first versus destigmatizing, person-first) on physician likability would be mediated through positive behavioral intentions (i.e., willingness to recommend, likelihood to see that physician in the future) and thus originally planned to conduct a statistical between subjects mediation analysis using PROCESS macro with 10,000 bootstrapped resamples (PROCESS macro)[37] to examine whether the predicted effect of language type on positive behavioral intentions is mediated through positive attitudes towards the physicians. However, we opted not to examine the mediation, as there was no effect found on either the mediator (likeability) or the dependent variable (positive behavioral intentions). Regardless of which physician used which language (destigmatizing, person-first; stigmatizing, identity-first), participants always found Dr. Smith to be more likable.

8.4 Exploratory Analyses

Finally, exploratory analyses included a 2 (physician: Dr. Smith, Dr. Johnson) x 2 (language counterbalance condition: 1, 2) Mixed Model Factorial ANOVA with physician as the repeated factor. We also explored correla-

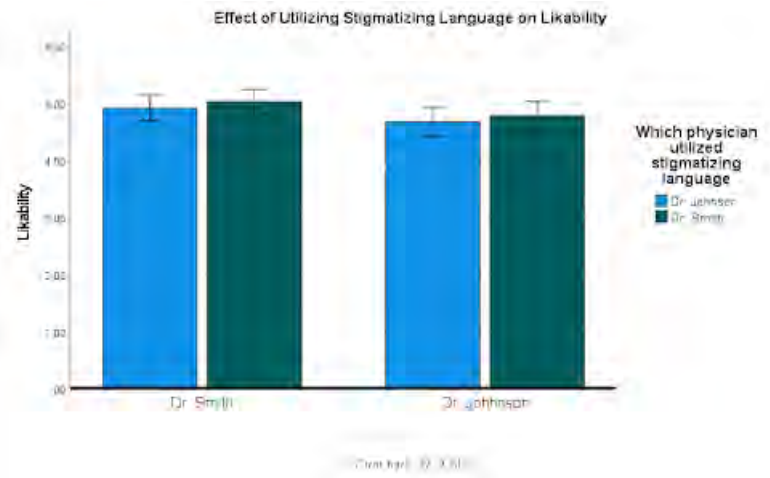

Figure 1. Effect of stigmatizing language on likability. The interaction between language type and physician likability is illustrated. Error bars indicate 95% CI.

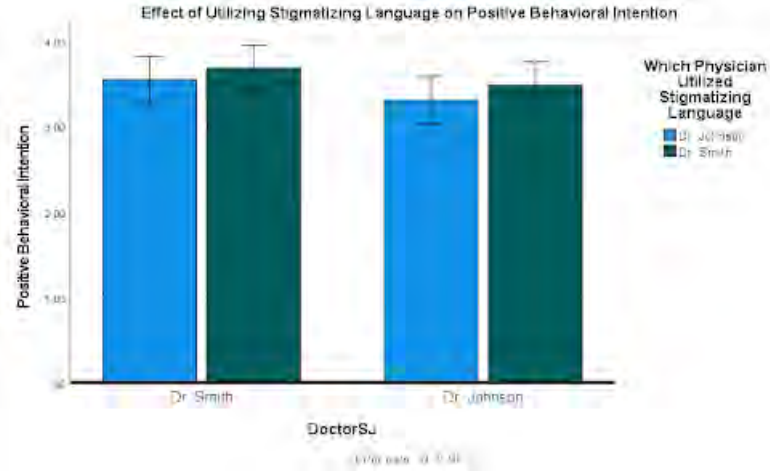

Figure 2. Effect of stigmatizing language on positive behavioral intentions. The interaction between language type and positive behavioral intentions towards physicians is demonstrated. Error bars indicate 95% CI.

tions between age and likeability and between age and positive behavioral intentions. These analyses aimed to offer insight into other relationships between language and behavior and impression formation. A 2 (Physician using stigmatizing language: Dr. Smith vs. Dr. Johnson) x 2 (Inclusion of a physician in substance use disorder: Dr. Smith vs. Dr. Johnson) Mixed Model ANOVA was conducted with the inclusion of the physicians in substance use disorder as the repeated measure. Results indicated a significant main effect of physician (Dr. Smith vs. Dr. Johnson) in the inclusion of physician in substance use disorder, $F(1,120) = 438.61$, $p < .001$, $\eta_p^2 = .79$. Participants indicated they perceived Dr. Smith to identify more with substance use disorder ($M = 3.52$, $SD = 1.89$) than they perceived Dr. Johnson to identify with substance use disorder ($M = 3.25$, $SD = 1.85$). There was a significant main effect between the use of stigmatizing language and rating of physician's inclusion of self in substance abuse disorder, $F(1, 120) = 6.67$, $p = .011$, $\eta_p^2 = .05$.

Although there is no evidence in the current work to show that stigmatizing, identity-first versus destigmatizing, person-first impacts likeability or behavioral intentions, we examined a correlation between positive behavioral intentions and likeability, indicating that likeability is a predictor for positive behavioral intentions. Specifically, the likeability of physicians was strongly positively correlated with perceivers' willingness to recommend and likelihood to see that physician in the future, $r(120) = .80$, $p < .001$.

9 DISCUSSION

We anticipated that a hypothetical physician's use of destigmatizing, person-first language type (i.e., "someone who uses substances") would result in more pos-

itive attitudes and behavioral intentions towards the physician (i.e., likelihood to recommend, willingness to see that physician in the future) than a hypothetical physician's use of stigmatizing, identity-first language (i.e., "substance user"). We predicted the effect of language type (stigmatizing, identity-first versus destigmatizing, person-first) on positive behavioral intentions would be mediated through physician likability. However, these predictions were not supported. Interestingly, there was an effect in which Dr. Smith, the physician that spoke first, was perceived more positively than Dr. Johnson. We also observed a positive correlation between positive behavioral intentions and likeability, indicating that likeability may be an important factor in patient-physician interactions and patient retention.

9.1 Implications

The results indicate no significant effect of language type on likeability or positive behavioral intentions. Instead, we found an effect of higher likability and positive behavioral intention towards the doctor who spoke first, which may be a result of uneven likeability of physician names, the amount each physician spoke, or the order in which each physician spoke. To this point, the doctor that spoke first was always named Dr. Smith and always said more words. It may be the case, for example, that the name "Smith" is more likable than the name "Johnson" and that this biased participants' judgments. The surname "smith" is more common than the surname "Johnson"[35], which may have led perceivers to evaluate a person with the last name "Smith" more positively because familiarity can yield increased liking[38]. Additionally, it is possible that the physician who spoke more came across as warmer and more compassionate toward perceivers, thus increasing likeability and positive behavioral intentions. Lastly, perceivers may have believed the physician who spoke first to have more confidence and authority, influencing trust[39;8] and thereby likability and behavioral intentions towards the physician[40]. However, these relationships are speculative and have yet to be experimentally investigated in this context; more research is required to support these hypotheses. Although inconsistent with our a priori hypotheses, this unexpected finding suggests the importance of counterbalancing such factors (name, word count) in future designs. Further, this work underscores the complexity of the literature surrounding language type on impression formation. A multitude of factors influence perceptions of others, such as cognitive processes of information selection and our interpretation[41]. Whether the use of terms surrounding substance use (e.g., "abuse" versus "use") or person-first versus identity-first language is among these factors that remains an open question.

Although our results did not indicate a causal relationship between language type and likability or positive behavioral intention, the correlation between likability and positive behavioral intention could offer practical implications for understanding patient retention and patient-provider relationships. This association between likability and behavioral intentions could serve to motivate physicians to improve bedside manners and communication with patients. Improving communication in healthcare is critical for reducing bias and decreasing the transmission of stigma[26].

9.2 Limitations and Future Directions

Furthermore, it is important to consider the context of this current work. As mentioned earlier, limitations such as unequal commonality of physician surnames (Smith versus Johnson) perhaps influenced our results by way of familiarity. An additional limitation of this design surrounds the amount and order each hypothetical physician spoke. Regardless of language type condition, Dr. Smith spoke first and more in word count compared to Dr. Johnson. This may have also contributed to more likable feelings toward Dr. Smith than Dr. Johnson. As order and mere exposure effects are critical determinants in our impressions of people, it is possible that participants may associate the first speaker with confidence, trust, and admiration, or may have associated commonly heard names with friendly connotations influencing likability[42]. It is also important to consider the mundane realism or rather lack thereof of the current work. The methodology employed does not closely resemble or mimic the experience of being at a physician's office. To this point, the participants were not actual patients of the hypothetical doctors. Thus, the motives at play in judging actual doctors or making decisions about one's health care may not have been activated in the current study.

Diverging from the limitations of this design, future work should simultaneously add in judgments of substance use disorder and the providers speaking about them. This would investigate how language affects both patient and provider impressions. Further future designs that better reflect the patient experience or counterbalance physician names and ordering could eliminate many of the limitations discussed above. With these limitations accounted for, we hypothesize that stigmatizing, identity-first language will result in more positive attitudes and behavioral intentions toward physicians.

10 CONCLUSION

In sum, although we did not find evidence to support our hypotheses in this experiment, we believe it remains possible, and even probable, that providers' use

of stigmatizing language negatively impacts key dimensions of impression formation (likability) and quality of care (e.g., patient retention). The abundance of research on impression formation derived from language offers many avenues for further investigating our specific question. We suggest the modification of the current design in order to offer theoretically grounded extensions, and we encourage a continued focus on this widely impactful domain.

11 APPENDIX A

11.1 Conversation Set 1

Physician A: 71 words, Physician B: 46 words

"Imagine you have arrived early to a doctor's appointment. You are sitting in your general practitioner's office waiting for your first appointment since your previous physician retired. You just are here for a general checkup. The nurse practitioner calls out your name and leads you into Room 1. The physician is on time and begins the check-up as normal. The physician leaves to run some basic blood work. From the hallway, you overhear two other physicians having a conversation about a patient

Dr. Smith - (PF) Physician A: There is someone who uses substances in Room 3. It's painful to see patients like this, especially when they're not responding to treatment. This is not the first time this person who uses substances has been here. They look to be in much worse condition this time.

Dr. Johnson - (IF) Physician B: We are getting so many substance abusers coming in lately. Maybe we need to implement new treatment techniques. I just had a substance abuser last week–they were the hardest patient I had all day.

Dr. Smith - (PF) Physician A: It is so hard to have patients who use substances, especially when we have to tell their families that their loved one uses substances.

Dr. Johnson - (IF) Physician B: Right, no one wants to hear their child is a substance abuser. Your physician comes back in, and you are assured you are in good overall health. You then proceed to the front desk to check out."

11.2 Conversation Set 2

Physician A: 69 words, Physician B: 50 words

"Imagine you have arrived early to a doctor's appointment. You are sitting in your general practitioner's office waiting for your first appointment since your previous physician retired. You just are here for a general checkup. The nurse practitioner calls out your name and leads you into Room 1. The physician is on time and begins the check-up as normal. The physician leaves to run some basic blood work. From the hallway, you overhear two other physicians having a conversation about a patient.

Dr. Smith - (IF) Physician A: There is a substance abuser in Room 3. It's painful to see patients like this, especially when they're not responding to treatment. This is not the first time this substance abuser has been here. They look to be in much worse condition this time.

Dr. Johnson - (PF) Physician B: We are getting so many people who use substances coming in lately. Maybe we need to implement new treatment techniques. I just had someone who uses substances last week–they were the hardest patient I had all day.

Dr. Smith - (IF) Physician A: It is so hard to have *substance abuser patients*, especially when we have to tell their families that their loved one is a substance abuser.

Dr. Johnson - (PF) Physician B: Right, no one wants to hear their child is someone who uses substances. Your physician comes back in, and you are assured you are in good overall health. You then proceed to the front desk to check out."

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13 EDITOR'S NOTES

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Dwelling by Katelyn Allen

FACTORS AFFECTING PRESENCE AND OCCUPANCY OF MARABOU STORKS *(LEPTOPTILOS CRUMENIFERUS)* AT ABATTOIRS AND SLAUGHTER SLABS NEAR JINJA, UGANDA

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Abstract

This study examined the factors affecting the presence and occupancy of marabou storks at abattoirs and slaughter slabs near Jinja, Uganda. The average number of storks per unit area was compared across different areas within one large abattoir, including an analysis of the presence of free food, human disturbance, and other scavenging birds (pied crow, piapiac, spur-winged lapwing, and cattle egrets). Occupancy across two abattoirs and one slaughter slab was compared and related to the number of animals slaughtered daily at the facility. Direct observations at abattoirs and slaughter slabs were conducted for ten minutes with five minutes between observations. All observations were taken at the same time of day. Brief interviews with officials at each facility provided information about the number of animals slaughtered and the areas that make up the abattoir.

Overall, more marabou storks were found at the largest abattoir, where the most animals are slaughtered daily. More storks were seen in areas where abattoir workers throw the birds offcuts. An apparent association between the number of marabou storks and the level of human disturbance exists, with more storks found in areas of higher disturbance. However, this is likely influenced by the presence of free food. The presence of other scavenging birds did not have any effect on the presence of marabou storks under statistical analysis using a chi-square test (χ^2, df =1, n = 90, $\alpha = 0.01$).

Keywords: marabou storks, abattoirs, urban adaptations, scavenging birds.

1 INTRODUCTION

1.1 Background Information

Uganda, located in East Africa, is known to have several breeding colonies of marabou storks, which were last mapped by Pomeroy, and in 1973 there were colonies present in both rural and urban areas[1]. Marabou storks can feed either on natural food such as fish, carcasses, and insects or on anthropogenic waste from human activities[2]. In urban areas such as Jinja, storks feed almost entirely on human refuse at landfills, abattoirs, and fisheries[1,2]. This study focused on abattoirs and slaughter slabs in the Jinja and Buikwe districts, where marabou storks are present. Uganda produces 142,000 metric tons of meat per year[3] at abattoirs and slaughter slabs. Similar activities occur at abattoirs and slaughter slabs. A result of this is the production of organic waste in various forms, which attracts many scavengers. In an increasingly urban world, more animals are adapting to urban environments. Urban animals have shown decreased vigilance and "neophobia," or fear of new things[4]. This is oftentimes an effect of a form of habituation, in which "an initial disposition to escape from humans wanes and is replaced by tolerance of human presence"[5]. This process can be sped up through attraction, such as the offering of food, which leads to animals with a positive attitude toward humans, a process known as provisioning. The main difference between habituated and provisioned animals is the positive attraction to humans found in provisioned animals. This often occurs because humans feed or otherwise praise animals, which can lead to begging behaviors in animals. This can eventually lead to violence toward people when the food source is removed or not provided in the volume the animals desire[5]. Furthermore, provisioning "localizes the animals," meaning that they return to the same area on a routine and sometimes change their regular schedules to be close to the food

source[5].

Marabou storks have a long and complicated history with humans. Locally known as karoli in Uganda, these birds were historically hunted for their down feathers[6]. Due to low prices, selling marabou stork meat has become a more common practice despite legal restrictions placed due to health concerns over the spread of zoonotic diseases[7].

The Ugandan parliament further warns about zoonotic diseases emerging from marabou storks, even removing marabou stork nests from nearby the parliament building to protect members of parliament from this potential health risk[8]. Studies have found that marabou stork feces can contain E. coli, Salmonella, and other harmful bacteria[9]. These issues will become more prevalent if the population of marabou storks continues to grow out of control, so research on these birds is vital.

Marabou storks, however, can also be beneficial aids to waste management, especially in urban areas. For this reason, according to staff at the abattoirs, workers generally enjoy having the birds around and workers even encourage marabou stork's presence by throwing them food regularly.

1.2 Study Area

Dumping grounds near abattoirs and slaughter slabs are the main area of focus for this study. Three locations were studied to provide a stratification of various-sized abattoirs: Jinja City Cattle Association (JCCA), Bugembe slaughter slab, and Njeru Municipal Abattoir Association (NMAA), with JCCA being the largest and NMAA the smallest.

Figure 1. Map of JCCA

Figure 2. Map of Bugembe Slaughter Slab

Figure 3. Map of NMAA

1.3 Problem Statement and Objectives

As waste management continues to pose challenges for communities worldwide and especially in Africa, many animal species have adapted to increasingly urban and polluted environments[10]. Marabou storks are one such species that benefit from the year-round food sources in urban environments.

It was predicted the marabou stork population would continue to grow until food becomes a limiting factor[11]. No further research on marabou storks feeding in urban environments has been conducted, but stork populations continue to rise. As marabou stork populations continue to grow at very high rates, issues concerning the spread of zoonotic diseases (diseases spread from animals to humans), hygiene, and the general nuisance nature of these birds grow as well[1;9;8;12].

Area Number	Description	Area m²	Presence of Marabou Storks	Level of Human Disturbance
1	Temporary storage of horns and bones	250	None	1
2	Processing of collected blood	280	None	1
3	Livestock enclosures	2360	Some	2
4	Livestock grazing	4020	Many	2
5	Back of building	790	Many	3
6	Directly outside the slaughter building	260	Many	3
7	Slaughterhouse roof	800	Some	1
8	Processing of legs	290	None	1
9	Small shops for workers	700	None	3
10	Entrance	1650	Many	2

Table 1 Description of JCCA Areas

Learning more about the role these birds play in urban ecosystems and how their presence can be controlled is an important step in managing these species. If the population is allowed to grow out of control, there could be an increase in detrimental effects on humans. By understanding these birds, efforts to mitigate negative future impacts of them, such as disease and nuisance, can be made while preserving the benefits of their presence, such as waste management and ecological scavenging services.

This study determined the factors affecting the presence and occupancy of marabou storks at abattoirs and slaughter slabs near Jinja, Uganda. Four main objectives were identified:

i. To compare the occupancy of marabou storks in areas where they are thrown food (entrance, slaughter building, and back area) to areas where they are not (7 areas, Table 1) at Jinja City Cattle Association.

ii. To relate the occupancy of marabou storks to the level of human disturbance in each area at Jinja City Cattle Association.

iii. To compare the occupancy of marabou storks as related to the number of animals (cows, goats, and sheep) slaughtered at each abattoir and slaughter slab (Jinja City Cattle Association, Bugembe Slaughter Slab, and Njeru Municipal Abattoir Association).

iv. To relate the presence of marabou storks to the presence of other scavenging birds present at abattoirs (pied crow, piapiac, spur-winged lapwing, and cattle egret).

It is predicted that the occupancy of marabou storks will be highest in areas where they are thrown free food by the workers. Abattoirs with more animals slaughtered per day will have more birds, as this creates more waste for them to scavenge. Lastly, it is thought that marabou storks are highly adapted to the urban environment, so the level of human disturbance will not affect their occupancy.

2 METHODOLOGY

2.1 Methods

The researcher visited multiple locations in and around Jinja, Uganda over a period of two weeks.

Direct observations of the number of storks took place from 7 am-10 am by walking around the facility and taking note of the number of birds in each area. According to Jimmy, an employee of the facility, this time provided information about the maximum occupancy of marabou storks during feeding time since this seems to be the time when the most storks were present. GPS coordinates were used to estimate the area and create a map for reference. The researcher walked around the facility, taking note of the number of birds in each area. Three counts were conducted five minutes apart at each location. This was to account for small variations in the number of birds leaving and entering each area. Five one-hour periods and four half-hour periods were spent at JCCA. Two one-hour periods each were spent at Bugembe slaughter slab and NMAA. Data from the manager or owner of the abattoir or slaughter slab about the number of animals slaughtered per day and descriptions of the activities in each area of the abattoir or slaughter slab were obtained through brief interviews with officials at each location.

2.2 Data Analysis

Non-parametric tests were selected to account for non-Normal data distributions. A residual plot of the parametric ANOVA test was used to determine whether a nonparametric test should be used. Since residuals of this test were not randomly distributed, a nonparametric test was used. A categorical bar chart re-

lating the number of birds per m2 within each area at JCCA was created. A Kruskal-Wallis test was used to determine if there were any significant differences between any two of the areas observed. The Steel-Dwass method was then used to further categorize this relationship and determine if there was a statistically significant difference.

Similarly, a categorical bar chart showing the average number of birds per square meter at the three levels of human disturbance was created.

A chi-squared analysis of a contingency table relating the presence of marabou storks with each other species of bird was performed to determine if the presence of marabou storks was independent of that of other bird species.

3 RESULTS

3.1 Presence of Food

The highest number of storks per square meter at JCCA was found in the back area and behind the slaughter building, followed by the entrance and the roof of the slaughter building. A Steel-Dwass method showed differences between bars labeled with different letters in Figure 7 (Appendix 3). Measurements of different areas were not taken at Bugembe slaughter slab or NMAA due to their small size and lack of separation of activities.

3.2 Human Disturbance

Three levels of disturbance, as defined in Table 1, were recorded and the number of birds in each area graphed. The Steel-Dwass method showed a significant difference between each pair of the three datasets, as shown with different letters in Figure 5. These data were only recorded at JCCA.

3.3 3.3 Number of Animals Slaughtered

JCCA had the most marabou storks by far as well as the highest number of animals slaughtered per day.

3.4 Presence of Other Scavenging Birds

The presence of marabou storks and other scavenging birds was recorded each day, and a chi-square analysis was conducted. Chi-square results show that the null hypothesis, stating that there is no relationship between the presence of marabou storks and other birds, cannot be rejected. No significant dependence between the presence of marabou storks and cattle egrets, piapiac, pied crows, and spur-winged lapwings was found (Appendix 4).

4 DISCUSSION

4.1 Presence of Food

The occupancy of the marabou storks varied significantly depending on the presence of food. The most storks by far were found at JCCA, which is the only location that throws offcuts to the birds. This further points to the reliance of the marabou storks on free food from the abattoir workers. JCCA and Bugembe slaughter slab were unable to estimate this value themselves.

Marabou storks were mainly found in areas with free food, which indicates their reliance on anthropogenic activities. This means that the marabou storks are inevitably here to stay if human activities proceed, which affirms Pomeroy's prediction of a steadily increasing population of storks until food resources become limited [11].

4.1.1 A case study: Jerry the Electrocuted Stork

One marabou stork at JCCA, known by the abattoir workers as "Jerry," was electrocuted on a nearby telephone wire several months before the study. Due to this injury, Jerry stays at the abattoir every night, and he is completely reliant on food from the abattoir. Natural selection is not in his favor, and he likely would have died soon after his injury if not for the food from abattoir workers. This is one example of the reliance these birds have on the abattoir workers for food.

4.2 Human Disturbance

More birds were found in areas of higher human disturbance. The presence of free food overlaps with the categories of human disturbance, wherein abattoir workers primarily throw free food to storks in areas with higher human disturbance, making this a confounding variable.

Additionally, human tolerance of storks highly influences this relationship. The occupancy of storks in different areas was only recorded at JCCA due to its size, but the treatment of storks here is also likely impactful on the storks' presence. Ssenga, an employee at JCCA, states that they generally enjoy the storks' presence and throw them free food. This is not the case at other abattoirs such as NMAA, where workers actively chase off the birds when they come near the slaughtering area. This points to the importance of human tolerance in addition to the provisioning of storks.

Marabou storks were found in many areas with high levels of human disturbance, indicating that human activity is not a deterrent. To keep marabou storks out of residential or business areas, deterrents other than human activity may be needed. The provisioning of storks has led to their perpetual presence at abattoirs, which may become a problem in the future as their population continues to grow. Throwing food to these

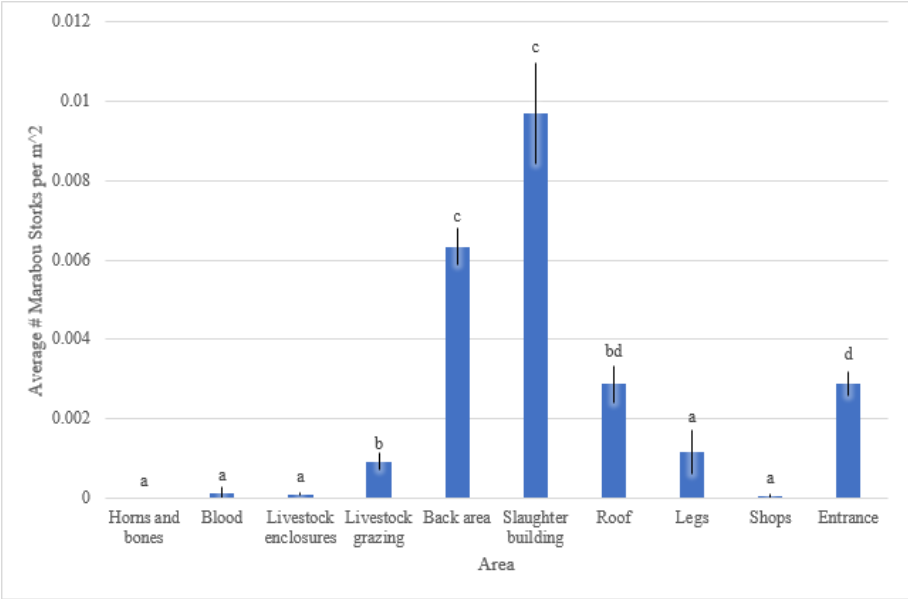

Figure 4. Average Number of Marabou Storks per Square Meter by Area ($\chi^2 = 199.4860$, $p < 0.001$, $df = 9$).

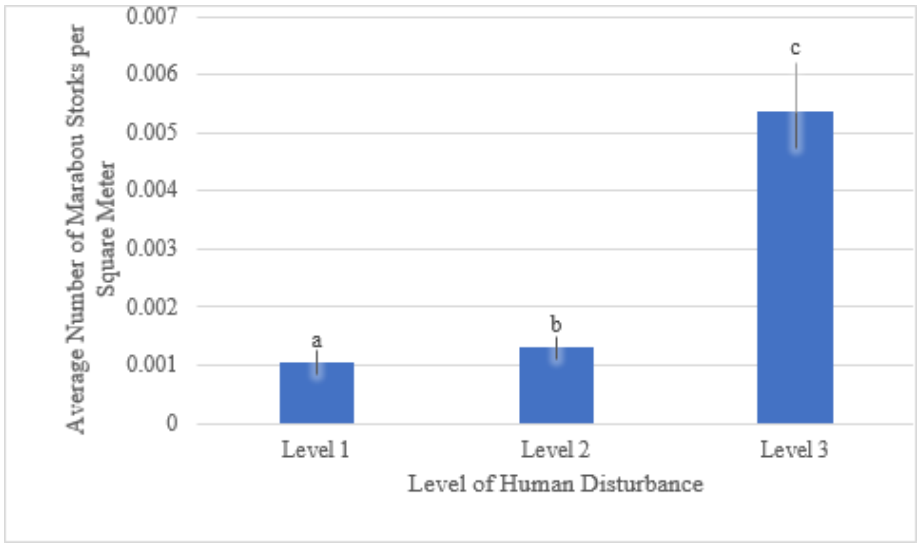

Figure 5. Average Number of Marabou Storks per Square Meter by Human Disturbance Level at JCCA ($\chi^2 = 48.3130$, $p < 0.001$, $df = 2$).

birds may eventually cause problems for abattoirs as the birds become more demanding or even violent towards the workers.

4.3 Number of Animals Slaughtered

The most marabou storks were observed at JCCA (Table 2), which is where the most animals were slaughtered. There is an apparent association between the number of animals slaughtered and the number of marabou storks seen, but more data from abattoirs is needed to further classify this relationship. Large abattoirs should invest in more research around these birds and their role in the micro-ecosystems created at these facilities to better inform practices such as throwing food and chasing the birds off.

4.4 Presence of Other Scavenging Birds

No significant dependence of occupancy between marabou storks and any other scavenging bird (pied crow, piapiac, spur-winged lapwing, or cattle egret) was found. Even though marabou storks were seen taking food from other birds, especially pied crows, this did not affect their presence. This is likely because of the different ecological niches each of these species offer. This follows theories of resource partitioning, which predict that species will evolve to fill all possible niches in an

Facility	Animals Slaughtered	Marabou Storks
Jinja City Cattle Association	75	18.89
Bugembe Slaughter Slab	22.43	0.33
Njeru Municipal Abattoir Association	18	0.5

Table 2 Average Number of Marabou Storks and Animals Slaughtered per Day by Facility. The total number of animals slaughtered, and the average number of marabou storks counted per day at each location.

Figure 6. Marabou Storks Awaiting Food Scraps outside the JCCA Slaughter Building. This behavior is characteristic of provisioning.

Figure 7. Jerry the Electrocuted Stork

environment[13]. The coexistence of these birds suggests that they all occupy different niches in this environment through Gause's competitive exclusion principle[14].

Further research about the number of each species of bird in each area may show an association. Marabou stork presence was found to be independent of the presence of piapiacs, pied crows, and spur-winged lapwing. However, very few birds of prey such as black kites and hooded vultures were spotted because they occupy a similar ecological niche. More research about competition between these species is needed to inform conservation efforts as species such as the hooded vultures are declining in population.

5 CONCLUSION

Marabou storks have only been minimally studied since the last census of the species in 1973[11] despite their precipitous increase in population and prevalence since then[2]. These birds are very common in urban areas, and they are increasingly viewed as nuisances[2]. Understanding the role these birds play in urban ecosystems and factors influencing population growth helps to inform further research and potential population control efforts as marabou storks increasingly become urban-dependent animals.

This study was largely limited by its small sample size. Significant differences were found among some variables, but others require more data to classify their relationship. For example, only three abattoirs and slaughter slabs were visited, which was not enough to account for the high amount of variation within each facility. Visiting more abattoirs and slaughter slabs with a wider range of the number of animals slaughtered would allow this relationship to be further characterized. Furthermore, only two days each were spent at NMAA and Bugembe slaughter slab, which does not provide enough data to draw meaningful conclusions on this objective.

Another limitation was the inconsistency in the time of data collection. The plan was to record data from 7-8 am at each location, but this was not always possible due to the limited transportation availability. Data collection usually began around 7:30 (Appendix 5 for details), when many of the birds were already starting to leave due to the heat. In addition, many workers reported that marabou storks are present only early in the morning (7-8 am), but this was not observed by the researcher. On days when observations were delayed due to outside factors, more storks were present. The relationship between the number of birds and the time of day should be further explored.

The time of day with the maximum number of birds may also vary among abattoirs and slaughter slabs due to differing practices. For example, Bugembe slaughter slab is very busy earlier in the morning and there are not a lot of perches for storks to look over the activity, so many birds do not come until after most people have

left. At JCCA, however, more birds were present when there were people because of how frequently workers throw food to the birds. At NMAA, workers also reported more birds later in the day when there were fewer people because many of the workers chase off the birds. These differing practices may affect the maximum number of storks present throughout the day and the time at which this occurs.

Furthermore, abattoirs and slaughter slabs were only able to provide estimates for the number of animals slaughtered each day, thus, it is likely that the number of animals reported to be slaughtered daily differs from the actual number. To draw conclusions around the number of animals slaughtered, this would need to be measured directly instead of obtained through interviews.

More research on this topic would benefit ecological efforts to maximize the use of waste management as an ecological service that marabou storks provide. To further this study, more research on the reliance of storks on abattoir workers is needed, including an analysis of how much food workers throw to them daily. Studying the times of day most marabous are present will also help to inform these efforts.

Effects of large open areas and perches on the presence of marabou storks may also be explored. In this study, they were often observed on perches or just outside the study area, which appears to be a necessity for their presence. In areas where birds could not watch from nearby, they were mostly not present.

This study contributes to the body of research surrounding animal adaptations to increasingly urban environments through provisioning, human disturbance, and competition with other animals.

6 ACKNOWLEDGEMENTS

This research project would not have been possible without the generous help of the staff at SIT: Uganda, including Dr. Charlotte Mafumbo and Paul Musungo, and SIT: Tanzania, including Dr. Oliver Nyakunga, Oscar Paschal, and Kaiza Kaganzi. Advising from Hamlet Mugabe helped to make this project possible. A special thanks to Ssozy Musa Ssenga and Nabwire Judith from Jinja City Cattle Association (JCCA) for helping with translation, transportation, and so much more!

7 EDITOR'S NOTES

This article was peer-reviewed.

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8 APPENDICES

8.1 Appendix A: Ethical Considerations

The marabou storks in this study were observed from a range of 10-100 meters. These birds are adapted to urban environments and are not bothered by the presence of people. Workers at JCCA that helped provide background information about their facility or the presence of birds were compensated monetarily for their time in addition to assistance in transportation and translation.

Area 1	Area 2	Z	p-value
Back	Horns/bones	6.76204	<0.0001
Back	Enclosures	6.55026	<0.0001
Entrance	Horns/bones	6.75344	<0.0001
Entrance	Enclosures	6.52446	<0.0001
Back	Blood	6.63673	<0.0001
Entrance	Shops	6.62842	<0.0001
Back	Grazing	6.05336	<0.0001
Entrance	Blood	6.297	<0.0001
Building	Horns/bones	6.3641	<0.0001
Building	Blood	6.28751	<0.0001
Building	Enclosures	6.03444	<0.0001
Roof	Horns/bones	5.97512	<0.0001
Back	Grazing	5.35757	<0.0001
Building	Horns/bones	6.76204	<0.0001
Roof	Enclosures	5.5238	<0.0001
Roof	Blood	5.62446	<0.0001
Grazing	Horns/bones	5.57841	<0.0001
Entrance	Grazing	4.83034	<0.0001
Grazing	Blood	5.07883	<0.0001
Entrance	Legs	4.38514	0.0005
Grazing	Enclosures	4.40592	0.0004
Roof	Grazing	3.6225	0.0109
Building	Back	2.1429	0.4968
Enclosures	Horns/bones	2.30658	0.3845
Legs	Horns/bones	2.30571	0.3851
Legs	Blood	1.68092	0.8066
Enclosures	Blood	1.61801	0.8397
Entrance	Roof	0.31319	1
Blood	Horns/bones	0.96296	0.9942
Shops	Horns/bones	0.96296	0.9942
Legs	Enclosures	0.30657	1
Shops	Blood	0	1
Shops	Enclosures	-1.61801	0.8397
Shops	Legs	-1.77607	0.7506
Legs	Grazing	-3.15474	0.0514
Legs	Roof	-3.9583	0.003
Roof	Building	-4.49199	0.0003
Shops	Back	-5.13721	<0.0001
Entrance	Back	4.82494	<0.0001
Roof	Back	-4.84245	<0.0001
Entrance	Building	-4.87268	<0.0001
Shops	Roof	-5.70073	<0.0001
Legs	Back	-5.39801	<0.0001
Legs	Building	-5.52493	<0.0001
Shops	Building	-6.28751	<0.0001
Shops	Back	-6.69204	<0.0001

Table 3 8.2 Appendix B: Steel-Dwass Test Results

Species of Bird	Chi-square Statistic	P-value
Cattle Egret	0.032	0.8569
Piapiac	0.218	0.6408
Pied Crow	0.411	0.5235
Spur-winged Lapwing	0.023	0.8800

Table 4 8.3 Appendix C: Chi-Square Results (df =1, n = 90, α=0.01) for Occupancy of Marabou Storks and Other Bird Species

Date	Start Time	End Time	Temperature (F)	Abattoir
22-Nov	7:40 AM	8:30 AM	70	Jinja City Cattle Association
23-Nov	7:45 AM	8:45 AM	70	Jinja City Cattle Association
24-Nov	8:00 AM	8:45 AM	71	Jinja City Cattle Association
25-Nov	7:40 AM	8:40 AM	70	Jinja City Cattle Association
27-Nov	7:50 AM	8:30 AM	68	Jinja City Cattle Association
29-Nov	7:20 AM	7:40 AM	68	Bugembe Slaughter Slab
29-Nov	7:50 AM	8:20 AM	71	Jinja City Cattle Association
30-Nov	8:15 AM	8:30 AM	68	Bugembe Slaughter Slab
30-Nov	8:45 AM	9:30 AM	71	Jinja City Cattle Association
1-Dec	7:30 AM	8:00 AM	70	Njeru Abattoir
1-Dec	8:15 AM	8:45 AM	71	Jinja City Cattle Association
2-Dec	7:30 AM	7:50 AM	71	Njeru Abattoir
2-Dec	8:10 AM	9:00 AM	71	Jinja City Cattle Association

Table 5 8.4 Appendix D: Metadata about Data Collection Days

Anwyn Steele

Dr. Andrew Goetz

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Ayanna Schubert[1], on behalf of the Editorial Board
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1 TELL US ABOUT YOURSELF, SUCH AS WHERE YOU WENT TO SCHOOL, HOW YOU BECAME INTERESTED IN YOUR MAJOR RESEARCH AREAS, AND HOW YOU FOUND YOUR WAY TO DU.

I'm from Cleveland, Ohio, born and raised there in the city itself. I, from an early age, had an interest in geography and maps, cities, and transportation. I had the opportunity to go to Northwestern University for my undergraduate degree in Geography. For my master's, I went to Kent State University. For my Ph.D., I went to Ohio State University, where I specialized mostly in transportation and in urban studies. When I came to Denver, I had been expanding my interests in those areas, with applications in different contexts. I originally became interested in these research areas at an early age, just growing up in the city and seeing how different forms of transportation work in urban environments; it was always something I was really fascinated by. I was very interested in maps as a kid. I was very curious about how new forms of transportation were being developed in cities and how it made it easier for people to be able to get around and access things that they need.

2 DESCRIBE YOUR CAREER TRAJECTORY AND ANY ZIGZAGS YOU ENCOUNTERED.

When I was in graduate school, my main area of interest was looking at how transportation affects cities. How it affects urban form. And so, my master's thesis was looking at the effect of rail transit on city development, population, and employment patterns within cities. At that time—this was quite a number of years ago—there really wasn't much that was going on in terms of the effect of rail transit on urban form, because most U.S. cities were really influenced to a much larger degree by cars and highways. That was really having a major influence. So, I felt in some ways, like I was looking at a topic that hadn't yet really emerged as an important area. I felt like I wasn't really finding much there, and maybe that's something that I would have to wait for another time to revisit.

When I went on for my doctoral degree dissertation, my advisor encouraged me to look more at air transportation, rather than rail transportation; that's what led me in my early years of teaching here at DU, to focus more on air transport, and what was happening in the airline industry. Specifically, I was looking at the effects of policies like deregulation, and what effect that was having in terms of patterns of air service to different places around the country. So that's kind of how I got started in air transport.

But when I came to Denver, one of the things happening here was the decision about whether we should be building a new airport. So, I got very heavily involved in studying airport planning in the case of Denver International Airport.

The other development that occurred when I was here in the 1990s, is that the University of Denver started the Intermodal Transportation Institute. And

I became quite heavily involved with that group. Today, it's known as the Transportation and Supply Chain Institute. In those early years, we were really focused on different modes of transportation and how they connect to each other. So that became more of an interest of mine.

After that, my interest started to shift more in the direction of public transit, because of what was happening in Denver, and that was the decision to expand the transit network here as part of the Fast Tracks program. And so, a lot of what I was interested in sort of moved into the transit area. I then came full circle, because I also realized that not only was the rail transit being built here, but there was a fair amount of development happening around the transit stations, and it was influencing urban form. So, I went right back to what I had been doing when I was in my master's program; I came full circle in terms of coming back to what I had originally been most interested in.

3 WHAT ARE YOUR TEACHING INTERESTS? WHAT IS YOUR "TEACHING PHILOSOPHY"?

I teach a course on urban landscapes, which is an Urban Studies course –an introduction to cities really– which I love to teach. It's been one of my favorite courses. I also teach a course on urban and regional planning which focuses on how planning can be used to make cities better places. In transportation, I teach an urban transportation planning class, and I teach a sustainability and transportation class. More recently, I've been teaching a course on air transportation, high-speed rail, and tourism. It's been really fun to teach that because it does relate directly to my research interests and is an opportunity to be able to share some of that with the students. I also have taught a first-year seminar about metropolitan Denver. It is all about the city of Denver, the metropolitan area of Denver, its geography, and how it's grown and changed over time.

In terms of philosophy and my approach to teaching, I try to be very open and very interactive with students. What I really enjoy, and I hope that the students do too, is an opportunity to just exchange ideas. Often, I present some background information, then pose some questions, and just listen to what students think about some of these key concepts, theories, and approaches in the fields of Urban Studies and in Transportation Studies. I'm curious to hear from students, what they think about a lot of things that are going on in cities today, what we could do to try to make cities better places to live, and how we can improve our transportation systems to make them more sustainable. So, I value having that input coming from students and getting their perceptions and perspectives on a lot of these issues that I am very interested in.

4 WHY DID YOU BECOME A SCIENTIST? WHAT DREW YOU TO GEOGRAPHY? WHAT MAKES YOU GET UP IN THE MORNING?

I never really thought of myself as being a physical scientist, like a natural scientist. I do, however, consider myself to be a social scientist. I've always been drawn to the human side of science, to the study of social groups. So, to me, fields like geography, history, political science, economics, and sociology are subjects that I've naturally been drawn to.

I've always been fascinated by the nature of human societies, and in particular, the geographic expression of human societies. Just looking at maps, and seeing how places are displayed in map form; that's always been something that I've been very interested in. If you talk to a lot of people who wind up studying geography, a lot of them will tell you that what drew them to the field was their interest in maps.

For example, if you get a roomful of geographers and you put a map out, they are going to be very interested in whatever spatial patterns that the map displays. I certainly would consider myself to be a part of that group.

As for what makes me get up in the morning, well I love what I do, and I'm not planning on retiring anytime soon because I love what I do. I love being able to come here, teach my classes, and be involved in research projects in which I have a very strong interest.

5 WHAT IS THE MOST FRUSTRATING, AND MOST REWARDING ACTIVITY, RESPECTIVELY, IN YOUR DAY-TO-DAY WORK?

I love having the opportunity to study the subjects that I enjoy, and to be able to share that with students and with other professionals who are also very interested in these subjects. I love going to conferences, presenting research, and listening to what my colleagues are presenting about, and their research. These things really drive me. Whenever I go to a conference, I come away with many, many ideas that are generated from those interactions with my colleagues. The same thing happens in the classroom. I love seeing students get new ideas and gain curiosity. When they start to ask questions and go out and do research, I am happy to help and advise students in their research.

I tend not to dwell on the frustrating parts, but I do remember that, as chair of our department for several years, the administrative aspects tended to be frustrating. Those aspects are not necessarily the reason I wanted to be in academia. However, it's one of those things that I realized was an important service that we need to do. And so, I was happy to step in and help, but it's not what drives me. It wasn't really what got me up

in the morning, for the most part.

6 WHAT WOULD YOU CHANGE TO IMPROVE HOW WORK IN YOUR FIELD IS DONE? IN OTHER WORDS, WHAT LEGISLATION MIGHT YOU PASS OR WHAT POLICIES WOULD YOU CHANGE AND WHY?

First, I would suggest that we think about what kinds of policies or plans that could be enacted to try to make transportation more sustainable, to make it more robust, a better, more efficient operation. What can we do to try to make cities better places in which to live?

For me, more of the emphasis needs to be directed toward what we can do to try to improve on the topics that I study regularly. For instance, in terms of sustainable transportation, asking questions such as: how can we continue to support transport systems that consist of biking and walking in cities? How do we create environments where it becomes much easier to be able to walk and bike and take transit, and not be as heavily reliant upon cars, especially internal combustion engine cars? How do we help in terms of making that transition to more electric vehicles, and using more renewable fuels to supply our electricity? How do we get that transition to go faster? Those are the topics that I'm more concerned about in terms of the future and trying to make a change.

In the academic area, I feel like there are problems associated with not providing enough support for colleges and universities, this is particularly true on the public side, but even so on the private side.

I have also seen a trend of expert viewpoints being disregarded in the political arena, not for good reasons. We sometimes tend to be quick to dismiss the facts that knowledgeable people are finding and sharing with us. It seems that the public, at large, seems very quick to dismiss a lot of what is being generated in terms of knowledge production, and I find that to be troubling. I'm not sure if there's any legislation that could solve that, but it is a troubling development. I would hope that we could, once again, restore the importance of science, scientific knowledge, and expertise in general, to the position where it once was and where it was valued, to a much greater extent.

7 IF YOU COULD GO BACK IN TIME AND GIVE ADVICE TO YOURSELF BEFORE YOU BEGAN YOUR CAREER, WHAT WOULD IT BE?

To stick with it and not be too discouraged by whatever setbacks may occur. There were times in the past when things didn't go the way that I was hoping and you begin to question if what you are doing is the right path for you or not. My advice would be to stick with what you feel is the right way to go, to not give up, and to not be too dismissive of setbacks that might be happening. Keep progressing based on what you really believe and what you think is the right thing to do.

Monkey of Mt. Batur, Bali by Mya Vander Pol

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1 WHAT SPARKED YOUR INTEREST IN, OR DREW YOU TO, YOUR FIELD? WHY DID YOU BECOME A SCIENTIST? WHAT MAKES YOU GET UP IN THE MORNING?

I grew up in the Hollywood Hills of Los Angeles, California (Laurel Canyon) during the 1960's. The movie 'Soylent Green' and the chest pain I experienced with deep breaths during smog alerts had a significant impact on me and my nascent perception of the Human-Environment-Sustainability problematic. A famous 1971 public service announcement on TV featuring what appears to be a Native American with a single tear flowing down his cheek as he looks upon a littered American landscape undoubtedly influenced me also (this PSA is one of the most famous ever made despite the fact that the 'Native American' (aka Iron Eyes Cody) was likely of Italian origin[1].

I later moved to Santa Barbara during my High School years and was deeply influenced by the works of Rachel Carson, Paul Ehrlich, and Garrett Hardin. Needless to say, my early childhood experiences primed me to be significantly influenced by perhaps manipulative PSAs, apocalyptic movies, and Neo-Malthusian jeremiads. Nonetheless, this was the era in which the Environmental Protection Agency was established along with the Clean Air Act, the Clean Water Act, the Endangered Species Act, and even Earth Day. This suite of environmental problems was even more poignant in the smoggy air of my adolescence in Los Angeles.

As a young man, I came to believe almost all of these kinds of problems were driven by overpopulation. I ran tables at Earth Day for Zero Population Growth right next to the Planned Parenthood table and learned that empowering women helped address the population problem and solved other problems as well. As my understanding of our social and environmental problems grew, I became increasingly convinced not that 'It's the economy stupid' but rather, 'It's the stupid economy'. Our prevailing neo-liberal, free market, capitalist, economic system demands infinite growth to function, and so far, that growth has come at the expense of other species, non-renewable natural resources, and damage to our environment. Neither our population nor our economy can grow on like this. We know it is unsustainable. I believe our value system is broken and we need to attribute a much higher value to the natural world as a commonwealth in order to support not only our economy but our very existence. To wit, we spend over eight billion dollars for costumes and lawn decorations for Halloween. Eight billion dollars for ONE single day. The entire ANNUAL budget for the national park service in the United States is roughly three billion dollars. Most of the Halloween purchases will be in a landfill within a month. This distorted value system is a clear and present threat to achieving the sustainable development goals outlined by the United Nations.

Sadly, we have adopted ideas of efficiency from economists as the way to run our government when government should prioritize resilience over efficiency. If we truly want our government to be efficient, we

would run our national parks the way we do airlines, which means no empty seats – campgrounds full all the time. Increasingly this is how many of our national parks are being run. Additionally, the parks will tend to raise prices to restrict campground space (or develop lottery systems which favor people with money and flexibility), which counters the intended purpose of the national parks. What we need is more campgrounds, and what we want is not to run our national parks on an efficiency basis, but on a resilience basis. Resilience is this ability to absorb shocks, or the waves of people that might want to visit our national parks. If the parks want to be able to absorb more visitors, they should never be full. But we need to recognize that resilience and efficiency are tradeoffs within our economic system. You cannot simultaneously maximize efficiency and resilience.

I want my students to be realistic about the way the world is. There's this whole eco-anxiety and climate grief thing than can be debilitating. Despair and/or denial are bad choices with respect to moving forward. So, I have tried to embed a 'solutions' perspective into my teaching. I really believe the solutions are in governance. I think we have regulatory capture and state capture, to such an extent that very wealthy individuals and very wealthy and influential corporations have basically bought our government so that the government doesn't regulate them in ways that encourage us to be stewards of the environment. Rex Tillerson, former CEO of Exxon, was Secretary of State under Trump. Hank Paulson was at Goldman Sachs, and then he was Secretary of the Treasury under Obama. This revolving door between people in the corporate world trained in economics and the efficiency/utility maximization ideology, will take dramatic pay cuts down to salaries in the $200,000 to $300,000 a year in the government. Why do they do this? To make sure that the government doesn't interfere with the ability of their 'former' companies to make crazy amounts of profit. They then return to their multi-million dollar a year gigs in the private sector that they were up until recently 'regulating'. This is one manifestation of what is called 'state capture' or 'regulatory capture'. It is a failure of governance. Many of the environmental issues we are challenged with result from a failure of governance. When my students demand a 'solutions'-oriented curriculum I decided to 'walk the talk' by running for office in government – where I believe the basis of the problems lay.

So, I tried. I ran for office, and now I'm on the town council of the little town I live in. I learned a lot about governance and the pressures and tradeoffs you must deal with in governance. I encourage my students to be politically active and to vote. Voting is much more important than not using plastic straws. We're in an economic system that is not going to fix itself. If you're Bill Gates, or Elon Musk, or Mark Zuckerberg, or one of these billionaires, why would you want system change? The system that we live in has been very very good for these multi-billionaires and I believe their wealth makes them think they are more brilliant than they actually are. Musk is tweeting about how to solve the Ukraine crisis, and that we need global population growth so we can get to Mars. Many of these people get ridiculous megalomaniacal ideas about how brilliant they are. As far as I am concerned none of them are as brilliant as the people that made the COVID mRNA vaccine.

2 DESCRIBE YOUR CURRENT RESEARCH IN LAYMAN'S TERMS.

I believe that we have an economic system that is unsustainable. The vast number of scientists who agree with me have worked in a variety of ways to develop persuasive evidence-based arguments that demonstrate many of the ways in which our economic system is in fact unsustainable. One of my research agendas is valuing nature, or in academic parlance, putting a dollar value on ecosystem services. I've published a great deal on this topic. A key point of this research is to point out that we don't allocate resources wisely. I conduct ecosystem service valuations using satellite imagery, GIS, benefits transfer, and a variety of economic methods.

Some of my political activism is associated with this research. I engage from a science-based perspective in what have sadly become political issues - climate change, loss of biodiversity, and sustainability. I also regard myself as a Neo Malthusian in that I believe that the global human population is not going to stabilize at 10 or 12 billion. It's going to come down, because we have exceeded our ecological footprint, and there will be consequences for that. We are lying to ourselves if we think we can live sustainably and happily at 12 billion people. We're not living sustainably now. That is why climate change and loss of biodiversity are such concerns. Yogi Berra has a great quote, "If you don't know where you're going, you'll end up someplace else." I try to paint a picture of where we want to go, what a solutions-oriented future looks like. I think it's going to be 2 to 3 billion people. I think having a vision of the future is important. And I think it's going to be solar panels and windmills and tidal energy. We're probably going to be consuming less in the United States and people in the developing world will be consuming more; we must reduce inequality. We must have a functioning government. We need a government that is not bought and paid for by billionaires and corporations. My first-year seminar is titled 'Envisioning Utopia' through the lens of a well-being economy. Based on the trajectory and history of what I see manifesting, I try to encourage students to put kindling on the little hope fire and fight the system, so that we can change the system.

3 WHAT IS THE MOST FRUSTRATING, AND MOST REWARDING ACTIVITY, RESPECTIVELY, IN YOUR DAY-TO-DAY WORK?

My dean wants me to bring in grant money. My research agenda is focused on bringing about system change. The current economic system that we operate in typically doesn't want to provide money to people who are proposing systems change. This is frustrating. While I do feel like Don Quixote when engaged in much of my research, I do find it rewarding that many avenues of research that I've been working on that didn't get funded are now established and accepted as viable and useful. For example, using satellite imagery as a proxy measure of population parameters, ecological footprints, and economic activity. Ecosystem service valuation was a crazy idea back in the 90s when I started working on this, and now it's in Obama's memos[2]. In fact, the Biden-Harris Administration has recently released a 'National Strategy to put Nature on the Nation's Balance Sheet'[3]. I provided public comment on this strategy alongside several Nobel Prize-winning economists. Ironically, it was economists who argued that addressing climate change was too expensive and that valuing natural capital and ecosystem services was a fool's errand. It is becoming increasingly clear that these economists were tragically wrong. In Greek mythology, Cassandra was cursed with the ability to predict the future, but no one listened to her. I often feel I have Cassandra's curse.

Nonetheless, I do find it rewarding to run into colleagues at conferences, getting invited to go to other places where there are other people that think the same thing I do or at least engage seriously with my ideas. These colleagues are highly cited, successful academics. So, I don't feel alone, and I don't feel like I need to wear a tinfoil hat. The people I respect are on the same page as me. But it's lonely for all of us. Many of us feel isolated at our own universities and feel much like we imagine the boy in the story 'The emperor's new clothes' felt when pointing out that the emperor was naked. One example of this is Nobel Prize-winning physicist Steven Chu who served as President Obama's Energy Secretary. Chu stated:

"The world economy is based on ever-increasing population, a scheme that economists don't talk about and that governments won't face, a scheme that makes sustainability impossible and is likely to eventually fail. The world needs a new model of how to generate a rising standard of living that's not dependent on a pyramid scheme."

4 WHAT WOULD YOU CHANGE TO IMPROVE HOW WORK IN YOUR FIELD IS DONE? IN OTHER WORDS, WHAT LEGISLATION MIGHT YOU PASS OR WHAT POLICIES WOULD YOU CHANGE AND WHY?

I have lots of ideas about policy in general: 1) Stop subsidizing fossil fuels; 2) Outlaw planned obsolescence; 3) Get money out of politics – start by overturning the Supreme Court decision known as 'Citizen's United'. As an educator at a university, I think we should force the state governments to fund their public institutions. I would suggest that the annual cost of tuition at any state school should not be more than what a student working full-time at minimum wage could earn through the summer in that state. Obviously, that's not going to pay all of the costs of that education. The rest should be provided by state and federal subsidies for higher education. I have written an Op-Ed on this topic in the Boulder Daily Camera titled: The Road to Idiocracy[4]. Higher education is increasingly a mechanism for increasing rather than decreasing inequality while simultaneously eroding the relatively strong meritocracy that America has had in the past.

5 CAN YOU SHARE A TURNING POINT OR DEFINING MOMENT IN YOUR WORK AS A RESEARCHER?

As a grad student, I was working on nighttime satellite imagery and public opinion of population issues. I had read in the literature of the trans-discipline of ecological economics, which is now one of my research agendas and important to ecosystem service valuation. The University of Santa Barbara was having a workshop where faculty from throughout the world were going to come and write a paper and do a global assessment of the value of the world's ecosystem services. As a grad student, I went down there and said "Can I watch you guys? Operate the overhead projector or something?" And they said, "You can participate in the work." Consequently, I was a co-author on a paper with these people; it was really rich and rewarding. There were economists and ecologists and geographers arguing about the value of nature and the nature of value. How do you do it? How do you map it? I got to do some aspects of the figures and participate in the writing and the discussion that produced the paper. This paper[5] that valued the world's ecosystem services, and natural capital came up with a value that the natural world annually provides value in the form of ecosystem services that is more than the entire global market economy. This upset most economists, so this paper was critiqued and ridiculed by them. Nonetheless, this paper is one of the most cited papers in the field of environmental science. This was a big turning point in my career that I'm very

grateful for.

6 IF YOU COULD GO BACK IN TIME AND GIVE ADVICE TO YOURSELF BEFORE YOU BEGAN YOUR CAREER, WHAT WOULD IT BE?

I got a degree in chemistry, which was cool, but I wish I got more programming under my belt to have the ability to do coding and programming to support my future work in geography. I would have liked it if there had been more programming and coding theory classes in my training.

7 ARE THERE ANY OTHER FUN FACTS YOU WOULD LIKE TO SHARE?

I'm on the board of trustees of the town of Morrison, and I did that because my students pushed me to be involved in solutions. I believe the solutions are in politics. I've learned a lot from doing that and it's been a fun fact in my life; nonetheless, it's a lot of work. I'm encouraging my students to get involved in politics, but it's hard, and it takes time, and I'm doing this for free. It's not a paid position; we just voted so that, once I'm done, future members of the board of trustees will be paid $500 a month because it takes 20-30 hours a month. When important local government positions are done by volunteers, you end up with people who have the time and money to volunteer doing the work. Consequently, governance becomes dominated by people who have the free time rather than people who are working two jobs and don't have 20 to 30 hours a week to give away to the governance of their own town. I'm proud, and I don't use this word lightly, of the town of Morrison, which has had a population of 400 for over 100 years. I personally think that's what sustainability looks like. I have written about the challenges facing local government in this Op-Ed titled: *We can't solve the problems of growth with 'good' growth*[6].

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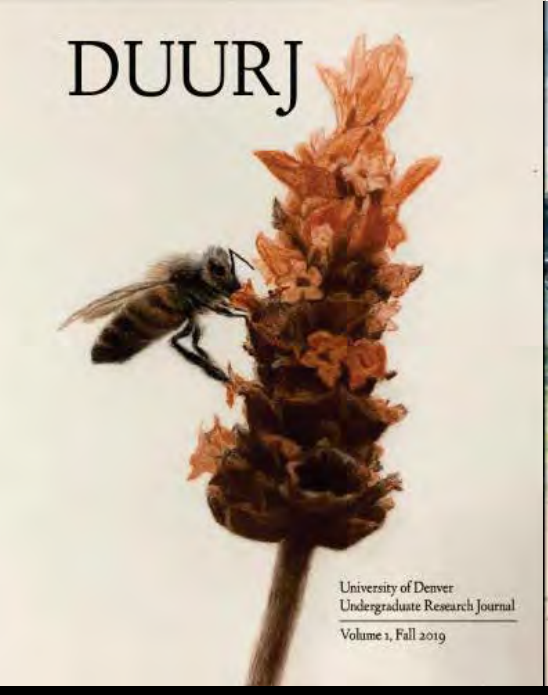

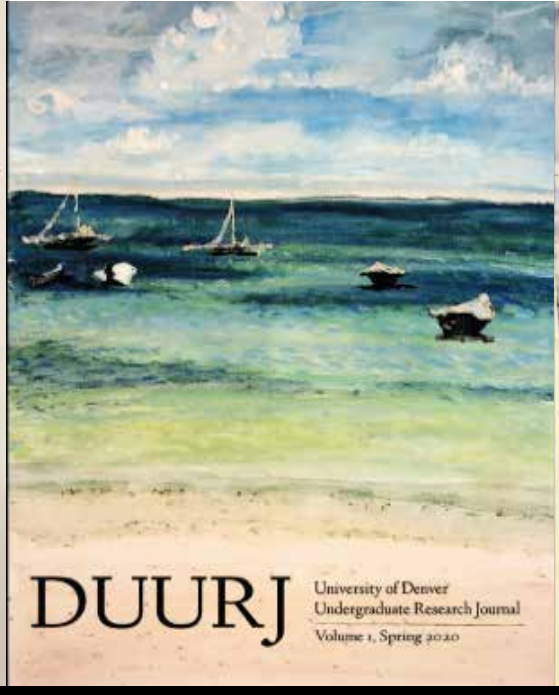

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