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Effects of Patient's Race on Pain Perception and Treatment in Nursing Students

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Effects of Patient's Race on Pain Perception and Treatment in Nursing Students

by

Christian J. Phillips

A Thesis
Submitted to the Honors College of
The University of Southern Mississippi
in Partial Fulfillment
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ABSTRACT

This study investigates whether a patients' race affects how nursing students evaluate the patient's pain. Undergraduate and graduate nursing students ($N = 117$) recruited from the University of Southern Mississippi School of Nursing were presented with a clinical vignette detailing a 35-year-old man in the emergency department presenting with extreme left shoulder pain. They were randomly assigned to either a Black or a White patient condition. The patient's race was revealed through an attached photograph, with each condition represented by one of eight unique photographs. Participants evaluated the patient's current pain level and time to be triaged; the patient's pain that attributes to medical or psychosocial factors; their trust in the patient's description of his own pain; levels of pain severity; and how likely the patient to be a drug seeker. There were no significant differences between the two conditions (Black vs. White patient) for all the outcome variables (all $|ts| < 1.41$, $ps > .16$). When race of participants was entered as a factor in 2 (race of patient: Black vs. White) x 2 (race of provider: Non-White vs. White) ANOVAs, no significant effects involving race of patient and no significant race of patient x race of provider interactions emerged for each of the outcome variables (all $ps > .1$). These results suggest that future nursing providers trained at the University of Southern Mississippi do not exhibit racial biases in evaluations of chronic pain. Such findings inspire hope that racial and ethnic disparities in healthcare can be eliminated.

Keywords: race, discrimination, healthcare, racial disparities, pain perception, racial bias

DEDICATION

I would like to dedicate this honors thesis to my parents, brother, and sister. Your love, support, and belief in me is very much appreciated and embraced. I am proud to call you my family. I would like to extend this dedication to my friends. You are all motivating and inspiring in your own way. Thank you for the countless memories.

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ANOVA   Analysis of Variance

CDC   Centers for Disease Control and Prevention

CTA   Canadian Triage and Acuity

CHAPTER I: INTRODUCTION

Throughout the history of the United States, white supremacy and racism have shaped how systems operate and how individuals think and act within the system (Guess, 2006; Robinson-Lane & Booker, 2017). Race-related health disparities are well documented in the literature (for review, see Smedley et al., 2003). Disparities in the healthcare field in the United States have led to the undertreatment of patients (Riley, 2012), especially many non-white minorities (Anderson et al., 2009; Smedley et al., 2003). Healthcare systems and providers propagate health disparities among certain communities by not giving equal treatment to minority patients because of their lack of resources or misconstrued assessments (Anderson et al., 2009; Green et al., 2003).

Previous work shows that racial disparities in pain management exist (for review, see Anderson et al., 2009; Green et al., 2003; Hampton et al., 2015) in both pain assessment and treatment of pain. Studies have shown that the ratings of pain differ between patients and providers (Hollinshead et al., 2016; Marquié et al., 2003; Mende-Siedlecki et al., 2019; Trawalter & Hoffman, 2015). Certain patients' characteristics such as race, gender, and age can influence a physician's perspective in every situation when evaluating and treating patients' pain (Marquié et al., 2003). One of the underlying factors that contribute to differences in pain perception specifically is the race and ethnicity of the patient (Anderson et al., 2009; Mathur et al., 2014). For example, in pain assessments of minority patients, providers are more likely to underestimate pain severity in cases with severe/extreme pain (Todd et al., 1993; Todd et al., 2000). Pain treatment work indicates that Black Americans and other minority patients also treated less aggressively for a variety of conditions (for review, see Anderson et al., 2009).

However, there is mixed evidence whether belonging to a specific racial/ethnic group per se affects patient's treatment of pain by healthcare providers (e.g., with supporting evidence by Butwick et al., 2016; Druckman et al., 2018; Schulman et al., 1999; partial evidence by Weisse et al., 2001; and no evidence by Tamayo-Sarver, 2003).

Since there is limited evidence on the influence of patients' race on healthcare providers' clinical evaluation and treatment and few studies on the effects of patients' racial background on pain perception and treatment in nursing students, this project will aim to answer the following research question: Is there an effect of a patient's race on pain perception and treatment in healthcare pre-professionals, specifically nursing students? This project investigated whether patients' race would affect how healthcare pre-professionals perceive and evaluate patients' pain. Given the withstanding racial tensions occurring in America, the answer to this question can aid future healthcare providers in the evaluation and treatment of pain, lead to the development of interventions and reduce racial disparities in healthcare.

CHAPTER II: LITERATURE REVIEW

Race and Ethnicity: Disparities in Healthcare

Race and ethnicity have different meanings, but they are socially constructed categories that define groups of people (Obach, 1999). The term *race* is used to define people based on their physical and biological attributes, while *ethnicity* classifies people based on their social and historical background, such as shared religion or culture (Edwards et al., 2001; Campbell & Edwards, 2012). Mathur et al. (2014) suggests that race and ethnicity hold a significant amount of weight in how a health care provider will diagnose and treat someone. Healthcare disparities are not just race-based but affected by other demographic characteristics, such as patients' location and socioeconomic status (e.g., Egede, 2006).

White Americans have benefitted from the depths of systemic and structural racism in the healthcare field, as they are more likely to receive better quality care in comparison to racial minorities (Gee and Ford, 2011; Trawalter & Hoffman, 2015; Smedley et al., 2003). The most affected racial and ethnic group in the United States are Black Americans as they are known to be undertreated and underestimated despite them being more likely to suffer from sickness (Anderson et al., 2009; Dore et al., 2014; Trawalter & Hoffman, 2015). The negative perception of Black American men, women, and children in healthcare settings could partly explain their low life expectancy or why they have higher mortality rates after certain operations (Andrews & Moy, 2015; Campbell & Edwards, 2012; Lucas et al., 2006).

Disparities of Pain Care in Black Americans

Healthcare disparities in pain treatment persist between populations because of the different social environments and inequalities of power that exist (Braveman, 2006). There are many contributions to miscalibrations in pain, such as gender and age, but race seems to be one underlying factor that is also more prevalent in the south (Fiscella & Sanders, 2016; Fowler-Brown et al., 2006). The false beliefs that exist around different races (e.g., that individuals of some racial groups are more tolerant of pain, see Trawalter & Hoffman, 2015) might influence the perception of each patient's pain.

Pain is undoubtedly a subjective feeling of the patient. Patients will express their pain in ways they see fit, but it is ultimately up to a medical professional to assess their pain to design the most beneficial plan of treatment and care. Healthcare providers trust their judgement when it comes to assessing a patient's pain, but their medical decisions can become predisposed by unconscious and conscious racial biases. Consequently, the assessment and management of pain in Black Americans can differ from their White counterparts, as many studies relating to pain care show (Anderson et al., 2009; Hoffman et al., 2016; Trawalter & Hoffman, 2015).

It is almost typical for a physician to give lower ratings of patient's pain compared to patients' self-assessments of pain, but this discrepancy is larger for minority patients (Anderson et al., 2009; Marquié et al., 2003). A review done in 2009 showed that minorities received lesser quality pain care than White people in many areas such as postoperative pain and palliative care (Anderson et al., 2009). A literature review on the influence of race on pain sensitivity reported that Black Americans had a lower pain tolerance and higher pain ratings than White Americans (Kim et al., 2017). By rating low

pain intensity, physicians will consequently not administer needed medication or administer lower doses to Black American adults or children. White and Native American children were more likely to be administered opioids compared to other minority groups as they were more likely to receive non-opioid prescriptions (Groenewald et al., 2018). Another study showed that Black American children were less likely to receive any pain medication (non-opioid or opioid) for moderate or severe pain (Goyal et al., 2015). It is assumed that adults are the main target, but children are also victims of this prejudice.

The factors contributing to disparate treatments of pain include the patient, healthcare provider, and healthcare system (Anderson et al., 2009; Green et al., 2003). Green et al. (2003) sourced these factors by conducting a selective review of literature on pain care disparities occurring across various types of pain and settings. Some characteristics of healthcare systems can influence racial pain care disparities in certain environments, such as predominantly minority or nonminority settings. Studies highlight how a lack of access or availability to effective pain medication can affect treatment toward Black patients (Green et al., 2003). Some researchers have argued that racial disparities in pain treatment have historical roots (Robinson-Lane & Booker, 2017) and believe a lack of knowledge and training in medical education contributes to those disparities (Anderson et al., 2009).

Patients can impact pain care through a lack of communication when they do not report their pain adequately. Some studies suggest that Black Americans and Hispanics underreport pain because of their fortitude or the possible addiction that comes with being prescribed opioids (Green et al., 2003).

Healthcare providers contribute to pain care disparities by their medical judgements and decisions. Their judgment could be altered by a physician's lack of knowledge and bias or the social context surrounding each medical encounter (Green et al., 2003).

Providers' Attitudes and Stereotypes

Studies have shown that some physicians and providers are more likely to provide lower pain ratings for Black than White patients (Anderson et al., 2009; Staton et al., 2007). False measurements of a patient's pain can result from physicians holding certain beliefs about different races. Many healthcare providers think that Black Americans are less pain-sensitive and possess "super" strength (Groenewald et al., 2018; Trawalter & Hoffman, 2015; Waytz, Hoffman, & Trawalter, 2014). The more healthcare providers express these biases, such as *superhumanization bias*, the more likely they are to mistreat or undertreat Black American patients (Green et al., 2007; Hall et al., 2015; Sabin & Greenwald, 2012; Trawalter & Hoffman, 2015). Some researchers have tied these biases to a lack or reduction of empathy (racial empathy bias) because mistreatments result from not being able to understand or relate to the pain of Black Americans by white health care providers (Dore et al., 2014; Drwecki et al., 2011; Waytz, Hoffman, & Trawalter, 2014). Drwecki et al. (2011) discovered that there was a direct relationship between racial empathy biases and racial treatment biases.

Another biological perspective that not only non-medical people, but some current and future physicians take is that Black Americans have thicker skin, faster blood coagulation, and less sensitive nervous systems (Hoffman et al., 2016). Hoffman et al. (2016) found that a stronger belief in these false biological differences predicted lower

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pain ratings and less effective treatment regimens for Black patients. Invalid, biological beliefs about the body from the days of slavery are still present and have the chance to negatively influence medical judgements. Along with that, there is the assumption that most Black Americans have experienced many hardships in their past life that they encompass extreme mental and physical abilities that give them a higher tolerance to withstand pain (Dore et al., 2014).

The stereotypes about the socioeconomic status of Black Americans might play a role in how they are treated as well. When Black Americans are part of low and middle socioeconomic status groups, they are more likely to be negatively perceived compared to their white counterparts (Ryn & Burke, 2000). Black Americans are perceived as unintelligent, participating in risky behaviors, and not owning insurance, all traits associated with a lower social-economic status (Ryn & Burke, 2000). If health care providers assume that Black Americans cannot afford medicine, they might prescribe lower doses of pain medication or seek other options that are not as equally beneficial. Although White Americans abuse opioids at higher rates, Black and minority patients are still labeled as drug seekers because of their implied association to risky behaviors (Han et al., 2015; Om, 2018; Singhal, Tien, & Hsia, 2016). As a result, these perceptions of Black and minority patients lead to reduced administration of opioid medication (Han et al., 2015; Om, 2018; Singhal, Tien, & Hsia, 2016).

The Current Study

While race of the patient is certainly a factor contributing to disparate treatments of pain, there is somewhat mixed evidence whether *belonging to a specific racial/ethnic group per se* influences treatment of pain by healthcare providers (e.g., with supporting

evidence by Butwick et al., 2016; Druckman et al., 2018; Schulman et al., 1999; partial evidence by Weisse et al., 2001; and no evidence by Tamayo-Sarver, 2003). The extent to which the *race* of the patients alone affects health care workers' decisions about diagnosis, triage, and treatment is not known. Therefore, the significance of this work is in identifying whether differential treatment of Black versus White patients by healthcare workers contribute to racial disparities in the documented problem of chronic pain management. Notably, the project will be able to show that discrimination does (or does not) exist in healthcare settings and drives health disparities in chronic pain management. The study set out to recruit healthcare pre-professionals, particularly nursing students. The use of nursing students as participants is important because nurses have the most contact with patients, make triaging decisions in emergency room settings, and can be influential in initial evaluations of patients' pain.

This study investigated the assessment of a patient's pain by nursing students using a written clinical vignette with a photograph of a hypothetical patient. The clinical vignette described either a Black or White male patient entering the emergency department and presenting with left shoulder chronic pain and was accompanied by a facial photograph of the grimacing patient, depicting pain. Nursing students were asked to assess the patient's pain using the Canadian Triage and Acuity Scale (CTA) (Bullard et al., 2008). This CTA scale allows nurses and physicians to appropriately triage patients in the emergency department by prioritizing each patient based on the pain and symptoms they present. Participants were also asked to attribute the patient's pain to medical or psychosocial factors, measure their own trust in the patient's pain (Chibnall et al., 2018), assess the patient's pain severity, and decide how likely their patient was a drug-seeker.

The study sampled nursing students from a research university located in the South of Mississippi,where there is a history of unjust civil rights and ongoing racial tensions are present.

It was expected that patients' race does influence how healthcare pre-professionals perceive and treat patients' pain. The following hypotheses were tested: Participants were expected to (a) rate the Black patient's pain as less urgent and severe than the White patient's, (b) triage the Black patient later than the White patient, (c) attribute the White patient's pain to medical factors more than the Black patient's and attribute the Black patient's pain to psychosocial factors more than the White patient's, (d) trust the White patient's description of pain more than the Black patient, and (e) perceive the Black patients as drug seekers more so than the White patients.

CHAPTER III: METHOD

Participants

Participants for this study were undergraduate and graduate nursing students

recruited from the University of Southern Mississippi College of Nursing ($N = 117$).

Eleven participants withdrew at different stages of the study. Two participants completed

the main survey questions but failed to provide demographic information. This left a

sample of 104 participants for the demographic data analyses. The age range of the

participants was from 19 to 57 years old ($M_{age} = 27.13$, $SD_{age} = 9.97$, $N = 104$). The

gender distribution for 102 participants who provided that information was the following:

87 females (85.3%) and 15 males (14.7%). The ethnic and racial identification of the

sample was the following: White ($n = 75$; 64.1%), Black/African American ($n = 14$;

12%), Asian/Pacific Islander ($n = 7$; 6%), Hispanic/Latino ($n = 3$; 2.6%), Native

American/American Indian ($n = 1$; 0.9%). Most of the participants were undergraduate

students working towards a Bachelor of Science in Nursing degree ($n = 66$; 56.4%). The

rest were graduate students ($n = 32$; 27.4%) working towards a Doctorate in Nursing

Practitioner ($n = 17$; 14.5%), Nurse Practitioner ($n = 8$; 6.8%), and Ph.D. in Nursing ($n = 7$; 6%) degrees.

Materials

The facial stimuli used in this study came from the Delaware Pain Database

(Mende-Siedlecki et al., 2020). Only 16 faces (8 White males, 8 Black males) exhibiting

painful expressions were chosen from the database (See Figure 1). The face presented

was attached to a clinical vignette which appeared before each question (see Appendix

A). The participants evaluated the clinical vignette using The Canadian Triage and

Acuity Scale (CTA) from Bullard et al. (2008) and questions analogous to Chibnall et al. (2018) (see Appendix A).

Procedure

Following agreement from the University of Southern Mississippi College of Nursing to recruit nursing students, an Institutional Review Board approval for the study was acquired (see Appendix B). The data was collected in December of 2020 through February of 2021. Nursing students were emailed a recruitment advertisement with a link to the study. Before starting the survey, participants had to indicate their consent to participate in the study (Appendix C) and confirm they were studying nursing. Participants who did not give their consent or confirm they were a nursing student were no longer able to complete the study. The survey was administered electronically through Qualtrics (Qualtrics, Provo, UT) and data was collected anonymously.

Participants were instructed to assume the role of a nurse working in an emergency department and evaluate a clinical vignette about a patient, Mr. John Smith, by answering questions. A picture of the patient displaying a painful expression was attached to the clinical vignette and both were presented to participants before each question. Participants were randomly assigned to either a Black patient or a White patient condition. It was randomly determined which face (out of eight) was presented to the participant based on the condition (either Black or White) they were randomly assigned to. The clinical vignette detailed the background and current information of a 35-year-old man suffering from chronic left shoulder pain (see Appendix A). All questions were presented to participants in the same order. Participants were asked to evaluate the patient's current pain level and time to be triaged (in minutes) using the CTA (Level I –

Resuscitation, Level II – Emergency, Level III – Urgency, Level IV – Less Urgency,

Level V – Non-Urgency). After that, they were asked to measure the percentage of the

patient's pain that attributes to (a) medical or (b) psychosocial factors with a 10-point

percentage scale (0–10% = Lowest, 91–100% = Highest) (Chibnall et al., 2018). Using a

10-point scale (1 = not at all, 10 = completely), they were then asked how much they trust

the patient's description of his own pain and what level of pain severity they think the

patient is actually expressing (Chibnall et al., 2018). Lastly, they determined how likely

the patient is to be drug seeking on a scale from 1 (Very Likely) to 5 (Very Unlikely) (see

the full survey in Appendix A).

      At the end of the survey, participants were asked to provide demographic

information such as their age, race, and gender, along with the degree they are seeking in

their respective nursing programs. Participants were then given the option to provide their

email address to receive a $10 Amazon e-gift card and a debriefing form once all data has

been collected.

CHAPTER IV: RESULTS

Responses on the following questions were treated as outcome variables: 1) Using the CTA, what is the level of Mr. Smith?; 2) Using the CTA, how long should this patient wait to be triaged (in minutes)?; 3) On a 10-point percentage scale, what percentage of Mr. Smith's pain do you think attributes to medical factors?; 4) On a 10-point percentage scale, what percentage of Mr. Smith's pain do you think attributes to psychosocial factors?; 5) On a 10-point scale, how much do you trust Mr. Smith's description of his own pain?; 6) On a 10-point scale, what level of pain severity do you think Mr. Smith is actually expressing?; 7) How likely is the patient to be drug seeking? Responses on the eight faces representing each condition (i.e., the Black or White patient) were aggregated for each question within each condition.

First, a series of independent samples t-tests were conducted on each of the outcome variables. The independent sample t-test results indicated that there were no significant differences for all dependent variables (all ps > .16) in ratings between the Black and White patient conditions (see Tables 1 and 2). All the research hypotheses were not confirmed.

Next, we created a new race variable (i.e., White vs. non-White). Because the sample was heterogeneous and did not have an equal number of participants in each racial/ethnic group, participants were grouped according to the White vs. non-White dichotomy, with all participants who indicated race/ethnicity other than White grouped into the non-White category. Finally, a series of 2 (race of patient: Black vs. White) x 2 (race of participant: non-White vs. White) analyses of variance (ANOVAs) were conducted on each of the outcome variables.

Based on the results of the two-way ANOVAs conducted on all dependent variables, there were no significant results for any main effects or interactions involving the race of the patient (see Tables 3 and 4). There was a race of participant main effect for one outcome variable, the level of trust. The responses to the question, on a 10-point scale, *"How much do you trust Mr. Smith's description of his own pain?"*, showed a main effect for the race of the participants [$F(1, 96) = 6.34$, $p = .013$, $\eta_p^2 = .062$]. Regardless of the race of the patient, White participants ($M = 8.83$, $SD = 1.39$) trusted the description of the patient's pain less than non-White participants ($M = 9.60$, $SD = .82$).

CHAPTER V: DISCUSSION

The intention of the current study was to determine if the race of a patient would influence how healthcare pre-professionals judge a patient's pain. Our results did not support the research hypotheses tested. The results of the study showed that participants (a) rated the Black patient's pain similar in urgency and severity to the White patient's, (b) triaged the Black patient similarly to the White patient, (c) attributed the White patient's pain to medical factors similarly to the Black patient's and attributed the Black patient's pain to psychosocial factors similarly to the White patient's, (d) trusted the White patient's description of pain analogously to the Black patient, and (e) did not perceive the Black patients as drug seekers more so than the White patients. In addition, there were no significant interactions between the race of a patient and race of the provider for any of the outcome variables.

While no significant interactions emerged, there were some non-significant trends. For example, White participants rated Black patients' pain as less severe and gave them longer wait times than non-White participants. However, these results were not significant to draw conclusions that both the race of the patient and race of the participant might affect pain ratings or triage times. The only significant result present in the study had nothing to do with the race of the patient. The outcome of this study suggests that nursing students from The University of Southern Mississippi do not exhibit racial bias when treating a patient and are more egalitarian than they were hypothesized to be.

The findings of this study were not consistent with some previous studies revealing that White healthcare professionals do assess pain differently based on the race of a patient (Hoffman et al., 2016; Drwecki et al., 2011). Then again, those studies

utilized other means of measuring the effects of a patient's race on the providers' perception of pain. For example, Hoffman et al. (2016) measured pain perception based on race by allowing participants to rate pain and recommend treatments for a Black and White patient in a medical case scenario without photographs of the hypothetical patients. Drwecki et al. (2011) used videos of patients displaying painful expressions while doing a range of motion tests, and participants measured the patient's pain using a treatment questionnaire.

There are also other previous studies in which the race of the patient did not explicitly influence providers' pain ratings or treatments (Green et al., 2007; Mathur et al., 2014; Tamayo-Sarver et al., 2003). Results of this work suggest that White or non-White participants do not deliberately express explicit racial attitudes when they are in the Black patient condition. However, other research has shown that racial biases in pain perception and treatment are partly due to unconscious beliefs (Green et al., 2007; Mathur et al., 2014; Hall et al., 2015), yet this study did not employ the use of implicit measures. Perhaps such individual differences variable as implicit racial attitudes could act as a moderator and explain the lack of the main effects for race of patient. Overall, the lack of significant results does not explicitly mean that the nursing student participants are not racially biased because their responses were controlled rather than more implicit gut reactions. Yet, at the same time, it is *medical judgment* and *behavior* of the providers that matters for patients' outcomes and this study attempted to measure them, albeit in a fictional scenario by proxy. Therefore, it is possible to be cautiously optimistic about the results of this study.

It was surprising to see no interactive effects between the race of nursing students and the race of the patients in the exploratory analyses given the location and history of racial tensions in the south of Mississippi. The student's impartial responses to the survey questions could have been influenced by the ongoing exposure of political and societal culture on campus and the media. Recent events such as the 2020 presidential election and nationwide protests against racially sensitive police brutality have led to a mass following of companies acknowledging racial tensions, with many individuals supporting the Black Lives Matter movement and attempting to reduce racial biases. Overexposure to this movement through the media could have affected participants in a positive way in which they tried to acknowledge and reduce any biases they might have.

Limitations and Future Directions

This study only used a small sample of nursing students from The University of Southern Mississippi. Within that sample, most of the participants were White and female, and there was a considerably lower number of minority participants and males; hence the grouping of White participants versus non-White participants in testing race of Participants effects and interactions. This is a crude way of defining race since it does not capture the true racial heterogeneity. Future studies should attempt to recruit a sufficient number of various ethnic and racial groups. This sample also does not accurately represent training and practicing healthcare professionals, specifically nursing students, across the country. Future research regarding the same topic should be conducted with more heterogeneous groups of participants coming from various nursing schools in different areas of the country since racial biases, curriculums, and training might vary from school to school.

Another limitation was the layout and production of this study. This study transitioned from an originally incepted in-person video experiment with live actors to an online survey following the COVID-19 guidelines recommended by the CDC and enforced by the state of Mississippi and the University. The online survey used the face of a male patient presumably in his mid-30s displaying a pain-ridden face, so participant's judgements were only based on that, and a general clinical vignette. Race could have been included more as a factor in a clinical video vignette by giving participants the chance to view live actors showcasing actual mannerisms and pain expressions. With that, it must also be noted that there are practical differences in nurses evaluating a patient in real life rather than through reading fictional scenarios. The use of both genders and different age groups for patients, live patient scenarios, and more and different outcome measures should also be considered in future studies by researchers. In addition, previous work has shown that racial biases are more likely to be exhibited in situations when the target of judgment is ambiguous and some mixed information is present (e.g., Hodson et al., 2002), which in our case could have been presenting nursing students with a White or Black patient having a previous drug use history. Such possible scenarios should be tested in the future.

Conclusion

The current study's focus on healthcare pre-professionals' perception of pain revealed that nursing students do not judge a patient's pain or act differently based on their race. It is appealing to know that nursing students' training in the state of Mississippi prepared them well not to exhibit any racial biases during the study. However, this sample does not represent all current and future healthcare pre-

professionals, so the topic should be further researched and discussed. Healthcare

disparities are still prevalent, and the source of disparities begins with the provider and

the relationships they develop with patients.

Table 1

Participants' Ratings as a Function of Patients' Race (N of Participants per Condition, M and SD)

Questions	White Patient Condition			Black Patient Condition		
	N	*M*	*SD*	*N*	*M*	*SD*
Using the CTA, what is the level of Mr. Smith?	51	3.96	1.06	57	4.21	.77
Using the CTA, how long should this patient wait to be triaged?	48	68.50	41.76	53	73.40	37.07
On a 10-point percentage scale, what percentage of Mr. Smith's pain do you think attributes to medical factors?	51	6.71	2.66	54	7.28	2.69
On a 10-point percentage scale, what percentage of Mr. Smith's pain do you think attributes to psychosocial factors?	51	2.92	1.91	54	3.35	2.67
On a 10-point scale, how much do you trust Mr. Smith's description of his own pain?	51	9.04	1.30	54	8.98	1.31
On a 10-point scale, what level of pain severity do you think Mr. Smith is actually expressing?	50	7.26	1.52	54	7.22	1.62
How likely is the patient to be drug seeking?	51	3.82	.74	54	3.83	.80

Note. Different number of participants across multiple measures is due to missing data.

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Table 2

T-tests Associated with Comparison of Means between Participants' Responses in Black and White Patient Condition

Questions	t-test for Equality of Means			
	t	*df*	*Sig. (2-tailed)*	*d*
Using the CTA, what is the level of Mr. Smith?	-1.41	106	.161	.27
Using the CTA, how long should this patient wait to be triaged?	-.62	99	.534	.12
On a 10-point percentage scale, what percentage of Mr. Smith's pain do you think attributes to medical factors?	-1.10	103	.275	.21
On a 10-point percentage scale, what percentage of Mr. Smith's pain do you think attributes to psychosocial factors?	-.95	103	.346	.19
On a 10-point scale, how much do you trust Mr. Smith's description of his own pain?	.23	103	.821	.05
On a 10-point scale, what level of pain severity do you think Mr. Smith is actually expressing?	.12	102	.903	.03
How likely is the patient to be drug seeking?	-.07	103	.948	.01

Note. Varying degrees of freedom across multiple measures are due to missing data.

Table 3

Participants' Ratings as a Function of Patients' Race and Participants' Race (N of Participants per Condition, M and SD)

| Questions | White Participants | | | | | | non-White Participants | | | | | |
| | White Patient Condition | | | Black Patient Condition | | | White Patient Condition | | | Black Patient Condition | | |
	N	M	SD	N	M	SD	N	M	SD	N	M	SD
Using the CTA, what is the level of Mr. Smith?	35	3.91	1.07	40	4.27	.75	14	4.00	1.11	11	3.91	.83
Using the CTA, how long should this patient wait to be triaged?	32	69.94	42.39	40	76.38	35.46	14	62.14	41.96	9	60.00	37.50
On a 10-point percentage scale, what percentage of Mr. Smith's pain do you think attributes to medical factors?	35	7.03	2.40	40	7.35	2.92	14	5.64	3.18	11	6.64	1.63
On a 10-point percentage scale, what percentage of Mr. Smith's pain do you think attributes to psychosocial factors?	35	2.80	1.71	40	3.13	2.55	14	3.29	2.46	11	4.45	3.05
On a 10-point scale, how much do you trust Mr. Smith's description of his own pain?	35	8.80	1.37	40	8.85	1.42	14	9.79	.80	11	9.36	.81
On a 10-point scale, what level of pain severity do you think Mr. Smith is actually expressing?	34	7.50	1.50	40	7.10	1.57	14	6.93	1.49	11	7.73	1.85
How likely is the patient to be drug seeking?	35	3.74	.74	40	3.83	.78	14	4.00	.78	11	3.82	.87

Note. Different number of participants across multiple measures is due to missing data.

25

Table 4

F-tests Associated with Participants' Ratings based on Patients' Race and Participants' Race

Questions	Factors		
	Participants' Race	Patients' Race	Participants' Race*Patients' Race
	F		
Using the CTA, what is the level of Mr. Smith?	$F(1, 96) = .42, p = .520, \eta_p^2 = .004$	$F(1, 96) = .39, p = .535, \eta_p^2 = .004$	$F(1, 96) = 1.08, p = .300, \eta_p^2 = .011$
Using the CTA, how long should this patient wait to be triaged?	$F(1, 91) = 1.60, p = .209, \eta_p^2 = .017$	$F(1, 91) = .05, p = .823, \eta_p^2 = .001$	$F(1, 91) = .20, p = .654, \eta_p^2 = .002$
On a 10-point percentage scale, what percentage of Mr. Smith's pain do you think attributes to medical factors?	$F(1, 96) = 2.86, p = .094, \eta_p^2 = .029$	$F(1, 96) = 1.12, p = .292, \eta_p^2 = .012$	$F(1, 96) = .29, p = .590, \eta_p^2 = .003$
On a 10-point percentage scale, what percentage of Mr. Smith's pain do you think attributes to psychosocial factors?	$F(1, 96) = 2.79, p = .098, \eta_p^2 = .028$	$F(1, 96) = 1.89, p = .173, \eta_p^2 = .019$	$F(1, 96) = .60, p = .440, \eta_p^2 = .006$
On a 10-point scale, how much do you trust Mr. Smith's description of his own pain?	$F(1, 96) = 6.34, p = .013*, \eta_p^2 = .062$	$F(1, 96) = .39, p = .533, \eta_p^2 = .004$	$F(1, 96) = .63, p = .430, \eta_p^2 = .007$
On a 10-point scale, what level of pain severity do you think Mr. Smith is actually expressing?	$F(1, 95) = .01, p = .939, \eta_p^2 = .000$	$F(1, 95) = .30, p = .586, \eta_p^2 = .003$	$F(1, 95) = 2.70, p = .104, \eta_p^2 = .028$
How likely is the patient to be drug seeking?	$F(1, 96) = .48, p = .490, \eta_p^2 = .005$	$F(1, 96) = .08, p = .783, \eta_p^2 = .001$	$F(1, 96) = .53, p = .467, \eta_p^2 = .006$

Note. *Factor is significant at the .05 level.

Varying degrees of freedom across multiple measures are due to missing data.
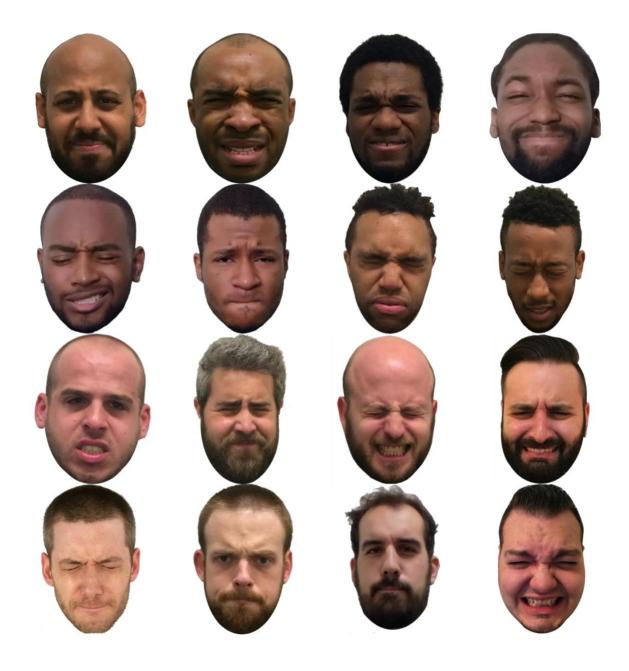
Figure 1. Facial stimuli exhibiting painful expressions from the Delaware Pain Database

(Mende-Siedlecki et al., 2020)

APPENDIX A: SURVEY INSTRUCTIONS, VIGNETTE, AND QUESTIONS

Instructions:

Imagine you are a nurse working in the emergency department when Mr. John Smith comes in. Read and evaluate his clinical vignette and answer the following questions to the best of your ability. Click the arrow at the bottom to continue.

Clinical Vignette:

Mr. John Smith, a 35-year-old man, suffering from extreme left shoulder pain presents himself to the emergency department. He weighs 220 pounds and is 6'1". He has been limited in his range of motion while doing his mechanical engineering job due to the strong pressure and strain he feels when reaching and lifting his arm. He began having shoulder pain while playing football in high school and college. After having surgery, the pain eventually dissipated. Recently, the pain came back, and he has been experiencing it for almost 6 months but ignored it to avoid missing work, visiting doctors, and incurring expenses. He has said multiple times that he coped with the pain with over-the-counter pain medication, but it eventually wasn't strong enough to suppress it. He describes this pain as being "stabbed in the shoulder from a very sharp object." He claims that the pain

increases extremely whenever he has to move his left arm in any way. It has gotten to the point where he cannot lift his arm past his neck or sleep well at night. He doesn't drink or smoke, and he exercises as much as he can with limited involvement of his left shoulder. He insists that he does not take any routine medication or narcotics other than the occasional drugstore pain medication for his shoulder. He currently has no other medical problems.

Questions (every question included a "prefer not to answer" choice)**:**

Canadian Triage and Acuity Scale (CTA):

Level I	Resuscitation	see patient immediately
Level II	Emergency	within 15 minutes
Level III	Urgency	within 30 minutes
Level IV	Less Urgency	within 60 minutes
Level V	Non Urgency	within 120 minutes

1) Using the CTA, what is the level of Mr. Smith?

- Level I (Highest)
- Level II
- Level III
- Level IV
- Level V (Lowest)

2) Using the CTA, how long should this patient wait (in minutes) to be triaged?

3) On a 10-point percentage scale, what percentage of Mr. Smith's pain do you think attributes to medical factors?

- 0-10% (Lowest)
- 11-20%
- 21-30%
- 31-40%
- 41-50%
- 51-60%
- 61-70%
- 71-80%
- 81-90%
- 91-100% (Highest)

4) On a 10-point percentage scale, what percentage of Mr. Smith's pain do you think

attributes to psychosocial factors?

- 0-10% (Lowest)
- 11-20%
- 21-30%
- 31-40%
- 41-50%
- 51-60%
- 61-70%
- 71-80%
- 81-90%
- 91-100% (Highest)

5) On a 10-point scale, how much do you trust Mr. Smith's description of his own pain?

- 1 (Not at all)
- 2
- 2
- 4
- 5
- 6
- 7
- 8
- 9
- 10 (Completely)

6) On a 10-point scale, what level of pain severity do you think Mr. Smith is actually

expressing?

- 1 (No pain)
- 2
- 2
- 4
- 5
- 6
- 7
- 8
- 9
- 10 (Excruciating pain)

7) How likely is this patient to be drug seeking?

- Very Likely
- Likely
- Neutral
- Unlikely
- Very Unlikely

APPENDIX B: IRB APPROVAL LETTER

Office *of*
Research Integrity

THE UNIVERSITY OF
SOUTHERN
MISSISSIPPI.

118 COLLEGE DRIVE #5125 • HATTIESBURG, MS | 601.266.6576 | USM.EDU/ORI

NOTICE OF INSTITUTIONAL REVIEW BOARD ACTION

The project below has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services regulations (45 CFR Part 46), and University Policy to ensure:

- The risks to subjects are minimized and reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered involving risks to subjects must be reported immediately. Problems should be reported to ORI via the Incident template on Cayuse IRB.
- The period of approval is twelve months. An application for renewal must be submitted for projects exceeding twelve months.
- Face-to-Face data collection may not commence without prior approval from the Vice President for Research's Office.

PROTOCOL NUMBER: IRB-20-458
PROJECT TITLE: Evaluation of Clinical Vignettes
SCHOOL/PROGRAM: Psychology, Nursing
RESEARCHER(S): Christian Phillips, Elena Stepanova, Elizabeth Tinnon, Lillian Spadgenske, Michong Rayborn, Raegan Bishop

IRB COMMITTEE ACTION: Approved
CATEGORY: Expedited
        7. Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

PERIOD OF APPROVAL: November 25, 2020

Donald Sacco Jr.

Donald Sacco, Ph.D.
Institutional Review Board Chairperson

APPENDIX C: INFORMED CONSENT FORM

ORI | Office *of* Research Integrity

INSTITUTIONAL REVIEW BOARD
STANDARD (ONLINE) INFORMED CONSENT

STANDARD (ONLINE) INFORMED CONSENT PROCEDURES
The Project Information and Research Description sections of this form should be completed by the Principal Investigator before submitting this form for IRB approval. Use what is given in the research description and consent sections below when constructing research instrument online.
Last Edited May 13th, 2019

Today's date:	11/20/20		
PROJECT INFORMATION			
Project Title: Evaluation of Clinical Vignettes			
Principal Investigator: Christian Phillips	Phone: 601-266-4342	Email: christian.phillips@usm.edu	
College: College of Education and Human Sciences	School and Program: School of Psychology		
RESEARCH DESCRIPTION			

1. **Purpose**:

   The purpose of this study is to assess how nurses in training make clinical decisions through the use of clinical vignettes and their subsequent evaluations.

2. **Description of Study**:

   This study will take approximately 10-15 minutes to complete. During this study, you will be instructed to complete an evaluation of a patient in the emergency room as an ER nurse. You will be given a photo of the patient along with a written vignette detailing the patient's reason for coming in. As the ER nurse, you will be asked to evaluate the patient by answering a variety of questions. The survey will end with some demographic questions.

3. **Benefits**:

   You will be compensated with a $10 Amazon e-gift card for your time completing the study. You will be redirected to another survey at the end of this survey and will be asked to provide your email. You must provide your email to be compensated. If you do not navigate to the end of the survey and provide your email, you will not be compensated. You will also receive a debriefing form with more information about the study once all the data is collected.

4. **Risks**:

   There are no associated risks with completing this study. Please remember that you are free to exit the survey at any time or skip any question if you feel uncomfortable or troubled in any way, and you may contact the Principle Investigator of this study with any concerns you may have.

5. **Confidentiality**:

   Your responses in this study will remain completely anonymous and your email will be disassociated from the responses you provide in this study today. Additionally, your data will be kept on a password protected

computer and any data you provide will be only be linked to an anonymous ID number which you will be randomly assigned.

6. **Alternative Procedures:**

If you wish not to participate in the study, or want to withdraw at any time, please close your browser window and you will exit out of the study. You can skip any question without penalty. However, if you withdraw from the study and do not complete it, you will not get compensated. You must navigate to the end of the survey and provide your email in order to be compensated.

7. **Participant's Assurance:**

This project and this consent form have been reviewed by the Institutional Review Board, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research participant should be directed to the Chair of the Institutional Review Board, The University of Southern Mississippi, 118 College Drive #5125, Hattiesburg, MS 39406-0001, 601-266-5997.

Any questions about this research project should be directed to the Principal Investigator using the contact information provided above.

CONSENT TO PARTICIPATE IN RESEARCH

I understand that participation in this project is completely voluntary, and I may withdraw at any time without penalty, prejudice, or loss of benefits. Unless described above, all personal information will be kept strictly confidential, including my name and other identifying information. All procedures to be followed and their purposes were explained to me. Information was given about all benefits, risks, inconveniences, or discomforts that might be expected. Any new information that develops during the project will be provided to me if that information may affect my willingness to continue participation in the project.

CONSENT TO PARTICIPATE IN RESEARCH

By clicking the box below, I give my consent to participate in this research project.

☐ Check this box if you consent to this study, and then click "Continue." (Clicking "Continue" will not allow you to advance to the study, unless you have checked the box indicating your consent.)

If you do not wish to consent to this study, please close your browser window at this time.

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