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Previous research provides evidence that stigma can be perpetuated through language with consequences for well-being and quality of care. For example, providers who use stigmatizing language transmit bias toward patients with implications for care provided by other healthcare professionals. 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. 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

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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.

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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-

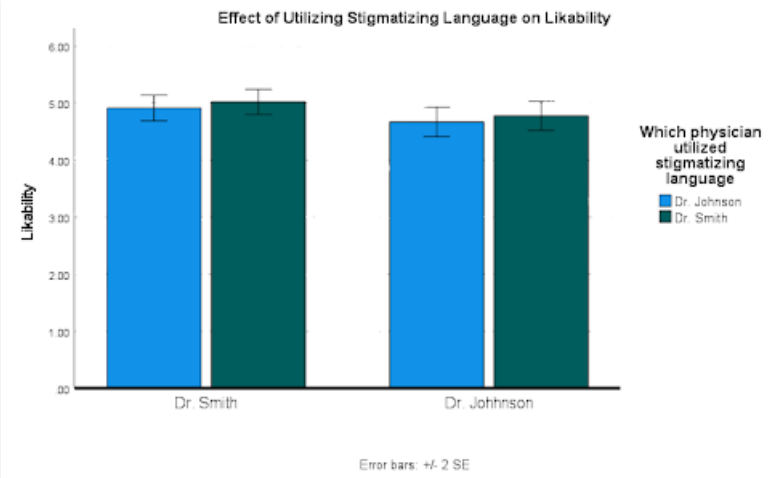

Figure 1. Effect of stigmatizing language on likability. The interaction between language type and physician likability is illustrated. Error bars indicate 95% CI.

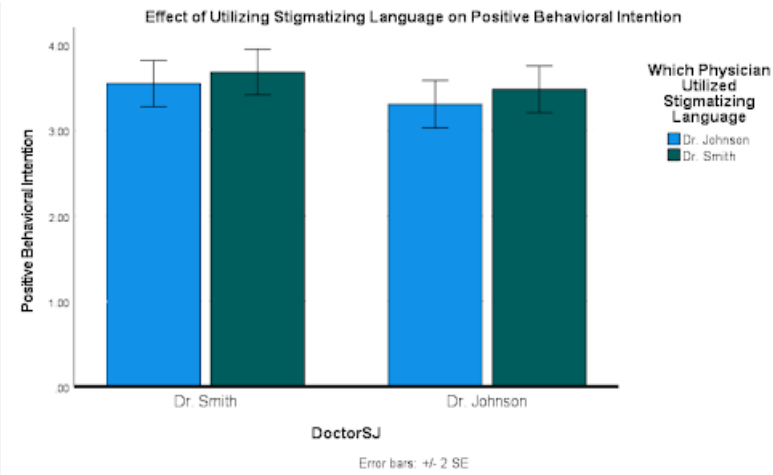

Figure 2. Effect of stigmatizing language on positive behavioral intentions. The interaction between language type and positive behavioral intentions towards physicians is demonstrated. Error bars indicate 95% CI.

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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